



**Tasmanian ICT Skills
Report
2008**

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About the Centre for Innovative Industry Economic Research:

**Centre for Innovative
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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 credible 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 provides the analysis for this project.



Whitehorse. Is an Australian owned management consulting practice specialising in ICT Market Research and analysis, ICT policy and strategy, especially in the Government sector, Information Management, and Economic Development.

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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. By the broadest definition, ICT employment accounts for nearly 5.5% 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.

TASICT received funding approval from the Intelligent Island MAPP program to perform a Tasmanian ICT Industry Capability Assessment to be conducted annually over a period of three years. The intent of this project is to assess the Tasmanian ICT sector size and structure, capabilities, diversity, rate of growth, economic contribution, export performance, market reach and investment attractiveness, and to identify opportunities, strengths and weaknesses of the Tasmanian ICT industry and determine the economic impact of ICT as an enabling industry in the State economy. The Project aims fall into four sub-projects;

1. Yearly Assessment of Tasmanian IT industry, including SWOT
2. Economic Impact statement
3. ICT Skills forecasting project
4. Developing an assessment mechanism and applying it to the support programmes indicated

This Report has been prepared to give an overview of the current state of Tasmanian ICT Skills profile and needs. It can be categorised in economic terms as a Labour market report. Other 2008 reports in this series include the 2008 Tasmanian ICT Industry Sector Assessment report, and a report on Tasmanian ICT Innovation and R&D, both private and public, with a *SWOT* analysis of the Tasmanian ICT Industry based both on this report and the 2008 Tasmanian ICT Industry Sector Assessment report. Annual ICT Sector assessments will be produced in 2009 and 2010.

Research Support

We would like to express our appreciation to the respondents to the Tasmanian ICT Industry Survey for their helpful responses and supply of information to our researchers for this report, and to TasICT and especially project manager Roy Pallett, for his assistance.

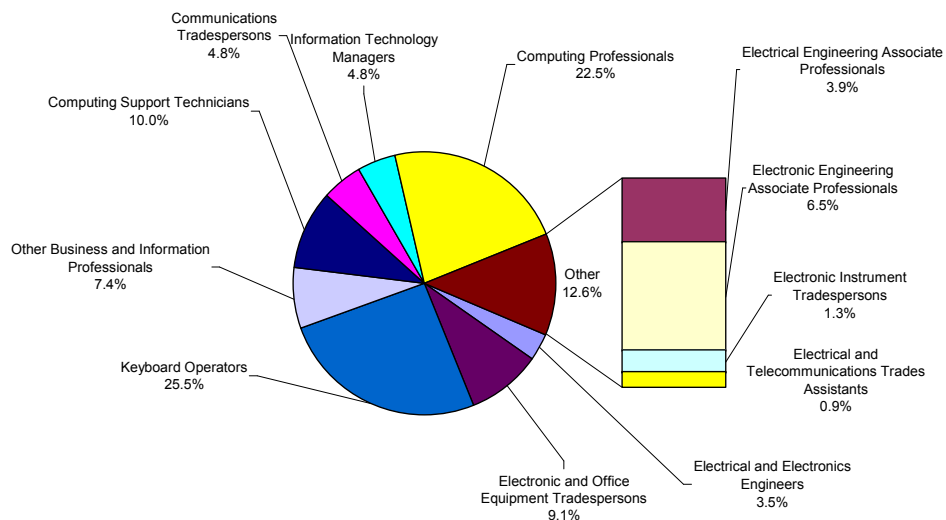
We also thank the Australian Computer Society, especially for access to their research on women in ICT, and the employment research staff from Australian Bureau of Statistics; Federal Department of Education, Employment and Workplace Relations (DEEWR), IBSA, Multimedia Victoria, CSES, and many others for access to the data and research insights which help us to construct working employment models. CIIER research for this project was undertaken by Ian Dennis, Bettina Harlos and Richard Hogg.

ICT Skills base in Tasmania

In October 2006, the Australian Bureau of Statistics published a detailed evaluation of ICT employment, based upon March 2006 DEWR (Dept of Employment and Workplace Relations) data. There have been no detailed studies by ABS of ICT employment since then. The data indicates that, at that time, there were 2,900 IT professionals and technicians employed in Tasmania, supported by 2,875 electronic tradespeople and associate professionals and office equipment support staff.

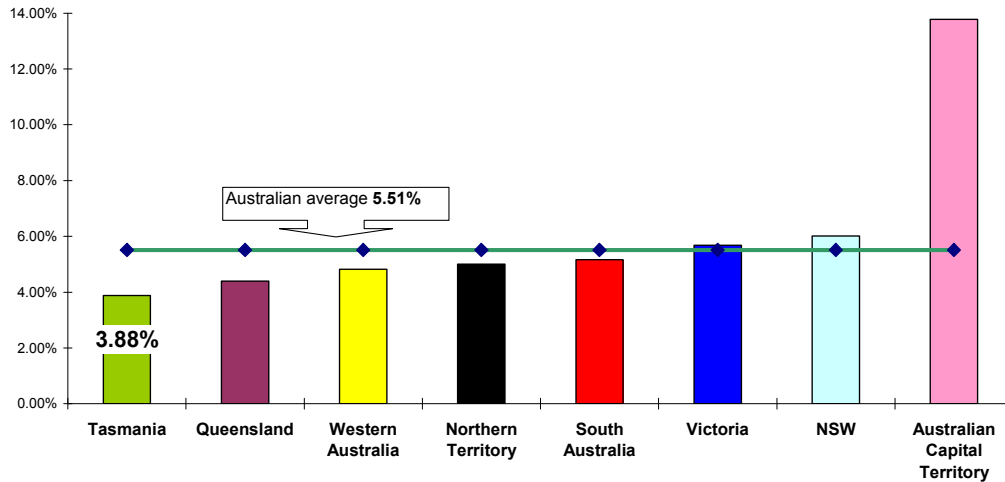
March 2006 DEWR ANZSCO format (FTE)	Tasmania	Australia	Tasmanian %
Computing Professionals	1,300	140,750	0.92%
Computing Support Technicians	575	37,150	1.55%
Other Business and Information Professionals	425	17,525	2.43%
Information Technology Managers	275	37,025	0.74%
Communications Tradespersons	275	20,375	1.35%
Electrical and Telecommunications Trades Assistants	50	2,300	2.17%
Total IT Professionals and Technicians	2,900	255,125	1.14%
Keyboard Operators	1,475	50,975	2.89%
Electronic and Office Equipment Tradespersons	525	29,850	1.76%
Electronic Engineering Associate Professionals	375	13,750	2.73%
Electrical Engineering Associate Professionals	225	7,025	3.20%
Electrical and Electronics Engineers	200	26,125	0.77%
Electronic Instrument Tradespersons	75	1,175	6.38%
Desktop Publishing Operators	0	1,625	0.00%
Total Electronic and Office Equipment support staff	2,875	130,525	2.20%
Total ICT and related jobs (FTE)	5,775	385,650	1.50%

