



Australian Government

Department of Finance and Administration

Australian Government Information Management Office



August 2007

Meeting the Demand for ICT Skills in the Australian Public Service — Today and for the Future

Report of the ICT Professional and
Skills Development Taskforce



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ISBN 1-921182-53-9 (hardcopy)

ISBN 1-921182-52-0 (online)

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Foreword

Information and Communications Technology (ICT) is transforming the way government operates. ICT advances are expanding capability, providing better service delivery, improving efficiency and reducing the costs of government. The continuing implementation of the e-Government Strategy, *Responsive Government – A New Service Agenda*, is dependent on the Australian Public Service (APS) having the necessary ICT skills in a wide range of areas such as project management, systems analysis, software development, security management, network management and website administration.

In October 2005 the Management Advisory Committee (MAC) report number five, *Managing and Sustaining the APS Workforce*, predicted demand would outstrip supply in several skill areas including ICT. In response to the report, the Department of Finance and Administration convened a cross-government ICT Professional and Skills Development Taskforce (the Taskforce) to gain a full understanding of the ICT skills shortage.

This report highlights the challenges that the government faces in addressing the ICT skills shortage such as:

- an ageing workforce;
- a contracting labour market;
- global competition for skilled ICT resources;
- declining IT student enrolments;
- generational change; and
- the need to retain and update existing ICT skills in the APS.

This report provides a number of recommendations and initiatives which address priority issues and will ensure that the APS is well placed to meet the challenges of attracting, managing and sustaining its workforce into the future.

MAC has noted the report of the Taskforce and has agreed to the development of whole-of-government approaches on priority items to assist the APS attract, recruit and retain staff with ICT skills.



I J Watt
Secretary
Department of Finance and Administration

Acknowledgements

The Department of Finance and Administration would like to acknowledge the following agencies for their valuable contributions towards the preparation of this report.

Attorney-General's Department

Australian Bureau of Statistics

Australian Public Service Commission

Australian Taxation Office

Centrelink

ComSuper

Department of Communications, Information Technology and the Arts

Department of Defence

Department of Education, Science and Training

Department of Employment and Workplace Relations

Department of Foreign Affairs and Trade

Department of Health and Ageing

Department of Immigration and Citizenship

Department of Industry, Tourism and Resources

Department of the Prime Minister and Cabinet

Department of Veterans' Affairs

Geoscience Australia

Department of Public Works, Queensland Government

InTACT, Department of Treasury, Australian Capital Territory Government

Contents

| | |
|--|-------------|
| Executive summary | 1 - |
| Purpose of this report | 2 - |
| State of play | 2 - |
| Government response | 3 - |
| Current initiatives | 3 - |
| Recommendations | 3 - |
| 1. Priority recommendations | 5 - |
| 1.1 Transportable security clearances | 6 - |
| 1.2 Whole-of-Government ICT panel contracts | 7 - |
| 1.3 Whole-of-government accreditation process for ICT project managers | 7 - |
| 1.4 Migrant and offshore ICT resources | 8 - |
| 1.5 Senior Executive ICT awareness | 8 - |
| 1.6 ICT Alumni programme for government | 9 - |
| 1.7 Mentoring programmes | 9 - |
| 1.8 ICT apprenticeships and cadetships—promoting ICT as a good career choice | 10 - |
| 1.9 Working with the education sector | 11 - |
| 2. Other recommendations | 13 - |
| 2.1 Standard terminology for ICT skills | 14 - |
| 2.2 ICT workforce planning—plan, be innovative and be strategic | 14 - |
| 2.3 Skills and resource sharing between APS agencies | 15 - |
| 2.4 Acknowledging ICT up-skilling with extra pay | 15 - |
| 2.5 Assistance with HECS debt | 16 - |
| 2.6 Implementing the recommendations: the way ahead | 16 - |
| 3. Demand for ICT skills in the APS | 17 - |
| 3.1 e-Government—increasing dependence on technology | 18 - |
| 3.2 Increasing number of vacancies | 18 - |
| 3.3 Increased contracting | 21 - |
| 3.4 Demand for particular ICT skills | 22 - |
| 3.5 The changing face of the APS workforce | 22 - |
| 3.5.1 Baby boomers | 24 - |
| 3.5.2 Gen X/Gen Y | 24 - |
| 3.6 The changing role of the ICT employee | 24 - |

