

# The Whitehorse Report

## ICT Industry Survey and Analysis National Summary

January 2006

Based upon December 2005 data



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**Centre for Innovative Industries Economic Research**

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### **About Whitehorse Strategic Group Ltd.**

Whitehorse Strategic Group Ltd. is an Australian owned management consulting practice founded in 1987 with a well established reputation in helping Industry and Government achieve success through strategies designed to maximise existing investments and capture efficiencies from new technologies. The Whitehorse Research Services Division produces the 'Top 250' *ICT Industry Research Report*, widely recognised as the leading credible indicator of trends in the Australian ICT industry, and conducts detailed analysis and reporting on Information Technology, and equivalent Reports on the Biotechnology Industry. Whitehorse principals specialise in the areas of ICT and Biotechnology Market Research, eGovernment policy and strategy, Business Process Management, and Economic and Community Development.

### **About the Centre for Innovative Industries Economic Research Inc**

CIER 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.

## Introduction

It is well recognised that the ICT industry in Australia is a key productivity enabler for other industries, but direct ICT employment, both in total and relative to other industries, shows that the ICT industry is also a major employer.

The ICT industry accounts for nearly 3% of total Full Time Equivalent (FTE) employment in Australia, more than many other Australian industry sectors, including Mining; Electricity, Gas and Water supply; Banking and Finance; and TV, Radio, Media.

The ICT industry is also a significant source of export revenue, and accounts for nearly 80% of ICT R&D performed in this country.

This Summary has been prepared to give an overview of the current state of the Australian ICT industry, as of December 2005, based upon the Whitehorse Top 250 methodology (T250).

Individual tailored reports by State and Industry sector are also available.

## Research background

The conduct of a research task such as this cannot take place effectively without the support and freely given time of many people. The consultants wish to thank all of the individuals and companies who assisted us by providing the data upon which the analysis is primarily based.

This research has been conducted under the aegis of the Centre for Innovative Industries Economic Research.

The CIIER is an Asia-Pacific Centre 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 encourages stakeholders to work co-operatively on such projects, and on extending our industry modelling approach, used successfully since 1998 for the ICT industries, to the biotechnology, nanotechnology, environmental technology, and other innovative and high technology industries.

## Survey and Analysis Process

The primary mechanism that is used to provide the data for this Report is a detailed survey of ICT companies in Australia, known as the 'Whitehorse Top 250'. The methodology employed includes a questionnaire both mailed and emailed out to respondents and direct verification telephone contact with a significant proportion of the survey base. The survey is supplemented by web-searches, press reports, Annual Reports, and other public sources of data.

The Whitehorse "Top 250" database contains detailed data for the last six years on now over 760 operating companies with 135,000 staff, \$69 billion in revenue and \$580 million in R&D expenditure. Historical data is also kept on companies which have been acquired, merged, or closed during this period, leading to a database with over 1000 company entries.

The current data, gathered in November/December 2005, represents approximately 62% of total current industry employment and 92% of total current industry revenues in the ICT industry in Australia.

From this data, a series of industry models are developed in a consistent and statistically verified structure. These models allow for the estimation of National and State industry sectoral totals for a number of measures, and for comparison and trend analysis to be performed.

## Periodic Model Review

In September 2004 the Australian Bureau of Statistics (ABS) issued an ICT industry employment report for June 2003 (Catalogue 8126-0).

Within this report, ABS allocated approximately 20,000 additional "sole trader/contractors" to the Australian ICT industry statistical base for the first time, based upon their inclusion in ATO lists derived from GST registrations. (It is likely that they had previously been considered to be casual or contractual workers, and included within ICT professional employment, but not classified to the ICT industry). ABS also cautioned against statistical comparison to its previous reports.

In October 2004 Whitehorse updated all 2003/4 models to reflect this new base, so that we could continue to use the ABS paradigms for comparison analysis.

Whilst the new gross employment numbers in our models reflected State by State proportions of this re-classification, individual State percentage shares of Australia's ICT industry only changed marginally, although one impact of the change in the ABS base was to increase the employment model percentage share by the smaller States, mainly through the inclusion by ABS of a higher proportion of very small local firms.

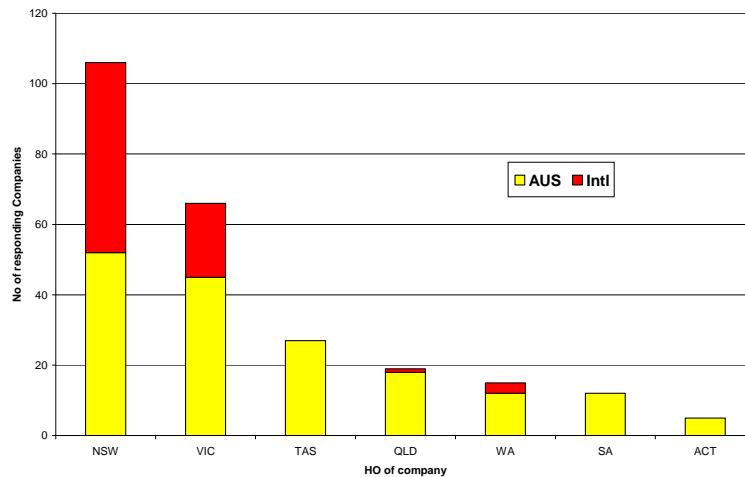
Industry model "period" analysis in this report is therefore factored from June 2003, rather than from our earlier model data, so that anomalies caused by the ABS restructure do not mislead analysts.

## The "T250 database

- Over 1000 total company records
- Data back to 1998 – updated 6 monthly
- Detailed Employment data for over 130,000 staff - 65% of the Australian ICT Industry
- All States and Territories represented
- All industry sectors represented
- Employment and Revenue models based upon ABS paradigms and stringently tested



### T250 database local/international mix

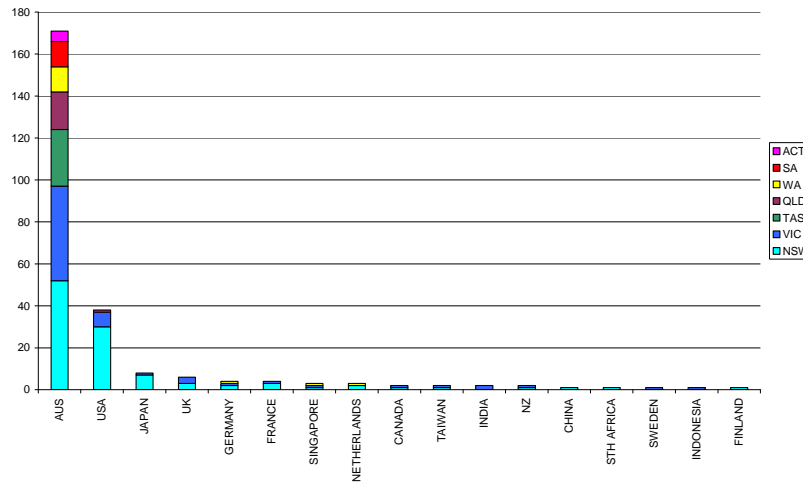


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The "mix" of local and international company data in the database, by necessity, overstates international presence, as a significant number of larger companies are internationally owned. This is statistically compensated within the model.