Categorisation of ICT and related employment in Tasmania by "Old" ANZSCO definition grouping
DEWR March 2006



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ICT Employment Density
 (ICT technical and professional employment
 as a percentage of total FTE employment)
 DEWR March 2006



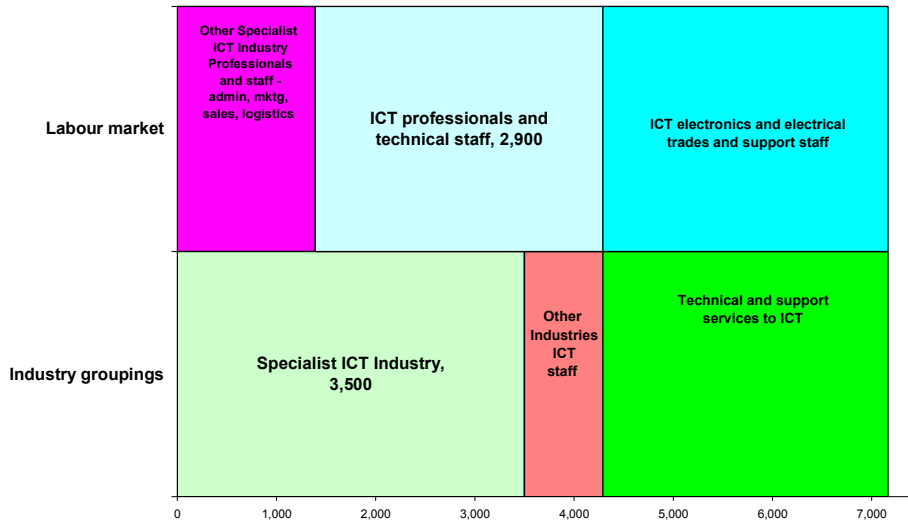
Based upon the then FTE employment in Tasmania, this meant that 5,775 people were classified as ICT employment, around 3.9% of all employed Tasmanians.

However, this does not tell the whole story. When we analyse the data for both ICT labour market and ICT industry employment, the following structure emerges for FTE employment:

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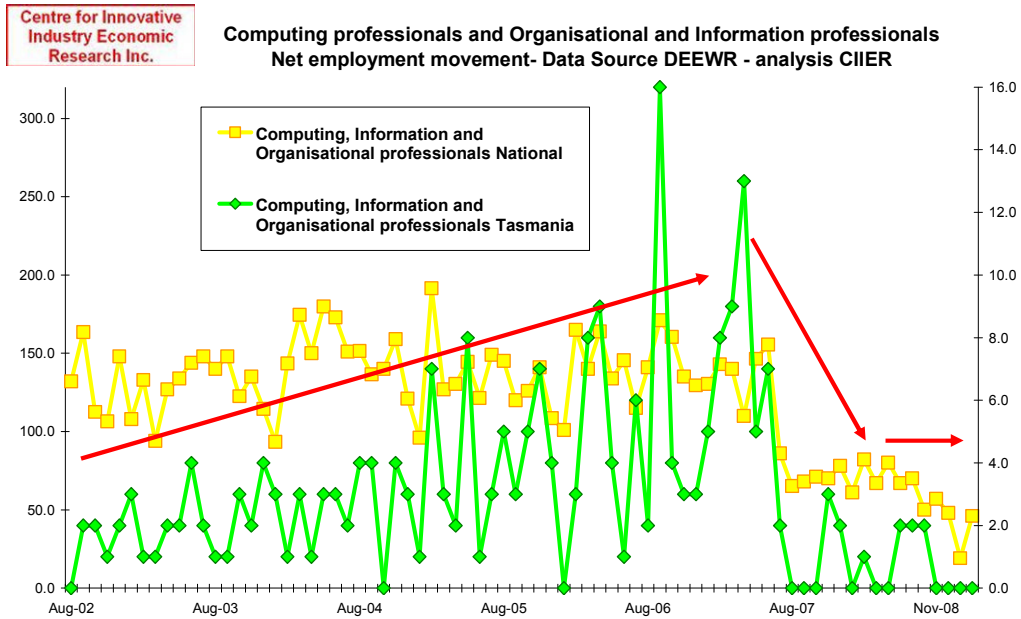
Structure of ICT Employment in Tasmania
 - 7,200 jobs -by Industry and by Labour market

Source ABS Labour force Feb 2006, ABS ICT Satellite account, Mar 2006, Whitehorse T250 Dec 2005, DEWR