Contents

| | |
|--|-------------|
| 4. Supply of ICT skills to the APS | 27 - |
| 4.1 Factors impacting on supply | 28 - |
| 4.2 Fewer graduates | 28 - |
| 4.2.1 Falling enrolments | 30 - |
| 4.3 Less students in vocational training | 31 - |
| 4.4 Lack of interest among secondary students | 31 - |
| 4.5 Gender imbalance | 32 - |
| 4.6 Retaining current APS employees | 32 - |
| Appendix A—The Taskforce | 33 - |
| Background | 34 - |
| Terms of reference | 34 - |
| Role of the Taskforce | 34 - |
| Membership of the Taskforce | 34 - |
| Responsibilities of Taskforce members | 35 - |
| Meetings of the Taskforce | 35 - |
| Governance arrangements | 35 - |
| Taskforce initiatives that informed this report | 36 - |
| Piloting an APS-wide ICT apprenticeship programme | 36 - |
| Mentoring existing APS ICT staff | 37 - |
| Promoting ICT careers in the APS | 37 - |
| Developing ICT skills demand and supply metrics and project management accreditation | 38 - |
| Working with educational institutions | 38 - |
| Working with the ICT industry | 39 - |
| Hosting a better practice seminar | 39 - |
| Participating in the ICT Careers Expo | 39 - |
| Investigating panel contracts | 40 - |
| Appendix B—ATO ICT capability framework | 41 - |
| Appendix C—University of Canberra First Year enrolments | 42 - |
| Appendix D—University of Canberra students completing IT courses | 44 - |



Executive summary

Executive summary

Purpose of this report

This report outlines initiatives identified by the Australian Government's information and communications technology (ICT) Professional and Skills Development Taskforce and ICT Skills Roundtable, aimed at improving the recruitment, retention and development of ICT specialists in the Australian Public Service (APS).

State of play

The Australian Government is increasingly reliant on ICT to support programmes and deliver services. In particular, implementation of the e-Government Strategy, *Responsive Government: A New Service Agenda*, is improving online service delivery and responsive government by applying ICT to enhance and reform underlying government processes. The implementation of the e-Government Strategy will depend on the APS having the necessary capability in a wide range of areas such as project management, business processes and security. The APS must increase the ICT skill level of its employees as part of the process of building agencies' service delivery, capability and maturity.

In October 2005, the Management Advisory Committee report *Managing and Sustaining the APS Workforce* (MAC 5 report) predicted that Australian Government demand would outstrip supply for professional employees in several areas, including ICT. Demand is now expected to remain high, driven by recent Commonwealth budget and agency-funded initiatives which include projects with significant investment in ICT-related solutions. An analysis of ICT-related investments shows a considerable rise in project-related work in 2006–07 and indicates a continuing high level of ICT activity for at least the next two financial years.

At the same time, supply is decreasing across the ICT sector. This is due to a combination of factors including lack of interest in ICT as a career among school leavers and women, falling enrolments in ICT courses, and the growing number of baby boomers who are retiring. In addition, world-wide demand for ICT skills provides ready opportunities for ICT staff to work overseas.

This imbalance will continue while demand remains high and until more people are attracted to ICT courses and pursue ICT careers. The current decline in university enrolments makes it more likely that university resourcing for ICT will remain low, creating longer lead times to cope with increased numbers when enrolments do rise again and implying greater competition for the existing pool of graduates.

The Australian Government, particularly in Canberra, faces additional challenges including perceptions about the image of the APS as a place for ICT professionals to work and of Canberra as a place to live. It also faces competition from attractive private sector remuneration packages.

Executive summary

Government response

The Department of Finance and Administration (Finance) convened the inter-departmental ICT Professional and Skills Development Taskforce in October 2005 in response to the MAC 5 report. The Taskforce includes representatives from government departments that are significant employers of people with ICT skills. Terms of Reference, membership and other details about the Taskforce and activities to date are at Appendix A.

In addition, the ICT Skills Roundtable was established in 2006 after several large agencies approached Finance, through the Australian Government Information Management Office (AGIMO) seeking a coordinated approach to deal with short-term ICT pressures.

The Roundtable identified areas where ICT demand is greatest, and recommended several short-term collaborative actions to ease agency demand and improve the supply of the specific skill sets.

The initiatives identified by the Taskforce and Roundtable to help meet the demand for ICT skills in the APS will assist agencies implement the recommendations of the MAC 5 report.

Current initiatives

Finance has led the development of several initiatives on behalf of the Taskforce. These include piloting an APS-wide ICT apprenticeship programme which placed over 70 apprentices across 10 agencies, mentoring staff through APS participation in Dell's Women in IT Executive Mentoring (WITEM) program, and convening a Roundtable of 14 agencies that identified the specific ICT skills in highest demand and explored common approaches to meet those needs. Awareness raising has included promoting ICT careers in the APS both to the ICT industry and education sector, and hosting a better practice seminar for APS staff.