## T 250 database - Head offices



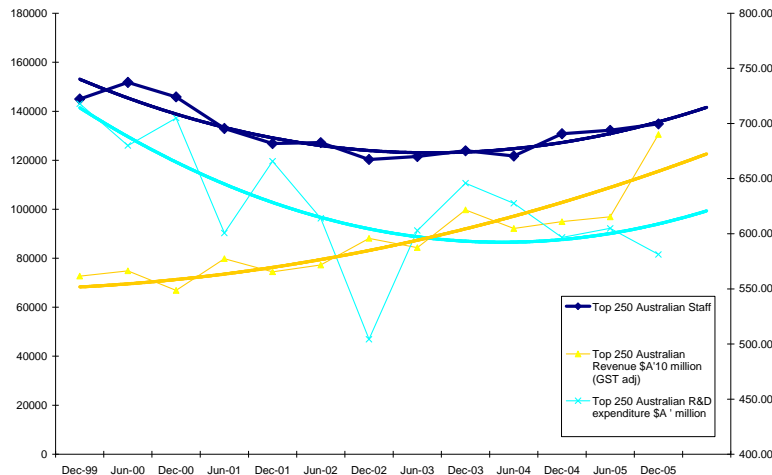
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The database includes companies headquartered in all States and Territories, to ensure a lack of regional bias, however most international companies tend to be headquartered in NSW, Victoria and Queensland.

This same evenness of representation is maintained for the State samples.



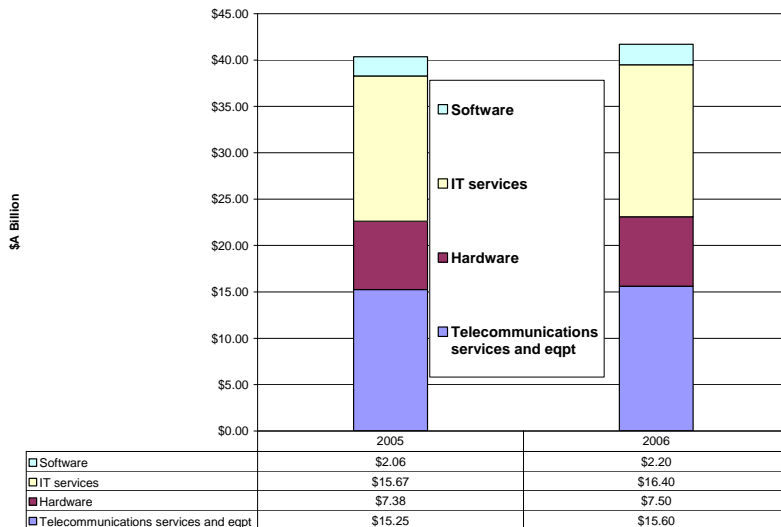
## Top 250 database - long-term trends



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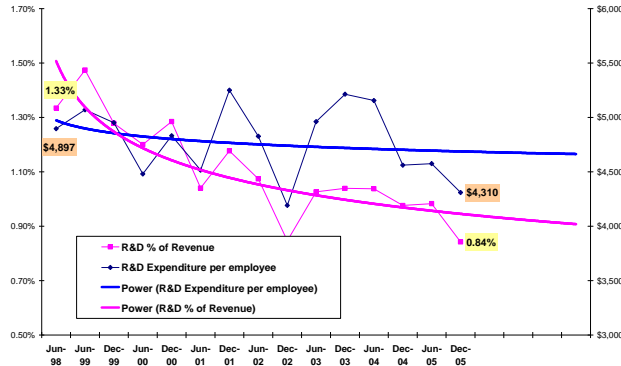
By using database data, rather than the Model, we can see longer-term trends. This chart analyses movement in each of the three key measures, (gross employment, gross revenue, and gross R&D spend) since 1999. Whilst employment has been trending upwards since 2003, after a flat couple of years, and revenue continues to grow regardless, R&D spend is declining over the last two and a half years.

A recent Gartner forecast of domestic ICT spend (below), lends support to the revenue trend identified.





## T250 National R&D trend

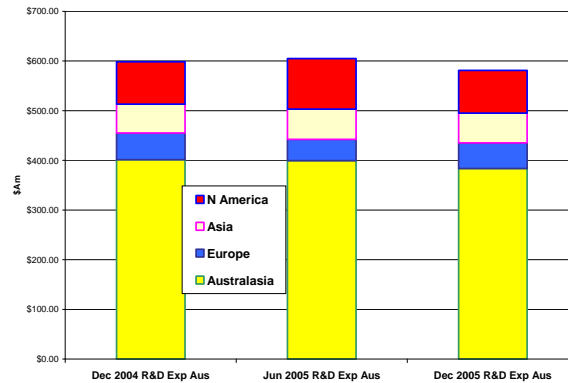


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This chart analyses the National R&D trend by responding T250 companies in more detail, by comparison to their corporate revenue and per capita by their employees. Regardless of the measure, the trend is, once again, downwards.



## T250 R&D by Country of ownership and trend

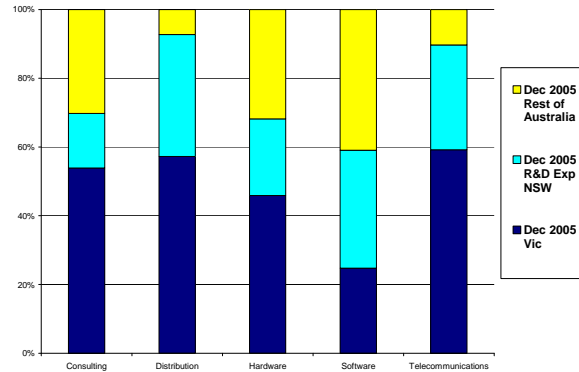


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It is also probably important to note that, based only upon responding T250 companies, (and therefore understating the local company contribution), a significant majority of R&D spend is by locally owned companies, in direct contrast to their minority market share. North American owned companies continue to reduce their Australian R&D spend, whilst there is an encouraging increase in R&D spend by European owned companies.