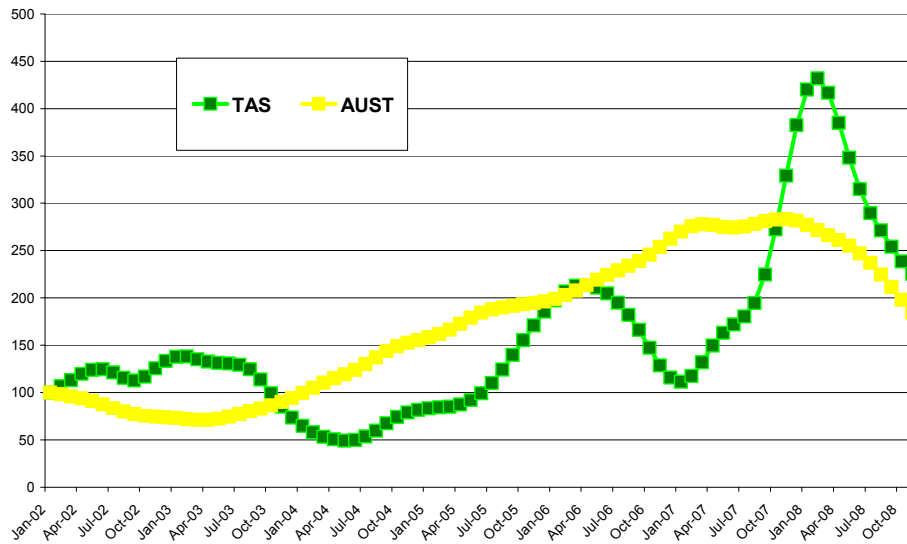
In September 2008, DEEWR labour force statistics indicated 238,600 Tasmanians were employed, either full or part-time. In November 2008, ABS (ref 6202.0) reported seasonal adjusted Tasmanian employment of 163,300 full-time and 237,400 total (i.e. working more than 1 hour per week).

On the basis of the November 2008 full time figures, total ICT workers, including professional, technical, and support staff, now represent 4.4% of the Tasmanian full-time work-force.

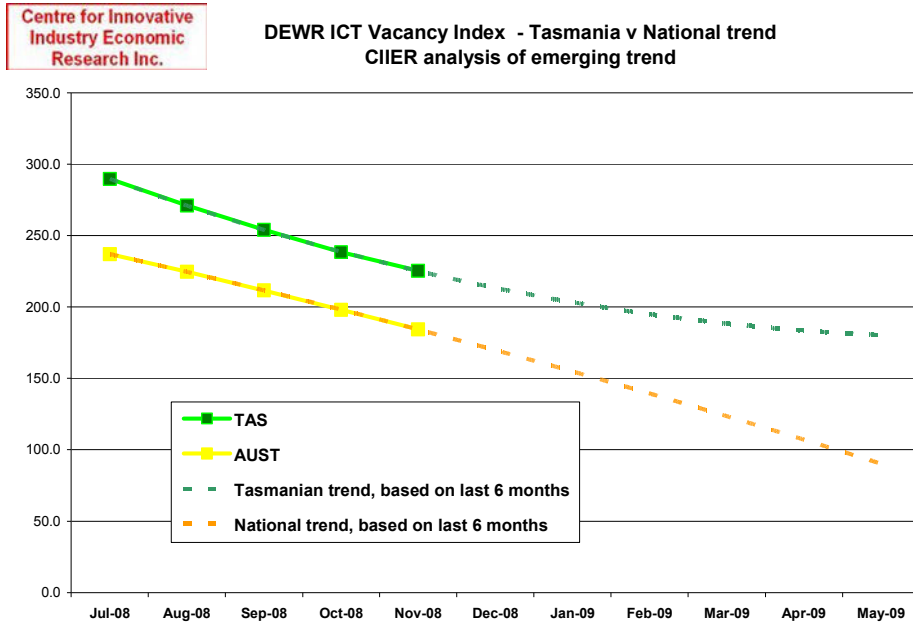


Net employment movement can vary considerably, both seasonally, and within categories. The chart above shows variations in net employment within the specific computing, information and organisational professional categories, nationally and in Tasmania. A clear growth took place from 2003 to 2007, followed by a sharp decline in net movement to July 2008, and a flat employment movement scenario since then.

DEWR ICT Vacancy Index - Tasmania v National trend



ICT vacancy indices confirm these trends, both nationally and specifically for Tasmania. It should be noted, however, that even after the significant decline between June 2008 and October 2008, vacancies are still at levels equivalent to 2006 peaks.