In addition, Finance continues to influence the ICT agenda by participating in high level working groups with the ICT industry, works with the local education sector to more closely align the content of ICT courses with APS needs, and participates in events such as the ICT Careers Expo for Canberra secondary students.

Recommendations

While current initiatives have begun to help address the imbalance between ICT supply and demand, the Taskforce and Roundtable recommend a range of further initiatives to tackle the work still to be done.

Executive summary

Recommendations include several whole-of-government initiatives such as: greater transportability of security clearances across the APS for easier staff sharing and transfers between agencies; ICT panels for specialised and high demand ICT skills; accreditation for project managers to raise the standard of ICT project management across the APS; ICT Alumni programmes to retain access to the skills and expertise of retiring ICT staff; extended mentoring programmes for ICT staff; and more comprehensive ICT apprenticeship and cadetship programmes to attract ICT students to the APS.

Other recommendations include providing definitive advice to agencies on engaging non-Australian citizens and developing senior executive ICT awareness workshops to support better decision making. Work-based training for ICT students could be increased through partnerships with ACT secondary schools and tertiary institutions, while standard terminology for ICT skills would improve collection and consistency of supply and demand statistics. Serious skills shortages over coming years could also be more effectively addressed through more agencies developing ICT workforce plans, skills and resource sharing between agencies, additional remuneration for staff who increase their ICT skills, and assistance with HECS debt to attract more ICT graduates.

Finally, a new ICT skills group, replacing the Taskforce, should be formed to steer current and future work on ICT skills in the APS.

Priority recommendations

1 Priority recommendations

‘To remain a leader in e-government and to combat the challenges an ageing and contracting labour market creates, the APS will require both innovative and effective leaders, and multi-skilled ICT professionals who can embrace the broader technological reform agenda... Some of this is the responsibility of individual agencies, but we also need to examine opportunities at a whole of government level. If we can work collaboratively, I believe we will be well positioned to secure the APS’s ICT workforce of the future’¹.

Ms Lynelle Briggs, Australian Public Service Commissioner

6

The Taskforce’s findings and recommendations are designed to develop a vibrant ICT community that is competent, committed, engaged, mobile, and can drive the future of ICT within the Australian Government.

The Secretaries’ Committee on ICT, a strategic, decision-making committee for whole-of-government ICT use by the Australian Government, has noted the findings and recommendations of this report. The Committee has agreed that a whole-of-government approach will be required to implement the report’s findings and nominated the following recommendations as immediate priorities for the APS.

1.1 Transportable security clearances

The Taskforce recommends a more standardised and streamlined approach to security clearances across the APS.

Varying arrangements have resulted in security clearances from one agency not being accepted by another. Agencies have identified this as a major impediment to sharing and transferring staff and to quickly recruiting contract staff who may already have a security clearance with another agency.

The Taskforce believes there is scope to apply the existing Australian Government Protective Security Manual policies in a more standardised and streamlined way across government. This will reduce the length of time required to obtain a security clearance and maximise acceptance of security clearances across agencies.

This initiative will result in agencies being able to share staff and staff being able to transfer quickly between agencies when their skills are required, whether on a temporary project basis or an ongoing basis.

Priority recommendations 1

1.2 Whole-of-government ICT panel contracts

The Taskforce recommends establishing whole-of-government panel contracts for specialised and high-demand ICT skills.

Initial work with the Australian Government Solicitor (AGS) is needed to determine the appropriate mechanism for establishing such contracts and to ensure the method of operation is consistent with current contracts in agencies and with the Australia-United States Free Trade Agreement, and is not detrimental to the external providers or biased to larger agencies over smaller agencies.

This initiative will result in savings to agencies by eliminating establishment and management costs of duplicate panel contracts. Agencies will also have greater certainty of costs for procuring contract ICT skills. Suppliers of ICT skills to the APS will also benefit through lower contract compliance and participation costs.

1.3 Whole-of-government accreditation process for ICT project managers

The Taskforce recommends adoption of a whole-of-government accreditation process for ICT project managers to raise the standard and profile of project management in the APS.

The successful implementation of the ICT component of government programmes depends on the availability and quality of ICT project managers. As a result, the Roundtable identified ICT project management as a high priority skill set requiring immediate whole-of-government attention.

The APS needs to attract more people to careers in ICT project management and improve the quality of ICT project managers. A standard approach to accreditation across the APS will help to address this as well as leading to greater mobility between agencies, a closer link between the public and private sectors and a common language and approach to project management.