## State Share of Dec 2005 T250 R&D by sector

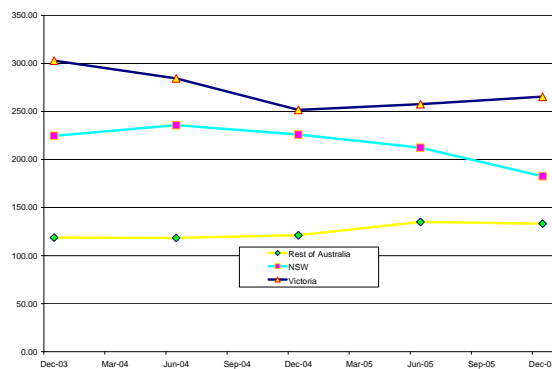


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The R&D mix in each State is different, however Victoria's R&D percentage share of the Australian total is significantly larger than its employment percentage in most industry sectors (measured by specific responses, regardless of the Head office of the company concerned). The software industry sector R&D spend most closely correlates to relative employment percentages, reflecting the more regionally dispersed nature of this sector.



## T250 Total R&D trend by State

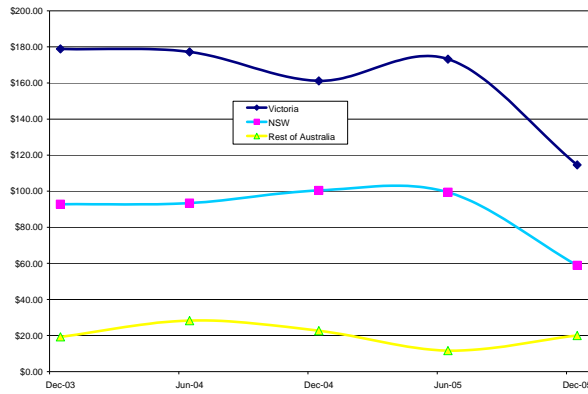


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State R&D trends are also not uniform, whilst Victorian R&D spend is starting to climb again after a period of decline, NSW R&D spend continues to fall, whilst the aggregate of the rest of the Australian States has risen slightly over the last year.



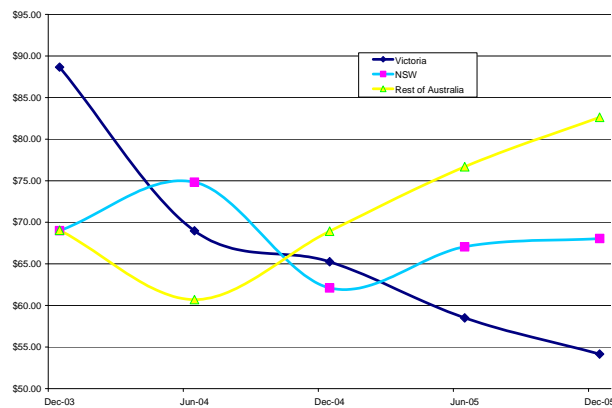
## T250 Telco R&D by State and trend



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The decline in R&D spend is led by Telcos, but the trends in Consulting and Software and services are far more complex.

## T250 Consulting and Software services R&D trend by State



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## Employment

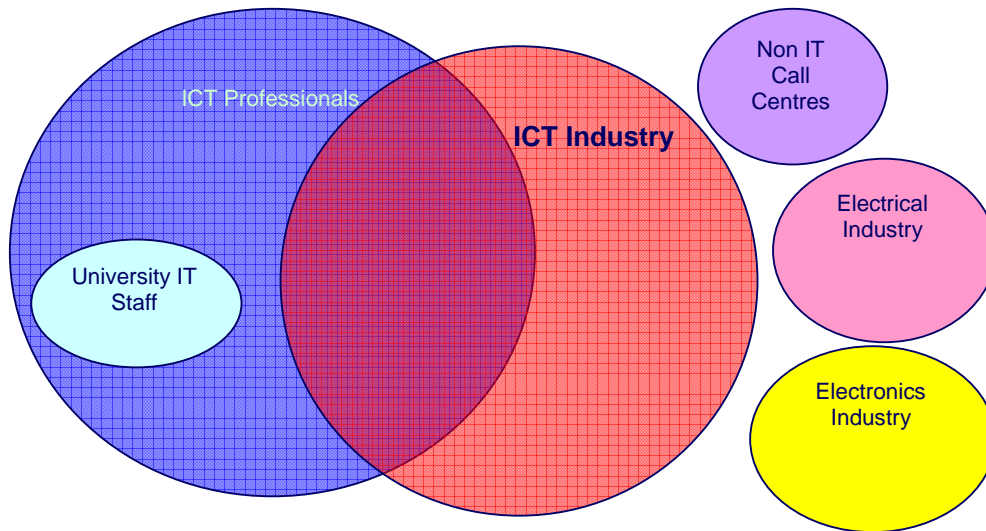
### *Employment Models - December 2005*

Based upon the latest ABS paradigms, we estimate that current (December 2005) Australian ICT industry Employment is just over 250,000 FTE.

It is important to understand what we mean by these figures, as they are sometimes misunderstood.

ICT employment occurs in a number of groupings. These include:

- the providers of ICT goods and services (the ICT industry).
- the purchasers and users of ICT goods and services including the government and private sectors who also employ a large number of specialists to help them apply their ICT purchases.
- the trainers, teachers and researchers into ICT who generally (but not always) operate within the universities and colleges.



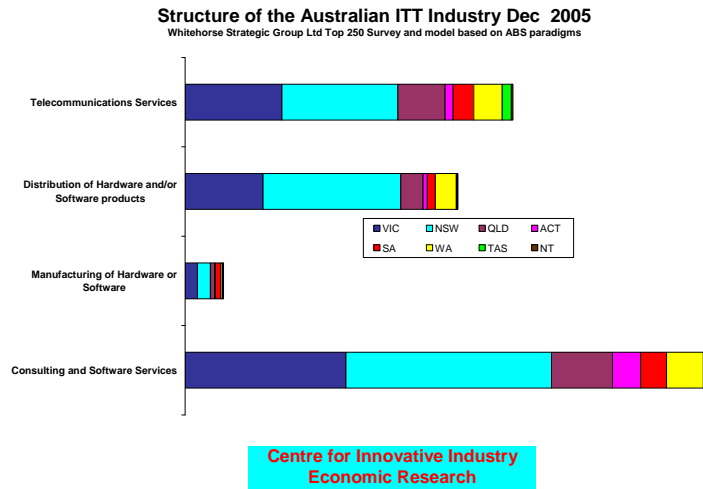
There is a significant percentage (close to 50%) of ICT professionals, in the ICT industry, but ICT industry employment includes not only those professionals but also ICT non-professional technical, sales, and administrative staff.

