



The ICT Skills Forecast Project

First Report: Quantifying Current and Forecast ICT Employment

(Executive Summary and Contents)

August 2008

**Centre for Innovative
Industry Economic
Research Inc.**

About the Australian Computer Society

As the professional body for ICT practitioners, the ACS plays a critical and growing role in establishing and promoting standards of excellence and maintaining members' expertise by providing access to quality education.

There are around 280,000 ICT professionals employed in Australia, with over 60% of those directly employed within the ICT industry, and the balance interacting with the industry from their roles in business, government and academia.

The continued, sustainable growth and prosperity of the ICT industry is therefore vital to the continuance of the ICT profession.

The ACS is the leading professional body in ICT in Australia. Members of the ACS are professionally qualified and accredited.

About the Centre for Innovative Industries Economic Research

CIIER is an Asia-Pacific Centre, formed to create a facility, repository and think-tank for consistent, competently researched, up-to-date and analysed data on employment, markets, revenue streams, R&D, processes and management methods, specifically focussed on high technology, innovative, and emerging industries. CIIER produces the '*Top 250*' *ICT Industry Research Report*, widely recognised as the leading creditable indicator of trends in the Australian ICT industry, and conducts detailed analysis and reporting on Information Technology, and Reports on other high technology industries.

Whitehorse Strategic Group Ltd provided the analysis for this publication. Whitehorse is an Australian owned management consulting practice specialising in ICT Market Research and analysis, ICT policy and strategy, especially in the Government sector, Business Process Management and Economic Development.

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ABN 64 806 162 996

Suite 5.03, 365 Little Collins St.

Melbourne, 3000

e-mail: admin@whitehorsestrategic.com

Phone: 03 9614 8510

Fax: 03 9614 8201

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Project Background

The ICT Skills Demand Forecasting Project was established two years ago to draw upon established expertise and access to national and international data on ICT skills.

Its tasks include:

- The collection and analysis of a wide range of data on historical and forecast trends relating to: GDP and GSP; economy wide markets and industries, employment and occupations; training commencements, completions and graduations; inward and outward skilled migration trends; labour productivity trends; gender and age demographics at the national and state levels, as well as developing an understanding of the potential implications of globalisation and trade in such areas as offshoring ICT and ICT-enabled business services;
- The development and formalisation of a model capable of embracing and reflecting the many trends in the above data, reconciling the numerous unconnected nomenclatures and data structures, converting both current and historical data into comparable formats ; and
- The building, formalisation, testing, validation and further development and refinement of the model.

This project is supported by the ACS and AIIA, and by Universities and other stakeholders. Initial funding has been provided by the ACS, private companies and individuals. Federal Government assistance for this important research has also been requested.

This report is the first outcome of the project; the second report will focus on analysing the now quantified demand for the next few years by the particular skills required, and in identifying regional and industry sectoral variations.

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Executive Summary

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The continued, sustainable growth and prosperity of the ICT industry is therefore vital to the continuance of the ICT profession.

The ICT Skills Demand Forecasting Project was established two years ago, with the support of the ACS, and now AIIA, to draw upon established expertise and access to national and international data on ICT skills, and to quantify and qualify ICT Skills employment supply and demand.

Acknowledged ICT skills shortage

It is universally acknowledged by the ICT community that Australia does not have sufficient skilled ICT practitioners to satisfy its needs today. This report quantifies that shortfall and projects the supply/demand equation to the year 2020.

Accurately quantifying ICT technical and professional employment has, historically, been difficult. It can, however, be argued that the most economically justifiable and socially responsible approach to satisfy future ICT skills demand is through domestic supply, both of ICT graduates, and of other domestic entrants to the ICT technical and professional workforce.

Who are we?

ICT professionals work in all industry sectors, however a large proportion of ICT professionals work for the providers of ICT goods and services (the ICT industry). ICT industry employment also includes not only those professionals but also many ICT non-professional technical, sales, logistical and administrative staff.

Over half of all employees in ICT companies in Australia are technically or professionally qualified, while over 70% of ICT technical and professional staff work in the ICT industry.

ICT economic contribution

ICT is also very important to Australia's economy. A number of studies has indicated that ICT is one of the biggest contributors to Productivity gains across all sectors, as well as being a major contributor in its own right.

According to ABS data from 2006, ICT is economically more significant to the Australian economy than:

- Mining
- Education
- Defence
- Agriculture
- And all individual Manufacturing sectors

Underlying ICT employment growth

ICT technical and professional employment has grown steadily over a long period, displaying a consistent underlying growth trend. While fluctuations have occurred, they have mainly been related to normal economic cycles and usually resolved back to a reasonably consistent trendline

within a three year window. The two trendlines are broadly consistent and both are easily projected.

State by State variation

ICT Industry Employment by State varies from 1.25% of the FTE workforce in the NT to 3.3% in the ACT, while ICT technical and professional employment in all industry sectors varies from 4% in Tasmania to 14% in the ACT, with the Australian average at 5.5% of FTE.

Analysing ICT employment

Analysing the ICT labour market requires access to a significant number of baseline statistics and indicative demand and supply drivers.