It has been observed by the Roundtable that there is a large gap between the skill sets and knowledge of experienced private sector and APS project management staff which leads to added costs and timeframes in implementing large projects. Improving the quality and number of ICT project managers will lessen the dependence of the APS on external suppliers and result in more effective management of major projects that involve a mix of public and private sector expertise.

However, accreditation is only part of the solution. Project managers need ongoing development through mentoring programmes and exposure to increasingly larger and more complex projects, as well as recognition of the value of the skills gained—possibly through additional remuneration (see recommendation 2.4).

1 Priority recommendations

1.4 Migrant and offshore ICT resources

The Taskforce recommends agencies are provided with clear advice on the process for engaging non-Australian citizens and that a whole-of-government approach or means of streamlining the process be investigated.

In 2005–06, some 4,500 management and information professionals were nominated by employers under the temporary business long-stay (subclass 457) programme, yet less than 20 were engaged directly by the APS.

Agency heads have the authority to engage non-Australian citizens as APS employees, on a case-by-case basis². However, this approach has not been adopted by many agencies, due to the high level of approval required and the fact that agency heads can only approve security clearances for non-citizens in exceptional circumstances. Lack of certainty about government policy in this area is also an issue for agencies.

There is scope to examine whether more use can be made of this resource.

1.5 Senior Executive ICT awareness

The Taskforce recommends the development and administration of ICT awareness workshops for non-ICT professionals.

To enable better decision making on ICT investments and more effective management during their implementation, a series of one to two day workshops should be initially conducted for Senior Executive Service (SES) officers and then extended to middle managers.

The workshops would offer insights and perspectives on the effective use and management of ICT to support programme initiatives from:

- ICT futurists
- Chief Information Officers
- programme managers who have led large programme implementations that contained a significant ICT component
- industry and industry association representatives.

The workshops would improve participants' knowledge of the capabilities of ICT and their understanding of the risks, costs and issues associated with design, implementation and management of ICT initiatives that support major government programmes.

Priority recommendations 1

1.6 ICT Alumni programme for government

The Taskforce recommends the investigation of a whole-of-government ICT Alumni Programme to help address difficulties in attracting and retaining specific ICT skills by maintaining contact with retired employees.

The Chief Information Officer Committee (CIOC) supports the development of an ICT Alumni Programme for government. It is also consistent with the Management Advisory Committee recommendation that all APS agencies develop mature workforce strategies.

Many agencies have developed, or are developing mature workforce strategies that include alumni associations to maintain contact with retired employees. For example, Centrelink has introduced a register of former employees who are interested in returning for temporary employment. This can reduce pressure during peak leave periods such as school holidays.

Several agencies are also pursuing mentoring through their alumni programmes. The greatest value in long-term employees comes from their knowledge of the business, their relationships with key users, and their deep insight into existing systems and infrastructure. Agencies need to develop an understanding of these skills and make practical arrangements that leverage them. Mature workers will often see synergies between the existing applications and new technologies that would escape less-experienced ICT professionals. Alumni members can teach/coach/mentor younger workers to accelerate their development of new technology skills and help them more quickly gain the seasoning and an understanding of the broader context for their work and how their solutions service the business.

This initiative, as acknowledged in the MAC 5 report³, will be an important mechanism for developing a talent pool of potential mature employees with valuable ICT skills.

1.7 Mentoring programmes

The Taskforce recommends that whole-of-government mentoring programmes be expanded from an existing pilot programme for women in ICT to also cover APS ICT employee groups including apprentices, cadets and Chief Information Officers of small agencies.

The successful pilot involved APS participation in Dell's Women in IT Executive Mentoring (WITEM) Program. As a result, the APS has recently commenced participation in WITEM Stage III Program, a Canberra-based program with both public and education sector participation.

1 Priority recommendations

The Taskforce anticipates the reach of such programmes will extend beyond those undertaking the mentor and mentee roles, with exponential growth throughout the participating agencies.

1.8 ICT apprenticeships and cadetships—promoting ICT as a good career choice

The Taskforce recommends that a lead agency develop a whole-of-government APS ICT apprenticeship programme and a companion cadetship programme to provide tertiary students with a mix of academic and practical skills.

The single cohort pilot APS ICT apprenticeship programme that commenced in February 2007 attracted 79 apprentices who would not have been attracted to, or recruited by, the APS through any other channel. The apprentices were placed across 10 agencies.

Given the initial success of this pilot programme, the Taskforce recommends developing options to extend the programme and introduce a companion cadetship programme incorporating a mix of tertiary study and on-the-job training.