Some commentators confuse these groupings, or include other groupings - such as staff in Non-IT call centres, or in the electrical or electronics industry, within or alongside these categories to calculate their "ICT industry" employment. Such inclusions can lead to erroneous assumptions about the relative size of the ICT industry.

ABS and CIIE/Whitehorse share similar views on what constitutes the Australian ICT industry, and all employment measures in this report are consistent and unbiased accordingly.



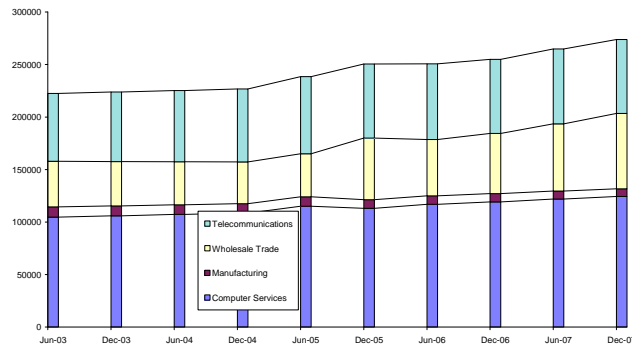
## Australian ICT industry structure Dec 2005



This chart simply groups Model employment by State and Industry sector. It is clear that the Australian ICT industry has a strong software and consulting sector orientation, and that the two largest States, NSW and Victoria, dominate employment.



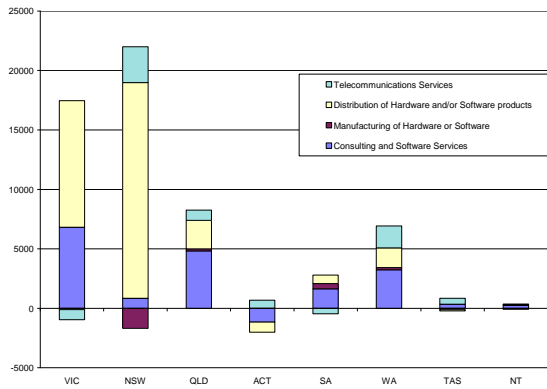
## Australian employment model and projections



We project continued ICT industry employment growth, factored both from underlying employment trends and acceleration in various leading indicators.

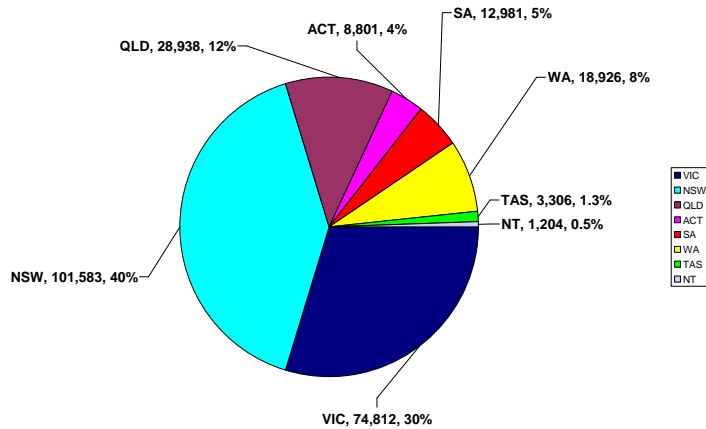
Employment growth and contraction varies by industry sector, however, and also by sector within State.

### Employment variation since June 2003 by State and industry sector



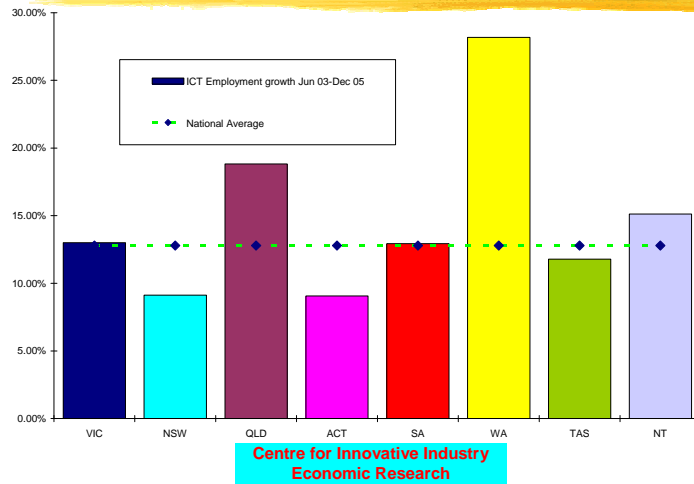
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### ICT Industry State employment shares



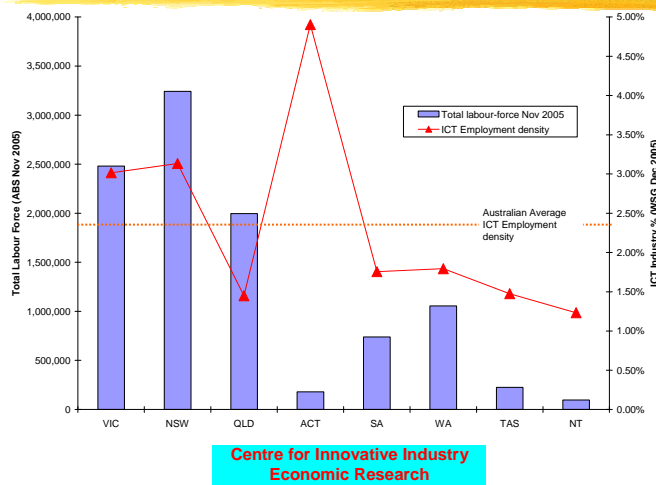
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## Industry Employment growth v national average Jun 2003- Dec 2005



Employment growth has varied significantly by State in the last few years, with Queensland WA and NT outperforming the national average, and NSW and ACT underperforming.