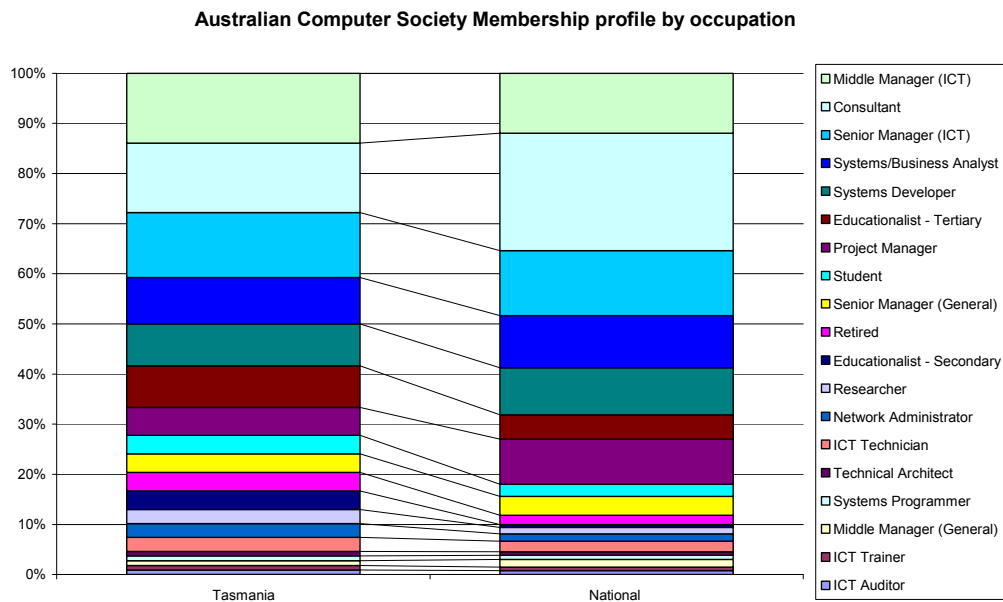
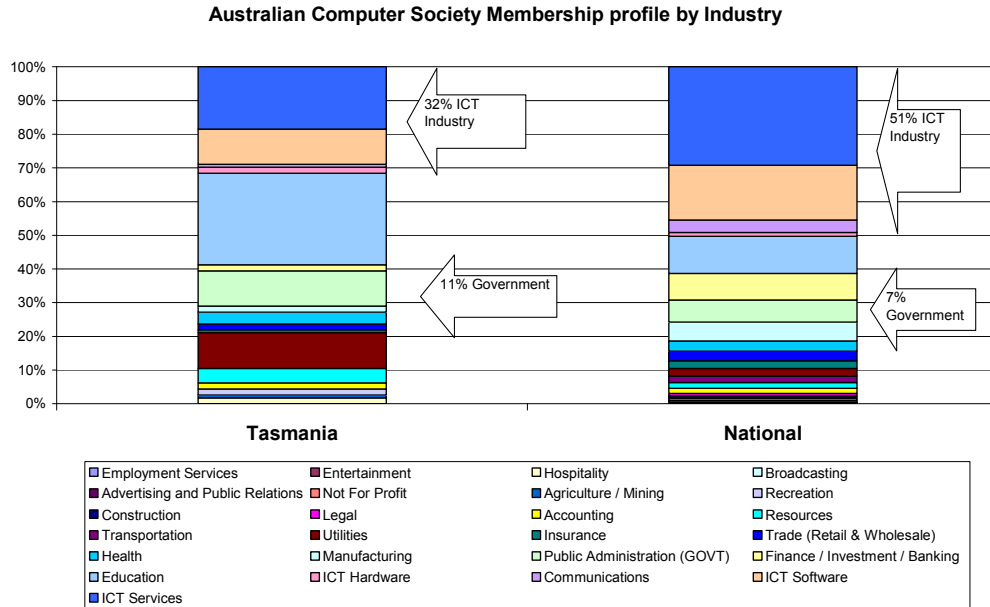
Analysing the trend of the last six months alone suggests that the decline will continue, however the Tasmanian ICT vacancy trend is not as pronounced as the national one, and appears more likely to flatten out.

Such an outcome would be consistent with the less volatile nature of ICT employment in Tasmania, and also reflect the limited exposure that Tasmanian ICT has to the banking and finance sector, which has borne the brunt of ICT job losses to date.

Job Profiles

As an indicative measure, and with the support of the Australian Computer Society, we analysed the job profiles of Tasmanian ACS members.

32% of Tasmanian ACS members work in the ICT supply side, lower than the national representation of 51%, and 11% of Tasmanian ACS members work for Government, a higher percentage than the national average of 7%.



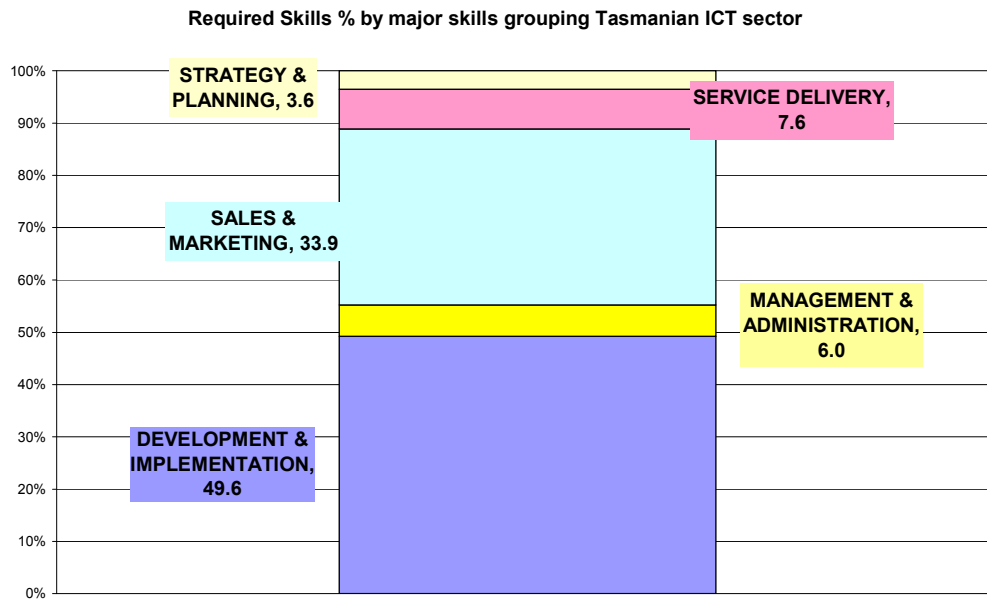
Occupationally, Tasmanian ACS members demonstrate very similar groupings to the National position, with significant percentages fulfilling ICT management, consulting, systems development and project management roles. A slightly higher percentage of Tasmanian ACS members are involved in tertiary education than the national average.

ICT Skills in demand

In order to develop some understanding of skills in demand, a targeted Survey was conducted in late 2008. Detailed responses were received from 43 organisations, headquartered in Tasmania, Victoria, NSW, ACT, and employing between them 1700 ICT staff in Tasmania, (approximately 58% of Tasmanian ICT technical and professional staff).