A major benefit of the ICT apprenticeship initiative is that it enables the recruitment of ICT skills at the entry level, 'freeing up' graduates to undertake the higher level duties appropriate to their educational qualifications.

Other benefits to the APS would be:

- supplying entry level staff that are formally trained in conjunction with work-based development of the administrative, team and specialist skills required by the APS
- providing more certainty about recruitment of ICT entry level staff, particularly when supply is low
- targeting students in educational courses that supply areas of identified demand in the APS
- supplying a stream of entry level staff into lower level, lower paid positions which are increasingly being considered for going off-shore.

The educational institutions will also benefit, as these programmes will provide more certainty on student numbers and assist in the development of courses that meet the needs of the workforce.

To support such initiatives, the APS and industry need to work more closely to provide consistent messages on ICT careers and to work on attracting young people into the ICT industry. For example, it is proposed that the APS partner further with industry,

Priority recommendations 1

industry associations and the education sector to promote ICT careers to Canberra secondary students in years 10 to 12.

This initiative, combined with specifically targeted recruitment initiatives, will result in a more consistent ongoing supply of entry level staff for the APS. It will be one aspect of coordinated APS involvement in wider industry initiatives to attract people to ICT careers, particularly in the APS.

1.9 Working with the education sector

The Taskforce recommends establishing partnerships with ACT secondary schools to increase the amount of work-based training provided to students as part of their ICT studies.

The Taskforce has already established good working relations with Canberra based educational institutions to influence course design. It is expected that the APS will be represented on the curriculum boards at each Canberra based tertiary institution.

Other recommendations

2 Other recommendations

While the Secretaries' Committee on ICT has asked that priority be given to the above recommendations, the Taskforce has also made the following findings and recommendations, which build on the priority work identified by the Committee.

2.1 A standard terminology for ICT skills

The Taskforce recommends the development of a standard terminology for ICT skills information and collection of annual ICT supply and demand statistics for the APS.

Current ICT skill-related demand and supply statistics for the APS are difficult to obtain and lack consistency, particularly on a whole-of-government basis. To address this, a repeatable method of collecting statistics on ICT supply and demand in the APS needs to be developed.

Finance could advance a framework, based on existing work by the Australian Bureau of Statistics, the Department of Employment and Workplace Relations (DEWR), and the Australian Taxation Office (ATO) that establishes a common nomenclature for ICT roles in the APS, competencies required to undertake ICT roles, and career paths for ICT workers in the APS.

This will provide agencies with a consistent and common framework for planning and managing their ICT workforce. This initiative will lead to better targeted recruitment initiatives, more structured development of ICT competencies, better use of ICT resources, and increased retention of ICT staff.

2.2 ICT workforce planning—plan, be innovative and be strategic

The Taskforce recommends that agencies develop policies, strategies and/or frameworks to ensure they have the skills and capabilities needed for the next one to five years.

Currently, 58 per cent of agencies have formal workforce planning frameworks or strategies in place, with another 37 per cent of agencies in the developmental stage. Over the next five years, there will be a serious shortage of skilled workers due to the current demographics of the workforce. Agencies must prepare for this with strong leadership and by being smart and proactive in their strategic workforce decision-making.

Agencies will have to decide how best to acquire ICT skills—for example, which skills to recruit for and keep in-house, and which skills can be contracted out. Whatever approach agencies take to their future ICT workforce needs, it is important to 'plan, be innovative and be strategic'.⁵

Other recommendations 2

Agencies such as the ATO and the Department of Defence (Defence) have undertaken extensive workforce planning. During 2006, the ATO prepared a *Workforce Futures Paper* which resulted in a three-year strategy for its ICT workforce. One of the outcomes was the development of the ATO ICT Capability Framework⁶ (see Appendix B for an outline) that is based on the APS Integrated Leadership Framework.

The ATO framework outlines the competencies required for career progression of ICT staff and assists the ATO to develop its ICT workforce to meet its projected ICT needs. The Taskforce believes that the ATO ICT Capability Framework could be applied more broadly across the APS.

Building on the work of agencies such as the ATO and Defence, consistent APS-wide ICT workforce planning initiatives will provide:

- ICT skill sets to support initiatives in the 2008–09 and following Budgets
- a basis for informed ICT workforce planning in agencies
- better whole-of-government decision making in implementing ICT initiatives
- better information for tertiary institutions and suppliers of ICT resources about the types of ICT skills that should be developed or sourced and the likely number of people required with those skills.

2.3 Skills and resource sharing between APS agencies

The Taskforce recommends the development of a model for sharing skills and resources between agencies to make the best use of scarce ICT resources.

