ICT workforce study
Meeting Australia's future ICT skills needs
July 2013

Information and Communications Technology (ICT) is transforming personal, social and business interactions in Australia and globally.

The emergence of ICT provides opportunities and challenges for Australia. It is a vital enabler of productivity and innovation in our economy.

While an innovative, productive and competitive Australian ICT workforce will deliver significant economic and social benefits, much depends on the availability of specialised ICT skills in the Australian marketplace.

The challenge for Australian industry is to enable innovation by attracting workers with the specialist skills and capabilities required to deliver and manage technological change.

The reality is that domestic supply of ICT skills has not kept pace with demand. While recent enrolment trends in both higher education and vocational education and training (VET) are encouraging, there are high drop-out rates from courses and some who do complete are experiencing difficulty finding work in ICT occupations.

Our businesses need to invest in ongoing skills development to promote the deepening and broadening of ICT skills, and commit to flexible organisational practices to facilitate retention and the effective utilisation of ICT skills.

If Australia is to move confidently into the digital century, we need to ensure that the possibilities of ICT careers are effectively communicated, and that a greater proportion of the population is motivated to engage in ICT during their education and throughout their careers.

Our ICT labour market

➤ IBISWorld predicts that 13 out of Australia's 19 industry sectors will be either transformed or derive significant benefits from ICT by 2050. Public administration and safety, retail, mining, health care and social assistance, professional, scientific and technical services, education and training, and transport, postal and warehousing industries will be among the key beneficiaries.

➤ Approximately 461,000 workers are employed in Australia's ICT sector—4.1 per cent of the total workforce.

➤ Our total ICT workforce is projected to grow by 33,200 workers, or 7.1 per cent, between 2012 and 2017.

➤ Women occupy less than 20 per cent of positions in the majority of ICT occupations, well below the percentage of women employed in all occupations (just over 45 per cent).

➤ A high proportion of workers in ICT Professional occupations are between 25 and 44 years of age (67.8 per cent compared with 45.5 per cent for all occupations).

➤ The number of primary subclass 457 visas granted for ICT Professionals increased by 74 per cent from 2009–10 (5,327 granted) to 2011–12 (9,271 granted).

➤ In contrast, the growth in domestic higher education completions for ICT Professionals is much slower over this period—a 4 per cent increase from 2009 (4,335) to 2011 (4,497).

➤ Research by the consulting firm IDC finds the investment in education by the Australian ICT industry lags behind the market average, and falls well behind spending on software. IDC forecasts that training expenditure will continue to decline to 2015.

A growing ICT industry

The demand for ICT skills is expected to increase over the next five years and Australia's ability to meet this demand through the supply of ICT skills will be vital to innovation and productivity.

Currently, workers employed in the ICT sector account for 4.1 per cent of our total workforce. The three ICT occupation groups with the most workers are ICT Professionals (233,300), ICT Support Technicians (57,000) and ICT Managers (53,100). Employment for ICT Professionals, in particular, has increased strongly since late 2010.

Projections developed by the Department of Education, Employment and Workplace Relations point to considerable growth in ICT employment over the next five years, with the total ICT workforce projected to grow by 7.1 per cent by 2017.

In the Australian Workforce and Productivity Agency's *Future focus, 2013 National Workforce Development Strategy,* scenario modelling to 2025 indicates the outlook is for a potential undersupply of qualifications for key ICT occupations.

Digital literacy across the economy

ICT skills and capabilities are important for all workers not just those engaged in specialist ICT roles.

Digital literacy needs to be included as a core component of school education, both in terms of content and delivery, as distinct from the teaching of specialised ICT, technology and computer science subjects. Post-school, the teaching of digital literacy skills must continue into tertiary education, and be a core component of ongoing workplace skills development.

As the influence of ICT is increasingly felt in every industry sector, the skills and capabilities required to utilise and engage with ICT in the workplace will need to be an essential part of lifelong learning. This includes equipping workers with the business and leadership skills required to make effective decisions about the procurement and management of ICT services.

Shortfalls in domestic supply

In response to the poor supply of domestic ICT skills in recent years, skilled and temporary (subclass 457 visa) migration programs have emerged as a key source of supply for Australia's ICT sector. In 2011–12, ICT Professionals represented 13.5 per cent of total primary subclass 457 visas.

It is likely that temporary and permanent skilled migration will continue to play a significant role in meeting demand for ICT Professionals in coming years. In this context, efforts to improve the work readiness and ongoing employment prospects of domestic ICT workers are particularly important.

Improving the supply of skilled ICT workers

The *ICT workforce study, 2013,* identifies the following four key issues that need to be addressed to improve the availability, development and utilisation of ICT skills in the Australian economy.

Improving perceptions of ICT as a career choice

The ICT industry carries a legacy of negative perceptions of male-dominated, desk-bound, repetitive, isolating jobs. These perceptions do not bear a close relationship to the contemporary emergence of dynamic, creative, flexible, interdisciplinary ICT jobs. These perceptions have implications for the pipeline of ICT skills from schools to tertiary education. They have to change if Australia is to take full advantage of the digital opportunities of the future.