## ICT Industry employment economic significance by State/Territory

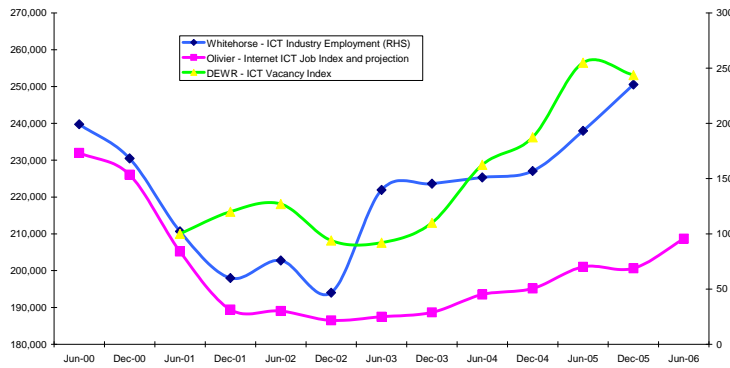


But the significance of the ICT industry also varies State by State, with ICT industry employment ratios highest in the ACT, close to 3% in Victoria and NSW, and around 2% in other States and Territories.

This chart compares two "leading" indicators, the Department of Employment and Workplace relations (DEWR), and the Olivier ICT employment index, to the employment Model derived from the T250 Survey. The Olivier data is gathered by regular counts of job advertisements over the Internet. The DEWR index is based upon a weekly count of advertisements on three recruitment websites.

It shows remarkable correlation between these indicators over an extended period, with Olivier showing a slightly more pessimistic outlook.

### National ICT job trends – DEWR and Olivier vacancy indices v Whitehorse ICT Industry jobs model



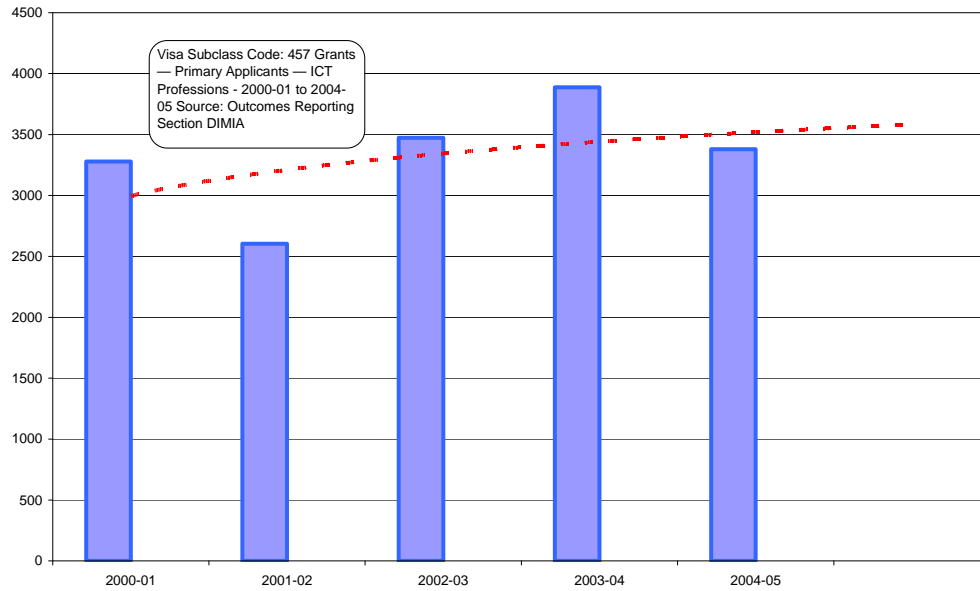
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### ICT Industry jobs growth projections v National Supply of graduates



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There is a concern, however, at where the recruits for this increasing employment demand will come from. Our projections of University ICT completions shows, both at the National and State level, a significantly decreasing supply of ICT graduates entering the work-force.



The shortfall is unlikely to be made up from immigration, as the previous upward trend in successful 457 Visa applications dropped in 2004-5, and the adoption of more stringent testing of applicants is likely to hold the input at below its previous peaks.

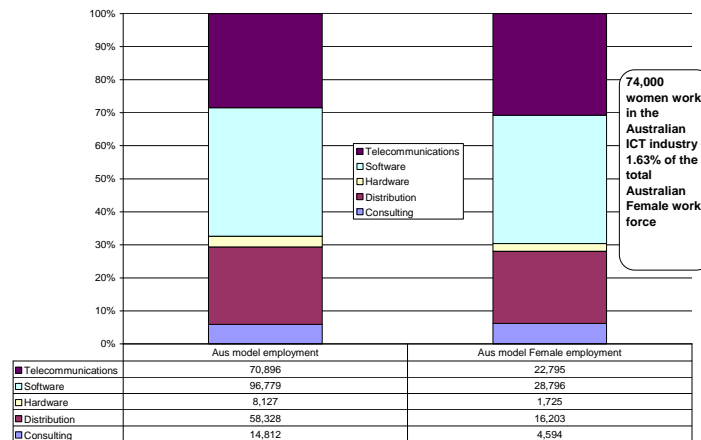
## Female Employment Models and analysis

This survey involved a higher concentration on female ICT employment. Companies were asked to respond with their percentage female employment, and/or specific numbers. Over 30 Companies responded with detail, these companies employ nearly 100,000 total staff, and came from all industry sectors and sizes

The data represents a sample of 46% of total Australian ICT industry employment. We believe that the data is more likely to underestimate rather than overestimate female employment, as the ratio of females tend to be higher in the large number of very small companies in the industry.



### Australian Female ICT industry employment



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On the basis of this sample and our modelling, we estimate that 74,000 women work in the Australian ICT industry – 1.63% of the Australian female work-force – 29.5% of all Australian ICT industry staff.

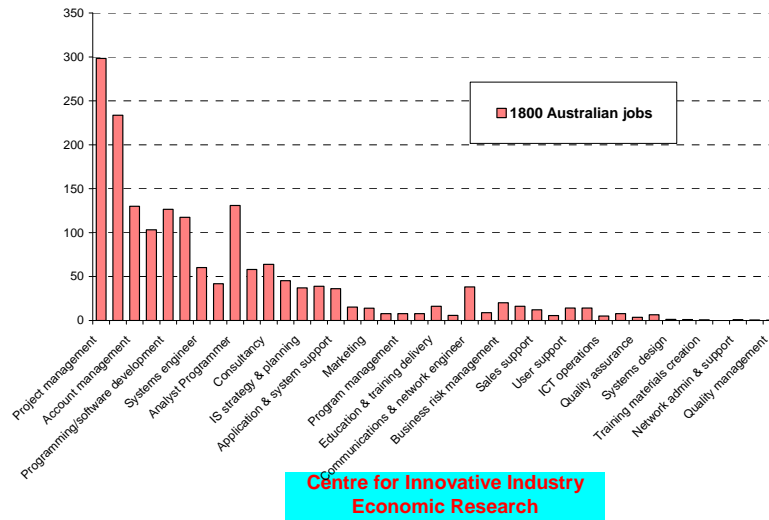
Relative proportions by industry sector are, somewhat surprisingly, not significantly dissimilar to the total work-force, however it is likely that a higher proportion of females employed in the telecommunications and hardware sectors are in non-professional employment, such as call-centres or assembly lines, whereas females in the consulting and software sectors, other than those employed in administrative tasks, are more likely to be professional or technical staff.