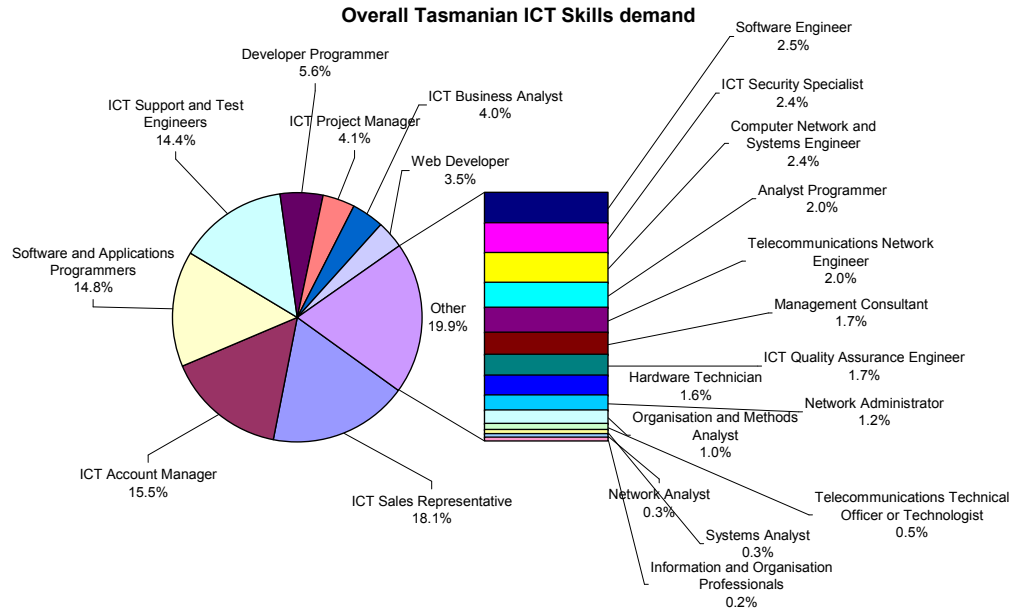
Respondents were asked to indicate which job-skills were in demand within their organisations, categorised by the “new” ANZSCO classification now used by DEEWR for forward assessments¹ together with turnover ratios and staff complements. We calculated staff demand numbers from this data for each organisation separately, in order to arrive at aggregate demand.

It was immediately clear how significant ICT development and implementation skills are in Tasmania, but equally clear that sales and marketing roles are also in significant demand – perhaps to counter a falling market.



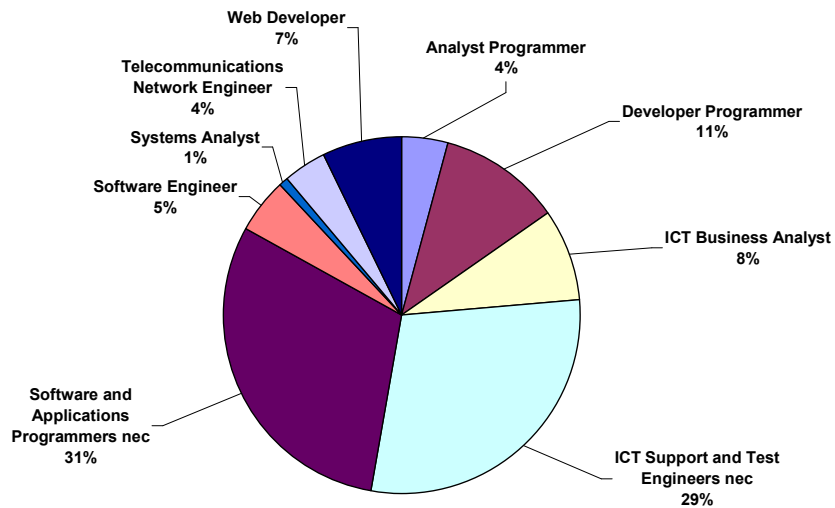
Detailed ICT demand (illustrated below) reinforces the significance of both sales and development roles, with ICT Sales representatives, ICT account managers, Software and applications programmers, and ICT support and test engineers, between them, representing more than 50% of total demand.

¹ The “new” ANZSCO classification, adopted by the Federal Government in 2007-8, is much more specific for ICT occupations than the “old” ANZSCO classification previously used. Unfortunately historical data is only available in the “old” format.



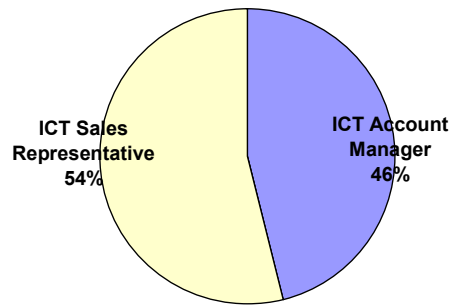
Each of the key groups, Development and Implementation; Sales and marketing; Strategy and planning; Service delivery, and management and administration were then analysed separately.

Development and Implementation Skills Demand - Tasmanian ICT sector



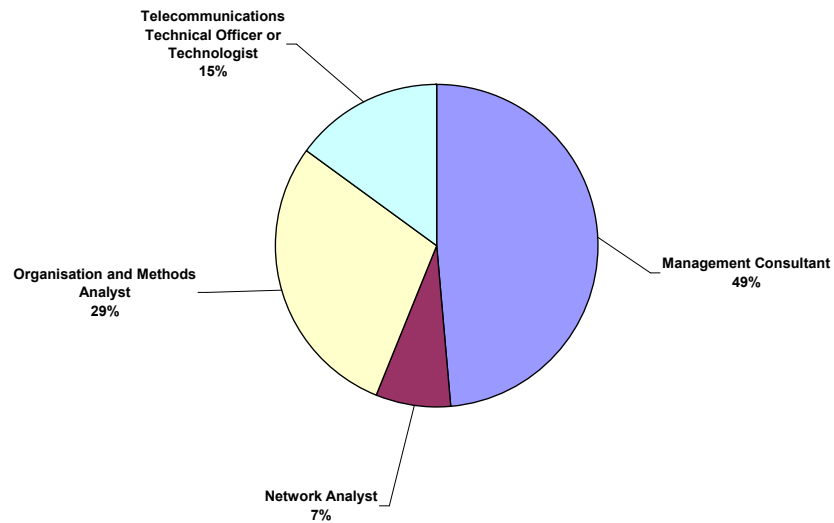
Development and implementation skills were in demand in almost all categories; however “pure” web development skills were less selected than the broader categories of software and applications programmers and developer programmer. This is consistent with national data separately analysed, and suggests that “web developer” skills are now being correctly seen as merely part of a suite of required software development skills, rather than a discrete set.