A range of stakeholders have also suggested the provision of ICT education in Australian schools presents an out-dated view of the industry. There is also criticism of the quality of the ICT curriculum and its delivery in VET and higher education and of the advice provided by career advisers.

Diversity in the ICT workforce

Low numbers of female and mature-age workers are limiting the supply of skills to the ICT industry. Women occupy less than 20 per cent of positions in the majority of ICT occupations, compared to the number employed in all occupations (just over 45 per cent). Also a high proportion of workers in ICT Professional occupations are between 25 and 44 years of age (67.8 per cent compared with 45.5 per cent for all occupations). Initiatives to attract and retain these groups of workers are important if we are to meet the demand for skilled ICT workers.

Work-ready graduates

Many students who pursue an ICT education experience difficulty in finding employment in the sector upon graduation, and many graduates use their qualifications to pursue other careers outside ICT.

Despite the young age profile of the ICT workforce, there appears to be a limited number of entry-level positions for persons in the 20 to 24 years age group, with many employers complaining that tertiary graduates do not possess the desired combination of technical and complementary business and communication skills to contribute effectively in the workplace.

The apparent shortage of entry-level opportunities contributes to the relatively high level of occupational wastage for ICT graduates. In 2011, only 37 per cent of ICT graduates aged 20 to 29 years were employed as ICT Professionals, and a further 51 per cent were employed in other occupations.

Industry and ICT skills development

Despite the increasing complexity of ICT services and the growing demand for these skills, the engagement and investment of industry in ICT skills development remains low. While many multinational ICT organisations have put in place highly effective workforce development strategies, there is limited collaboration between large ICT organisations to build the general pool of skills all employers draw from, and there are issues as well with skills development for contractors, which comprise 70 per cent of the ICT workforce. Many small to medium-sized organisations have limited capacity to support skills development.

ICT workforce development strategies

The *ICT workforce study, 2013,* presents a set of workforce development strategies for industry, the tertiary sector and government. These recommendations (see column at right), aim to boost Australia's supply of specialist ICT skills, improve ongoing skills development for the ICT workforce, and promote the effective utilisation of ICT skills.

Each of the strategies looks at how businesses can play a more influential role to ensure more students are employable in ICT jobs upon graduation, and to facilitate rewarding, sustainable careers in the industry.

The strategies identify how businesses can work more closely with schools and tertiary education providers to raise the profile of ICT careers and improve the work readiness of graduates.

These strategies have been identified in collaboration and partnership with industry, the education and training sector and government.

ICT workforce study recommendations

➢ *Motivate and excite people to take up ICT careers by shifting perceptions of the industry*

The study recommends a suite of targeted career promotion products for different cohorts and audiences to promote career opportunities in ICT.

➢ *Improve the quality of ICT teaching in schools and tertiary education institutions*

The study supports greater investment in the professional development of ICT teachers, enhanced ICT curricula development and delivery, and stronger industry engagement in schools.

➢ *Improve the suitability of tertiary graduates for entry-level ICT positions*

The study calls for a more strategic approach to work-integrated learning, a one-year 'graduate traineeship' requirement for entry-level ICT Professionals and the consideration of an ICT apprenticeship/traineeship model to better combine training and employment.

➢ *Increase the quantity of workers with ICT intensive skills*

The study recommends an intensive skills conversion program aimed at recent graduates from other disciplines.

➢ *Increase the quantity of workers with baseline ICT skills*

The study supports the development of a cross-disciplinary unit to support the integration of a digital literacy component into all undergraduate degrees, and a suite of approaches to improve the engagement of under-represented groups in the ICT workforce.

➢ *Ensure that employers of ICT workers, including employers of ICT contractors, support ongoing skills development and the effective utilisation of skills*

The study supports the expansion of the Australian Computer Society professional development program to domestic students, and highlights the Australian Government's National Workforce Development Fund as a key enabler for organisations to identify and address their workforce development needs.

Ways forward

Australia faces some challenges in ICT skills development and further work is required to address these. However, some good work is already underway in the sector to support the development and maintenance of high quality skills.

The *ICT workforce study, 2013,* features a series of case studies highlighting best practice approaches to ICT skills development, including successful schooling programs, various forms of work-integrated learning programs, and approaches to engage under-represented groups in the ICT workforce.

Australian Workforce and Productivity Agency

The Australian Workforce and Productivity Agency (AWPA) developed the *ICT workforce study, 2013,* in consultation with industry and education stakeholders.

The agency is an independent statutory authority which advises the Australian Government on the nation's current, emerging and future skills and workforce development needs.

AWPA's aim in undertaking the *ICT workforce study, 2013,* is to contribute to the development of an innovative, productive and competitive Australian ICT workforce by highlighting the essential role of innovative workforce development practices in driving the industry forward.

Contact us

You can view or order a copy of the *ICT workforce study, 2013.*

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