## Skills Requirements

The last Survey, for the first time, asked respondents for information about their skills requirements. Over 60 companies responded, employing between them 18,000 Australian staff. Excluding Telstra this constitute around 9% of the industry by employment. The data was requested in a structured format of 58 consistent and structured unique skill descriptors in 5 groupings (Development; Management; Sales; Service; and Strategy), derived from work undertaken by CIIER last year for the Victorian Government and others on ICT Skills analysis



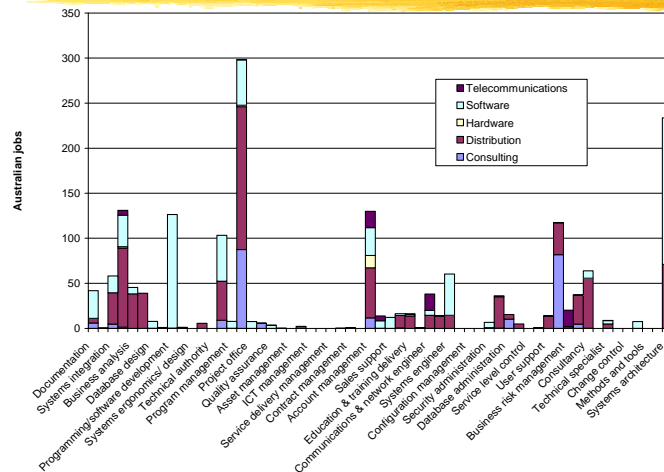
### Skills requirements – ICT Industry Australia



By analysing each individual companies employment levels, and allocating the skills requirements identified against job turnover ratios, we were able to estimate the number of jobs involved, regardless of company size, thus creating a more accurate analysis of relative skill significance.



## Skills requirements ICT Industry Australia



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We were also able to conduct this analysis by industry sector, and it could be easily factored by many other useful groupings.

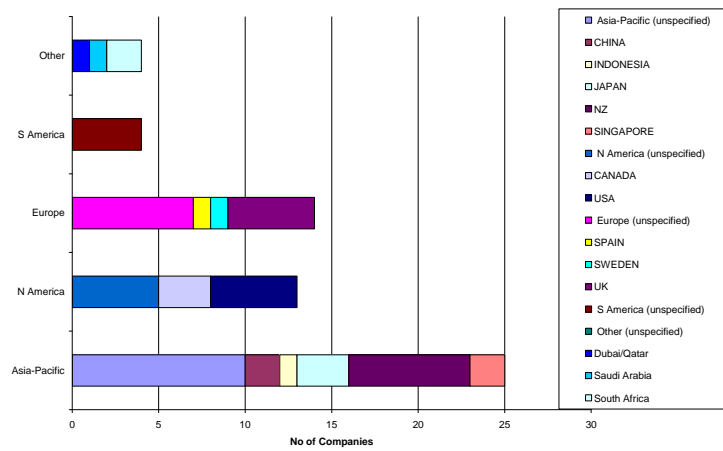
The most important feature, however, was the overwhelming selection of "project management" as the key skill requirement, and that the next three selected skills, comprising, with project management, over 50% of the skills required, were each of a managerial or senior professional nature.

## Exports

Export data was provided by 70 companies, employing an aggregate 60,000 staff, earning \$31 Billion in annual revenue, and providing over \$2.6 Billion in total exports. All industry sectors and States were represented in the sample.



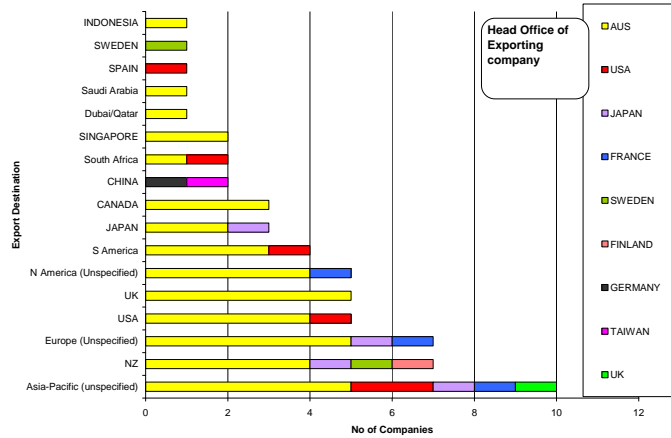
### Export destinations selected



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Export destinations and targets were widespread, with Asia-Pacific countries and European countries being selected by a greater number of companies than North American destinations.

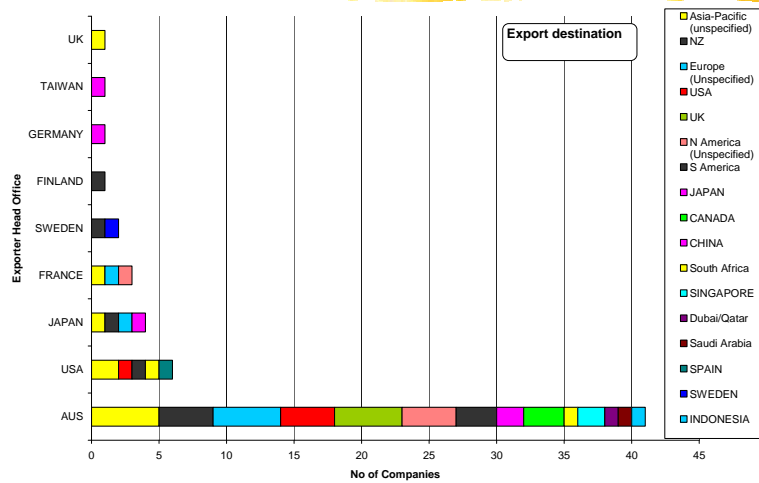
## Export Destinations by Head Office of Exporter



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S. The destinations selected seemed to have little to do with the ownership of the company, with even US owned companies selecting Asia-Pacific or European destinations