Sales and marketing Skills Demand - Tasmanian ICT sector



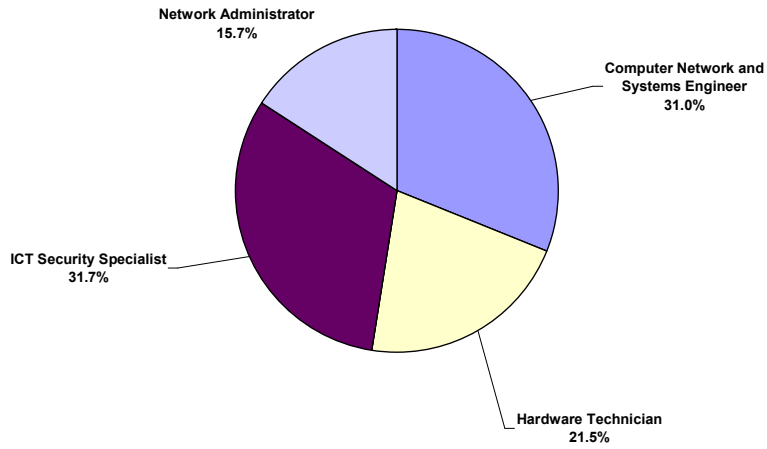
It is difficult to understand what distinction is intended by a differentiation of Sales representative from Account manager, other than that account managers assume an ongoing role with the client

Strategy and Planning Skills Demand - Tasmanian ICT sector



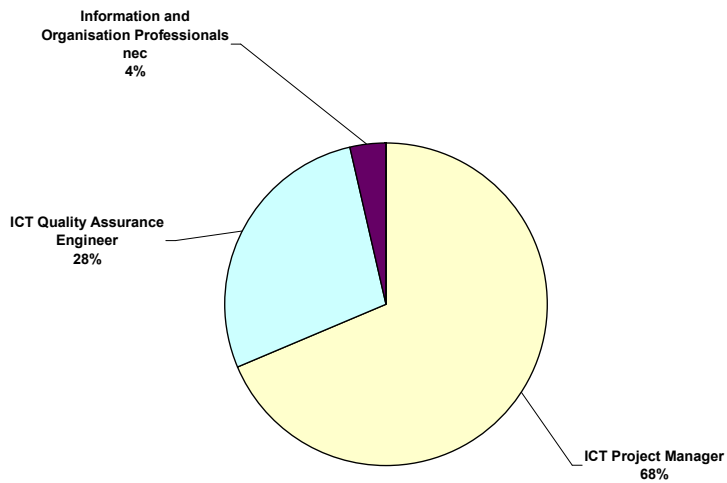
The selections within the strategy and planning group are more interesting, and, in particular identify continuing demand for specific telecommunications and network skills.

Service delivery Skills Demand - Tasmanian ICT sector



This network orientation is amplified in the service delivery frameworks, with clear demand for network and systems engineering skills.

Management and Administration Skills Demand - Tasmanian ICT sector



The need for project managers continues, but the demand for quality assurance is interesting, as it has not figured highly in previous national analysis. This may reflect a stronger focus on ICT quality, consistent with the findings of the Federal Government Gershon report.

Quantifying demand

This can be difficult, however, on the basis of the specific organisational demand outlined above, factored to the 4,290 Tasmanian combined quota of ICT professionals across all industries and other employees of Tasmania ICT companies (sales, logistical etc), the following table indicates likely current (November 2008) demand.

63	ICT Sales Representative
54	ICT Account Manager
51	Software and Applications Programmers
50	ICT Support and Test Engineers
20	Developer Programmer
15	ICT Project Manager
14	ICT Business Analyst
13	Web Developer
9	Software Engineer
9	ICT Security Specialist
9	Computer Network and Systems Engineer
7	Analyst Programmer
7	Telecommunications Network Engineer
6	Management Consultant
6	ICT Quality Assurance Engineer
6	Hardware Technician
5	Network Administrator
4	Organisation and Methods Analyst
2	Telecommunications Technical Officer or Technologist
2	Systems Analyst
1	Network Analyst
1	Information and Organisation Professionals

It should be noted that this is not the same thing as immediate demand. Some of this demand may be aspirational, and some may be subject to market requirement, what it does indicate is a *ranking* of demand as it occurs.

But whilst the first quarter of 2009 may be very cautious, a recent Hays Quarterly Report suggests that, nationally, IT recruitment will remain buoyant despite the current economic slowdown. Hays suggest that “Public sector spending, telecoms innovation and a need for better systems management will keep the recruitment market buoyant this year despite the economic slowdown”.