There is no clear and established method for sharing ICT skills between agencies; nonetheless ad hoc sharing does occur in response to unforeseen need. There is scope for greater planned sharing of resources.

As a first step, a greater understanding of the work programmes of agencies needs to be shared among agencies. Agencies have suggested using existing communication channels, for example the Human Resources Directors Forum (meeting held every second month) and/or the Small Agencies Forum, in conjunction with any new initiatives.

2.4 Acknowledging ICT up-skilling with extra pay

The Taskforce recommends agencies consider encouraging staff to up-skill or re-skill by offering extra pay in recognition of those skills. For example, project management accreditation may attract additional remuneration. This incentive may be incorporated into Australian Workplace Agreements (AWAs).

2 Other recommendations

2.5 Assistance with HECS debt

The Taskforce recommends agencies consider assisting with the Higher Education Contribution Scheme (HECS) debt of ICT employees.

Most graduates enter the workforce with a HECS debt, which will take some years to repay. In a tight labour market, this initiative provides an opportunity for agencies to position themselves as employers of choice. Agencies could provide assistance with the HECS debt, paying part or all of the debt, based on certain conditions.

2.6 Implementing the recommendations: the way ahead

The Taskforce believes it has now completed the role given to it by the Management Advisory Committee—that is, gaining an understanding of the shortage of ICT skills in the APS and provided key recommendations on how to attract and retain ICT skills into the APS.

The Taskforce recommends it be disbanded by 30 June 2007, and, should the MAC consider further work is necessary, a new cross-agency group be formed to guide and review current initiatives and future work on ICT skills in the APS.

MAC may wish to consider the priorities for the group and possible lead agencies to progress the required work.

This group should report to the Secretaries' Committee on ICT, through the Chief Information Officer Committee or the Business Process Transformation Committee.

Demand for ICT skills
in the APS

3 Demand for ICT skills in the APS

3.1 e-Government—increasing dependence on technology

ICT is changing the way government operates and the pace of change will continue to accelerate through technology-enabled transformation of government business. Efficiency gains, reduced costs and better service delivery are supported by advances in ICT.

The government's 2006 e-Government Strategy, *Responsive Government: A New Service Agenda*, represents the next phase in terms of improved online service delivery and responsive government. The strategy is all about applying ICT to improve and reform underlying government processes. Four strategic priorities are identified to guide agencies in the government's vision to 2010: meeting users' needs; establishing connected service delivery; achieving value for money; and enhancing public sector capability.⁷

Large ICT projects being undertaken by Australian Government agencies as part of this drive—such as the ATO's *Change Program*, the Department of Immigration and Citizenship's *Systems for People*, and the Department of Human Services' *Access Card*—are putting considerable pressure on both the availability of ICT workers (government and industry) and the capacity of agencies to meet new and emerging government priorities.

3.2 Increasing number of vacancies

ICT vacancies over the coming year are expected to rise in the Australian Government and in industry.

The CCS Technology Recruiters recruitment and retention report⁸ indicates that 37 per cent of organisations plan to increase their number of ICT staff, with only eight per cent expecting to decrease.

Candle, a specialist ICT recruiting firm, states in its *ICT Market Analysis 2007*⁹ report that national demand for permanent ICT staff during 2005–06 increased by 13 per cent on 2004–05. Demand in New South Wales was up by 25 per cent and demand for ICT professionals in Canberra was at the highest levels ever.

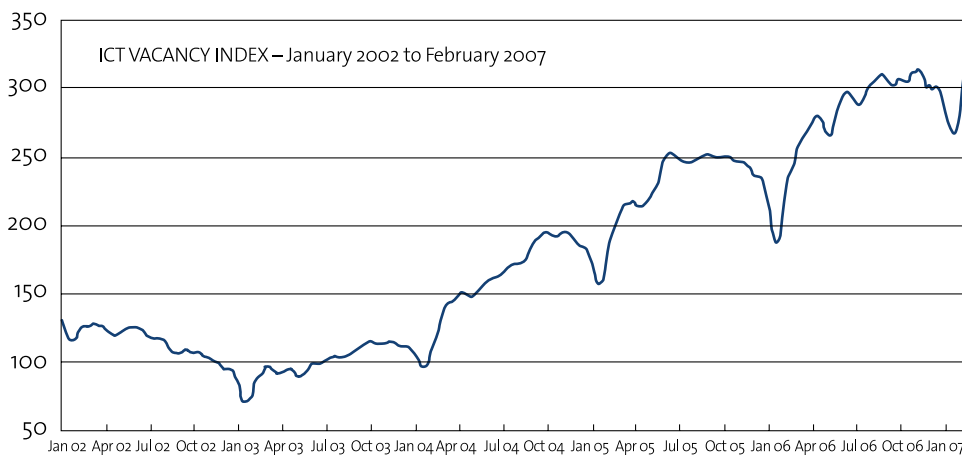
The Hays Recruiting January 2007 quarterly forecast¹⁰ for ICT in the public sector also confirms the strong upward pressure on demand for ICT skills and notes that 'competition between public sector organisations themselves for this limited resource pool will present the greatest challenges'.