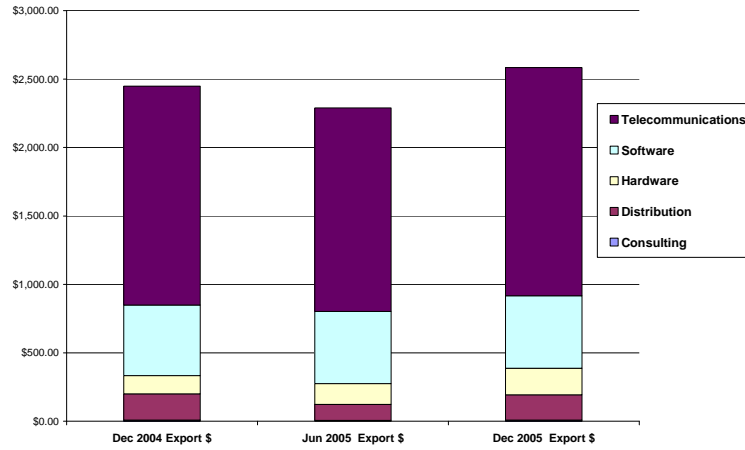
## Head Office of Exporter by Export Destinations



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## Value of Exports T250 sample



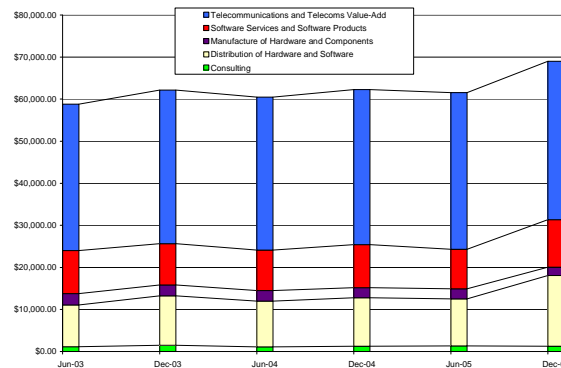
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The sample value trend in exports was up, led by telecommunications exports, but with small increases in other industry sectors from Dec 2004 and June 2005.

## Revenue

Revenue models are developed by State and industry sector using a similar ABS paradigm approach as is used for employment modeling. Almost all Survey respondents providing employment data also provide gross revenue information. Some revenue data is also sourced from news sources and from other databases (e.g. ASX etc)

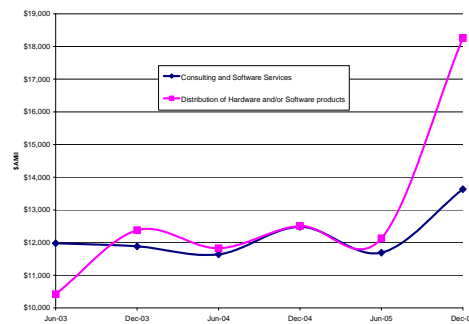
### Australian Revenue Model by CIIER Industry sectors



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The chart above shows historical and current Australian revenue by CIIER industry sectors (i.e. consulting is treated separately to software and services), and indicates a significant revenue lift in the wholesale distribution sector, increasing the overall total, after an extended period of flat, or mildly cyclical, returns. This can often indicate a change in the ratio of services to products.

### Australian Consulting, Software and Services v Distribution Revenue – Service V Product

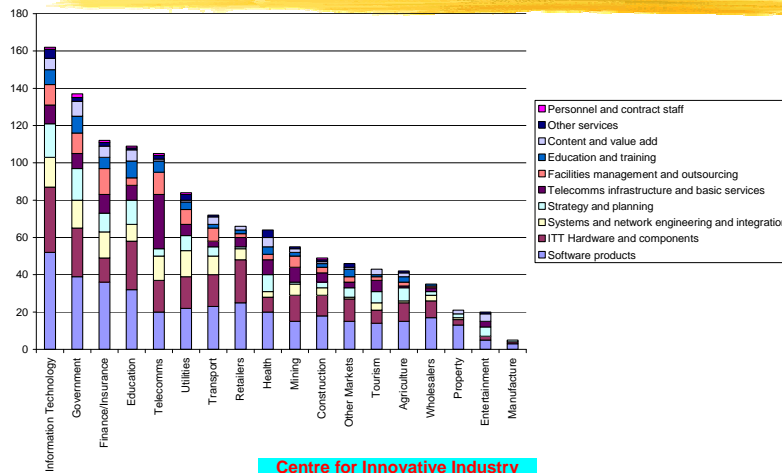


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## Client markets

Over 380 companies responded to this question.

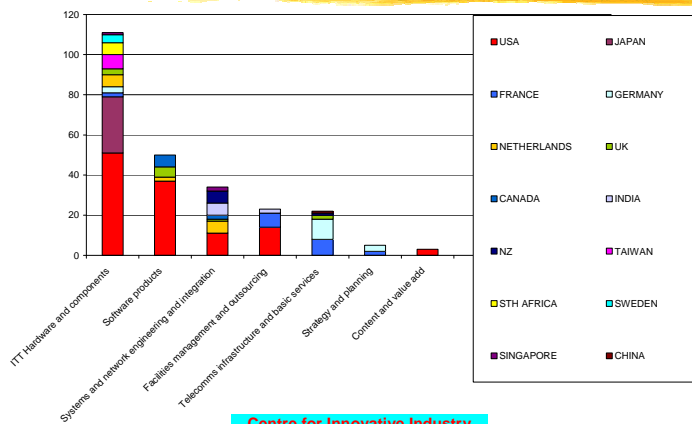
### Which products are supplied to which markets ?



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This chart looks at the markets selected by each companies main product/service, aggregated by the number of companies, and demonstrates the preponderance of software and services supplying companies.

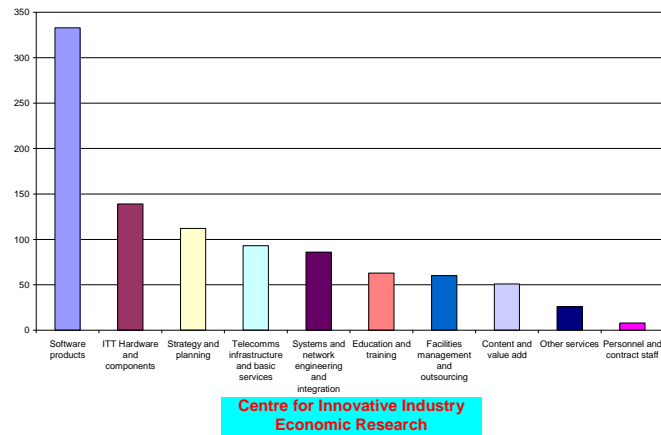
### Where do the majority of suppliers come from ?