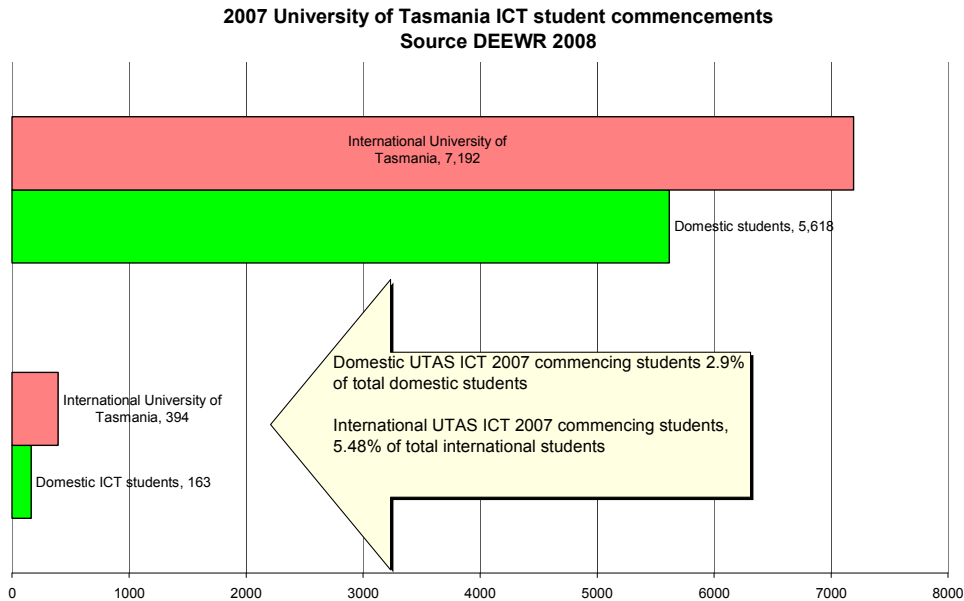
The Hays report identified the telecoms and public sectors as key areas of opportunity and cited the Federal Government’s National Broadband Network project as an example of increased IT spending. Systems administration, server support, project management and .Net programming skills were indicated as being most in demand. Skills sought after included project managers, .Net, SharePoint and Java developers as well as systems engineers with virtualisation/VMware and Cisco voice and networking expertise. SAP and Oracle database skills were also indicated as high in demand. The general thrust of the Hays demand categories is consistent with our analysis, and we cautiously share their confidence that, as least as far as ICT is concerned, our skills shortages have diminished, but they have not gone away.

Another recent analysis was conducted by Allen Consulting for IBSA², based upon a nationwide Survey of businesses with over 1000 responses. Whilst unpublished at the date of this report, the IBSA report states “ICT has acute skill needs – at a time when the importance of ICT to the wider economy is growing rapidly.” The report identifies a number of perceived ICT skills needs, both in the short and medium term, which are, again, broadly consistent with the findings of the CIIER Tasmanian study.

² IBSA is the Industry Training Council principally concerned with ICT

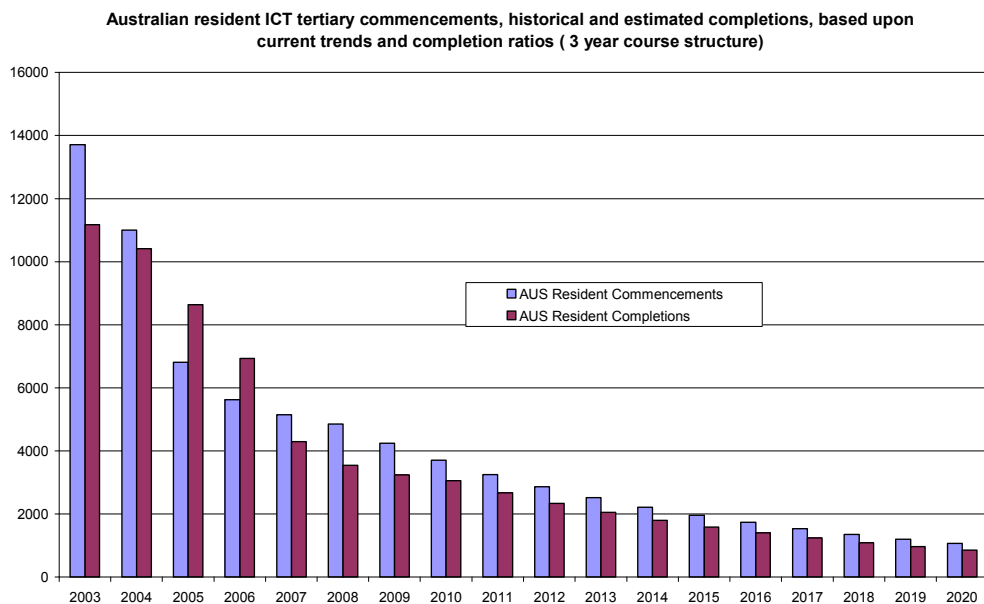
Quantifying supply

One of the most important ways of satisfying some of that demand is through new graduates entering the ICT profession.

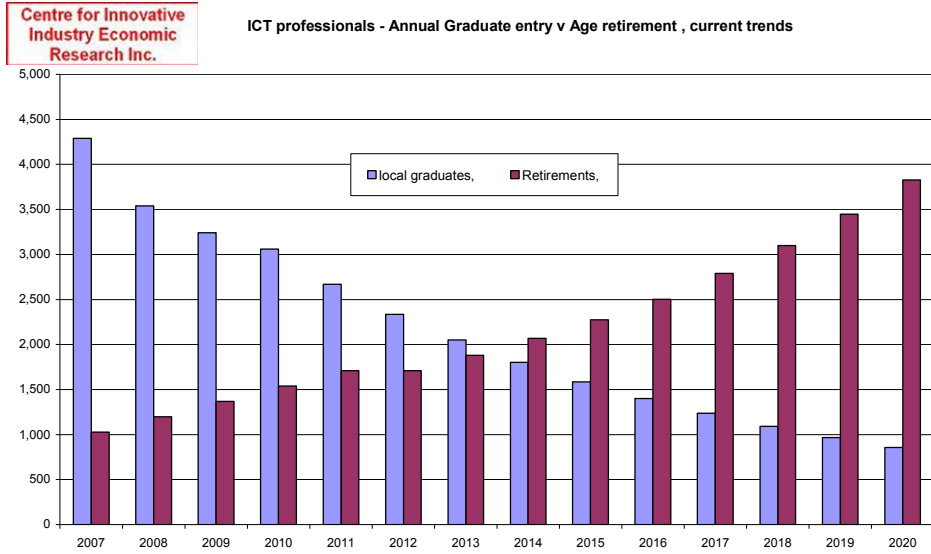


Nationally, 2007 ICT commencements were 18,223, of which 7,839 (43%) were domestic. In Tasmania, 2007 ICT commencements were 557, of which 163 (29.3%) were domestic.