Demand for ICT skills in the APS 3

The Department of Employment and Workplace Relations (DEWR) Vacancy Report for February 2007 reveals that the one-year growth in ICT vacancies for Australia was 35.1 per cent, its highest level since August 2001. The ACT accounted for eight per cent of total ICT vacancies, an increase over the year to February 2007 of 42.1 per cent.

Chart 3.1 demonstrates that advertised vacancies for ICT professionals since 2002 has tripled. Extrapolating from this data, and the expected increases in staff, future increases in vacancy rates can be expected in 2007.

Chart 3.1: DEWR ICT Vacancy Index ¹¹



Similar problems are being experienced in other industries, opening up a wide range of career options for skilled employees and leading to even greater competition in attracting numbers into the ICT industry.

Difficulties in recruiting people with the required skills were reported by three-quarters of APS agencies, and almost all of these report difficulties in finding people with ICT skills.¹²

Chart 3.2 shows the types of skills shortages and their impact on agency capability in 2005–06 as reported in the latest *State of the Service Report*.¹³ Thirty-five per cent of Australian Government agencies reported that skills shortages in information technology were having a moderate or severe impact on their agency's organisational capability and this trend is expected to increase as demand continues to grow and supply remains at best, static.

3 Demand for ICT skills in the APS

Chart 3.2: Skill shortages and their impact on agency capability, 2005–06

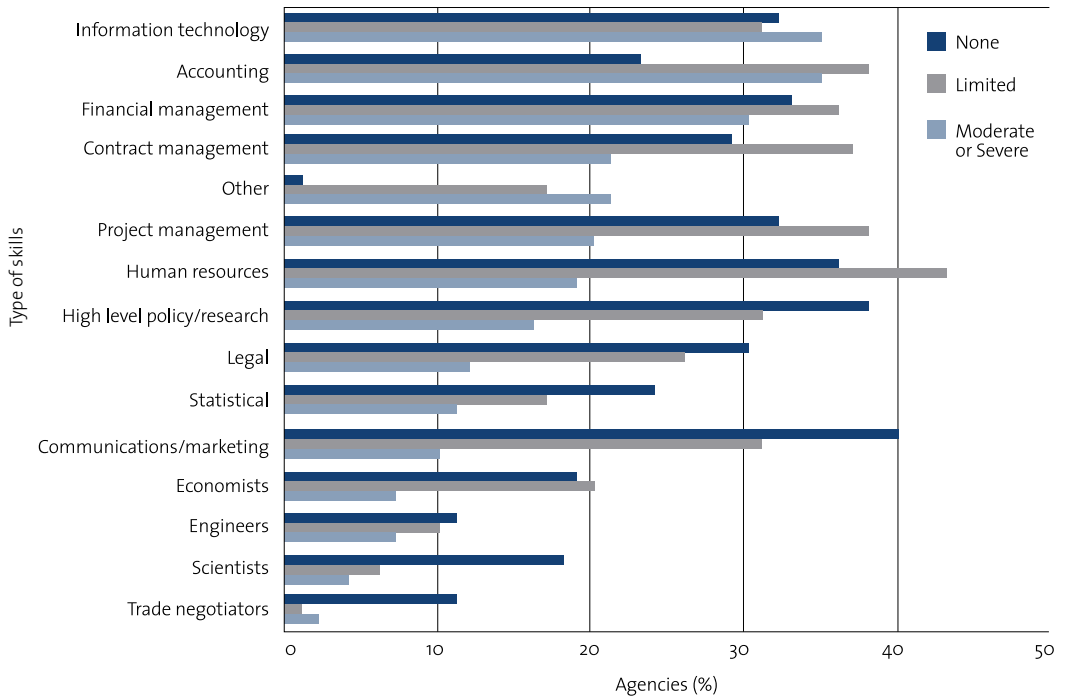


Table 3.1 indicates the challenges that many agencies were faced with in 2006 in sourcing appropriately skilled ICT staff. In 2005, on average, only four suitable applicants were applying for positions. In 2006 this had reduced to only two suitable applicants. This indicates that increases in ICT-related work and decreases in available staff are impacting on the quantity and quality of ICT skills available to government.