Factors can include:

- *General economic trends*, especially the pace of innovation;
- *Employment supply constraints*, such as education outputs and migration targets and caps;
- *The Brain-Drain* of skilled and competent workers to external destinations;
- *Increases in the installed base* of ICT systems and applications, both by expanded usage and through general economic and structural growth;
- *Changes in spending on ICT* by ICT user industries;
- *Changes in technology* directly through their impact on labour requirements and skill needs and indirectly through the impact of new technologies on broader demand conditions for ICT products and services;
- *Changes in investment* in the ICT producer industries, especially in ICT-related R&D;
- *Changes in employment structure* in the ICT producer industries; and
- *Changes in net exports* of ICT products and services and in our relative cost position as a supplier of ICT products and services.

As well as considering a conservative economic forecast, the report analyses the trend in permanent skilled migration and the relative proportion that ICT skilled migration represents of the total Skilled migration target set by Government, and the trend of ICT 457 (temporary) visas issued each year.

The report also analyses commencement and completion data for Australian resident ICT tertiary courses, and retirement projections based upon an age categorisation of the current ICT workforce.

ICT Employment projections

A series of Scenarios is canvassed in the report starting with Scenario 0 – “Current trends unchecked by economic reality“, and including:

Scenario 1 – Holding inwards - migration to current budget settings

Scenario 2 – Holding the line – and lifting education

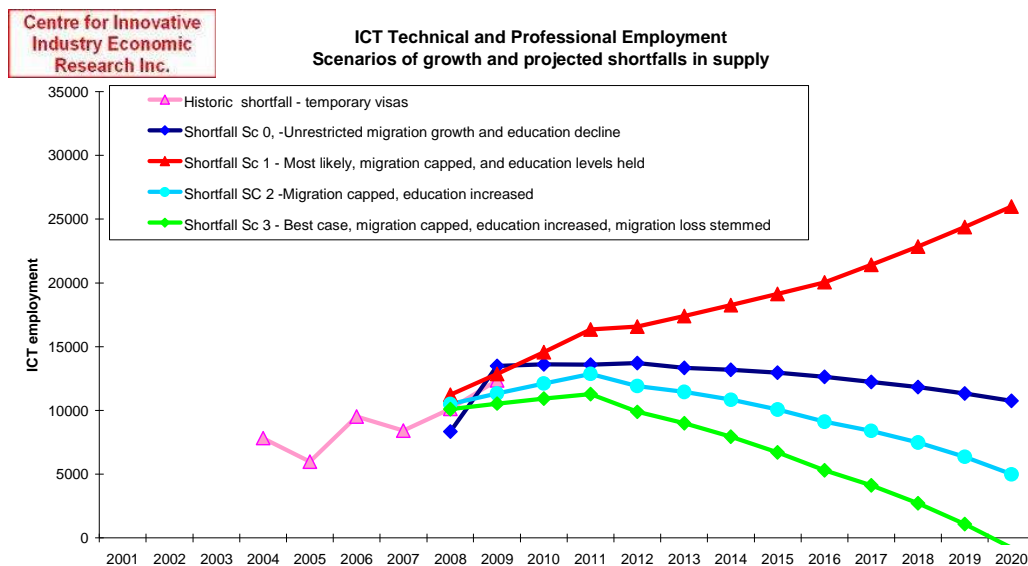
Scenario 3 – Best case - holding the line, lifting education, slowing the brain drain

The relatively conservative scenarios outlined in the report indicate:

Continued ICT skills shortages will continue at current or worse levels until at least 2012, regardless of optimistic presumptions in respect to forecast levels of graduates and migration settings.

The current shortfall is being addressed through the use of temporary Visa migrants, but even the current historically high numbers of these Visas will not be sufficient for future ICT demand, even on the most optimistic scenario, until 2012.

After 2012, assuming that some of the scenario assumptions become reality, the more optimistic scenarios suggest a gradual reduction in the need for temporary skills support.



Scenario 1, which is the most likely outcome on current settings, shows continued and rapidly growing ICT skills shortages, which would inevitably translate into reduced economic performance for all Australian industry sectors.

The “most-likely” outcome indicates the shortage growing by 29% by the year 2010 to over 14,500 FTE, worsening to 19,000 by 2015, and then to over 25,000 by the year 2020 unless current policy settings and paradigms change.

Even the “best-case” scenario delivers little substantial improvement until after 2010.

This analysis leads to the conclusion that a “policy free-zone” on future ICT employment is not an economic option. The current “most-likely” outcome resulting from previous policy settings is

unacceptable, both economically and politically. While it is unlikely that the “best-case” scenario can be achieved, any advance towards it would be positive. Action is required to minimise the long-term damage to Australia’s economy

The Next Step

This report quantifies current and future ICT employment. It does not answer the question: What **kind** of ICT jobs will be in demand in 5-10-15 years time?

Quantifying the overall ICT skills requirement was the first phase in analysing ICT skills needs. We now have to shape both the current ICT employment structure and the future needs of ICT employers based on quality and up-to-date data.

With the support of both the ACS and AIIA, CIIER researchers are conducting an ICT skills needs survey, well supported by ICT employers from every industry sector. This new data, collected in July-August 2008 , allows us to populate the forward ICT employment demand paradigms, reflecting **actual** skills needs, based upon major ICT employers responses. This data will be integral to the next report – “The Shape of Future ICT Employment”.