It is noticeable that Tasmania's ratio of domestic to international ICT students is very low, (even compared to the national numbers, where we are also teaching far more international students than domestic, reflecting the now established focus of Universities on financial survival, rather than the original goals of national education and research). Graduates, historically at a completion ratio of around 63%, enter the market three years after commencement.



On this basis, we can therefore expect only around 102 domestic ICT graduates from UTAS in 2009-10.



This level of graduates is unlikely to be enough even to offset inevitable retirements and separation over the next few years. (The national situation is illustrated above). This is especially as the early 2008 indications are of continued reductions, with only 72 Tasmanian acceptances of ICT courses, as of the latest data available. .

Tasmanian Undergraduate Applications, Offers and Acceptances, 2008, DEEWR

	Eligible Applicants	Received an offer	Not offered	Offer Rate	Acceptances	Acceptance Rate	Rejection Rate
Information Technology	106	89	17	84.0%	72	80.9%	19.1%

Women in ICT -Tasmania

According to the latest ABS data, female participation rates in ICT roles are around 21% at the professional level, 18% when electronics and communications workers are included, and drop to 15% when all the relevant trades assistants are included.

Within the ICT industry, women account for just under 30% of the total workforce, suggesting that the ICT industry has a better track record on employing women than other industry sectors. In January 2008, there were an estimated 79,000 women employed in the Australian ICT industry, with almost half working in the software and services sector. There is no evidence that female participation rates have varied significantly in the past six years.

The ACS-W survey, conducted in 2008, found that some women in the Australian IT industry receive less remuneration for equivalent work, fewer opportunities for challenging work and promotion and, less recognition. The factors that members thought contributed to these inequities included; the predominance of males in IT; traditional views of gender; the high value placed on men within the industry; and, differences between men and women in their approach to salary negotiations. Similar issues have been raised in the 2007 APESMA Women in the Professions Survey.

Tasmanians who responded to the ACS-W Survey mainly work in Project Management, Systems Management, Business Analyst roles, and as web developers or software engineers. Many of them are employed in Consulting or Technical Services (25%) or Government (25%). 68% have fulltime permanent positions and the majority (56%) work for organisations that have more than 100 employees, with 36% working in organisation employing between 20 and 100 employees.

Comparison of the ACS –Survey results in Tasmania with results derived from respondents in other states indicates that females in ICT in Tasmania seem to be younger than the norm, with a shorter experience in Industry. 26% of the Tasmanian respondents were under 30 years old, 37% have been working in the industry up to two years and 11% up to 5 years. With 63% having a diploma or undergraduate degree, the education level of Tasmanian respondents was also lower than, for example, those in Victoria, where 60% had postgraduate or higher education.

There are a significant number of females in ICT roles in Tasmania, more than 40% of respondents, who joined the ICT industry as a second career. Females seem to stay in their roles for a longer time than men, with 56% claiming not to have changed jobs at all and 38% stating that they have changed roles only once. 38%, however, also state that they have never been promoted.

The majority of all females who responded earn less than \$90,000 pa with 31% earning less than \$50,000 pa and 31% earning between \$50,000 and \$75,000.

When asked about factors that affected career advancement, the main reasons mentioned were:

- lack of promotion opportunities 47%,
- poor or no training 32%,
- lack of mentoring 32%
- workplace culture 32%.

Other reasons named are “lack of role models” (26%) and “male dominated environment” (21%).

The survey reflected ACS members opinions and situations. Some of the results may therefore benefit from additional sources verification. The main indicators for female employment in ICT roles, however, such as remuneration and career opportunities, do not differ significantly from national responses, when compared to national results of both ACS and APESMA surveys.

Summary

Andy Penn, chief executive of AXA Asia Pacific, recently summed up the economic situation nicely when he said: “While there are many economists and other experts ready to offer an opinion on what markets will do next the reality is none of us really knows. That is why we must stay focused on the long-term fundamentals.”

These fundamentals for ICT skills in Tasmania are:

- There is a solid base of ICT skills in Tasmania, with over 7,200 total jobs, and , although at a lower level of employment density for ICT professional and technical skills than in other States, this employment is integral to the Tasmanian economy
- The majority of this ICT skills base is found within the Tasmanian ICT industry sector
- ICT vacancies and employment movements suggest some falls, but a softer landing for Tasmanian ICT than other States, with skills demand still around the 2006 levels.
- Tasmanian ICT job profiles are consistent with national norms, but with higher concentrations in the Government and education sectors.
- ICT development and implementation skills are in significant demand in Tasmania, together with sales and marketing roles
- Other Tasmanian ICT skill demand is broadly consistent with national paradigms.
- Lack of exposure to the finance sector is helping to insulate Tasmanian ICT employment from decline, and federal and State government infrastructure spending is likely to create ICT job demand in the near future.
- Less than 30% of 2007 ICT UTAS commencements were domestic, well below the national percentage of 43%. The future level of graduates, if held at this level, is unlikely to be enough even to offset retirements.
- Women in Tasmania have many of the same issues in ICT employment as women in the rest of Australia; however, on the basis of the ACS-W survey, they seem to be younger and less-experienced than those on the mainland.