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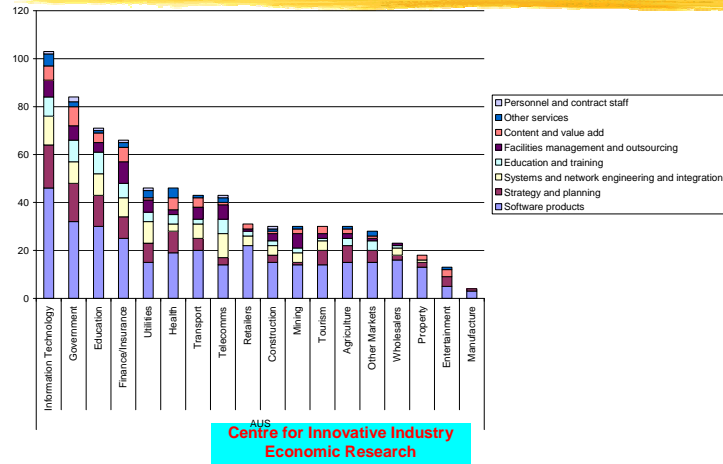
Whilst many countries are represented, in most product and service categories, other than telecommunications, systems integration, and strategy and planning, US owned companies predominate.

### What do Australian owned companies sell ?



Australian owned companies mainly sell software products, and the broad range of services. Those selling IT hardware and components are mainly local distributors.

## To what markets do Australian companies sell ?

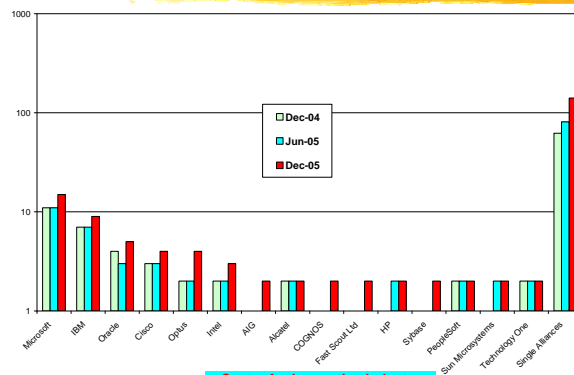


The most important markets for Australian owned companies are the ICT market itself, followed by Government, education, and finance/insurance. a second, significant block supplies to utilities, health, transport and telecomms.

## Alliances

There were 94 responding companies to this question, and, between them, they nominated 194 alliances with other companies, or, in some cases, trade groupings or external entities. The majority of the nominated alliances were longer term, with a median duration of 4 years, and an average of 5.3 years, some were over 20 years old !

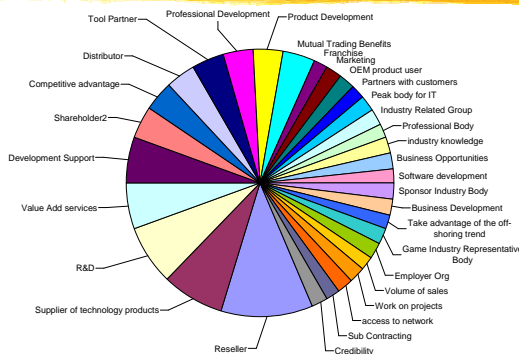
### Alliance partners



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A number of major international companies were nominated by more than one responding company, Microsoft leading with 14 direct nominations, other international companies indicated that they had alliance groupings, in one case of over 300 "alliance partners", but we suspect that these were probably simply reseller/distributor arrangements. The number of alliances nominated is also rising, but this may also reflect a higher response level over the Survey period.

### Reasons for Alliances



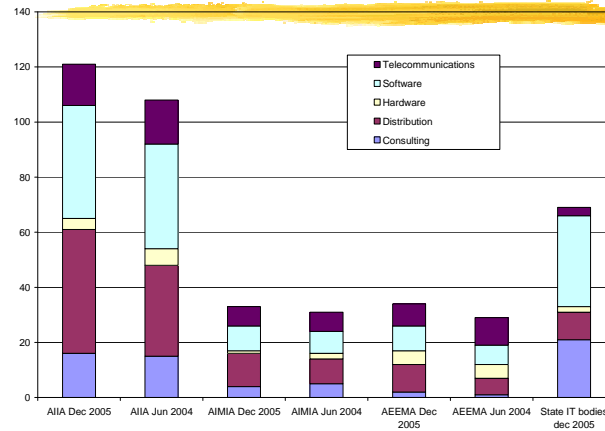
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The majority of Alliances nominated were with single other companies, and, in many cases were "mutual trading" alliances meant to overcome distance or local market knowledge disparities.

## Industry Associations

The question was responded to by 206 companies, a number of which belonged to more than one body. It should be noted that the Australian Computer Society is not listed here, as it is a professional (i.e. individual membership) body, not a corporate one. (ACS membership is around 13,000 IT professionals, many of whom are professional software contractors.)

**National membership in T250 by industry sector – June 2004 and Dec 2005**



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The most interesting aspect of industry body membership is that the title of the organisation seems to have little to do with the industry sector of its membership. AIIA is clearly the dominant national body, with various State based bodies having significant membership in States other than NSW and Victoria.

## National Summary

### Employment

- ICT industry total employment is increasing - now over 250,000 FTE
- Most employment growth is in Distribution, Consulting and Software
- Telecommunications employment is flat
- Manufacturing employment is declining
- fastest growing States are WA, Qld, NT
- average growth in Vic, SA, Tas - below average growth in NSW, ACT
- ACT retains highest economic significance (ICT employee % as % of total employment), followed by NSW and Victoria.
- 74,000 women work in the national ICT industry, 1.63% of the total female workforce
- Most significant ICT employment Skills need is for Project managers, followed by Account managers and developers of various kinds.
- Employment growth may be jeopardised by lack of new ICT graduates and falling 457 Visa entries

### R&D and Exports

- National R&D spend is declining
- R&D now at its lowest per capita level (\$4300 pa), since all-time low in December 2002
- R&D by European owned companies is, however, increasing
- Exports are targeted mainly to Asia-pacific
- Europe is ahead of N. America as an export target destination
- Even US owned companies select alternate export destinations

### Revenue and markets

- ICT industry Revenue is rising sharply
- Stronger focus on Product revenue, services growth slowing
- ICT industry, Government, and Finance/Insurance are the preferred markets
- Significant difference in market profile between local and international companies
- US is the dominant international supplier, EXCEPT in the supply of Telecommunications, Systems integration, and Strategy and Planning
- Australian owned companies are strongest in software/services markets

### Alliances and Lobbyists

- Strategic Alliances between companies are increasing
- Most are supplier or reseller relationships
- Some international companies actively encouraging alliances
- Growing number of R&D alliances however
- Most alliances are long term - average over 5 years duration
- Growth in membership of State based ICT industry bodies
- AIIA /ACS the two main representative bodies at national level