Table 3.1: DEWR ICT Skill Shortage Survey, May 2006

| ICT Skill Shortage Survey—Findings May 2005 and May 2006 | | |
|--|----------|----------|
| Indicator | May 2005 | May 2006 |
| Number of vacancies | 221 | 272 |
| Total applicants | 3899 | 2814 |
| Applicants per vacancy | 17.6 | 10.3 |
| Total suitable applicants | 882 | 602 |
| Suitable applicants per vacancy | 4.0 | 2.2 |
| Proportion of applicants who were suitable | 22.6% | 21.4% |
| Vacancy filling rate | 84.2% | 80.5% |

Demand for ICT skills in the APS **3**

Planned large-scale government projects can be expected to adversely affect this figure even further in 2007.

Several large initiatives that require significant new investment in ICT have been announced in recent budgets. This has resulted in substantially increased spending on ICT, which is likely to continue at very high levels until at least 2009, even without taking into account any further significant decisions in the 2007–08 Budget.

The increased demand by the APS for skilled ICT workers has resulted in a labour shortage in critical areas, and increased the cost of skilled labour.

These skill shortages are adding to the difficulties agencies are experiencing in managing major projects, to the point where large projects are being placed at increasing risk of failure.

Efforts by agencies to meet the increasing demand for skilled ICT workers are drawing resources away from the day-to-day ICT operations, and jeopardising opportunities for cross-agency collaboration.

Skills shortages are also putting the Australian Government's 'vision of a connected and responsive government by 2010'¹⁴, at risk. Work across government on whole-of-government architectures and the re-use of business and ICT processes will assist in this area, but will still require an investment in developing and retraining ICT staff to reap the desired savings.

3.3 Increased contracting

The demand for ICT contractors is also expected to increase in 2007. This expectation is confirmed in the Hays Salary Survey 2006 which reports there has been a definite increase in contract requirements: mid-level project managers and business analysts are in extreme demand. The 2006 CCS recruitment and retention report¹⁵ indicates that 47 per cent of employers plan to increase the use of contractors in their organisations. The same report indicates that employers were predicting that similar levels of ongoing staff are expected, however Australian Government agencies have identified that a current shortfall of staff will be sourced predominately through ongoing and non-ongoing positions.

The growing trend for agencies to hire external ICT skills is one of the key features of the government market. This trend is driving strong growth in the Government IT services market; almost 30 per cent in the last five years.

According to Intermedium's Labour Hire Report¹⁶, the Australian Government awarded almost 800 contracts for ICT labour hire in the year to 30 June 2006. ICT labour hire

3 Demand for ICT skills in the APS

rose to 1,398 during the period July to September 2006. These contracts were worth \$231 million. Forty agencies hired outside labour to supplement in-house IT resources in 2005–06. The government labour hire market is dominated by three agencies: the Department of Immigration and Citizenship, Centrelink and Defence accounted for \$46.4 million or 58.8 per cent of the contracts (by value) let during the 2005–06 year.

3.4 Demand for particular ICT skills

Australian Government agencies have indicated immediate and specific skills-set shortages, with demand projected to increase further in 2007.

Finance surveyed 14 Australian Government agencies that have, or are about to commence, initiatives with a significant ICT component, asking about the demand for ICT skills from third quarter 2006 to second quarter 2007.

The assessment showed that there will be no tapering off of the current high demand, even if there is a plateau. It also revealed that some ICT skills are in greater demand than others, with the skills in highest demand being:

- project managers
- business analysts
- enterprise application integration skills (such as WebSphere, J2EE, and .NET)
- system testers.

This finding is mirrored in the 2006 CCS recruitment and retention report¹⁷ with approximately 40 per cent of respondents indicating most difficulty in recruiting project managers and business analysts. The finding is confirmed by the results of the Diversity survey¹⁸ which show the top two of three information technology areas currently hiring are project management (51 per cent) and business analysis (48 per cent).

Anecdotally, the APS has seen an increase in the cost of experienced project managers. This is not yet reflected in reports such as the Ambit report which notes the lack of increased wages for project management and business analyst skills between 2005 and 2006¹⁹. However, as these skill sets become harder to source and the market of suitably qualified candidates decreases (see table 5.3), wage costs are expected to increase.

3.5 The changing face of the APS workforce

The APS workforce and the expectations placed on it today are very different to the 1980s. In the past, employees viewed a position with the APS as a 'career for life'. Today there are increasing career mobility patterns in and out of the APS and between APS agencies.

Demand for ICT skills in the APS 3

APS employees are also seeking a flexible workplace that supports an appropriate work/life balance.

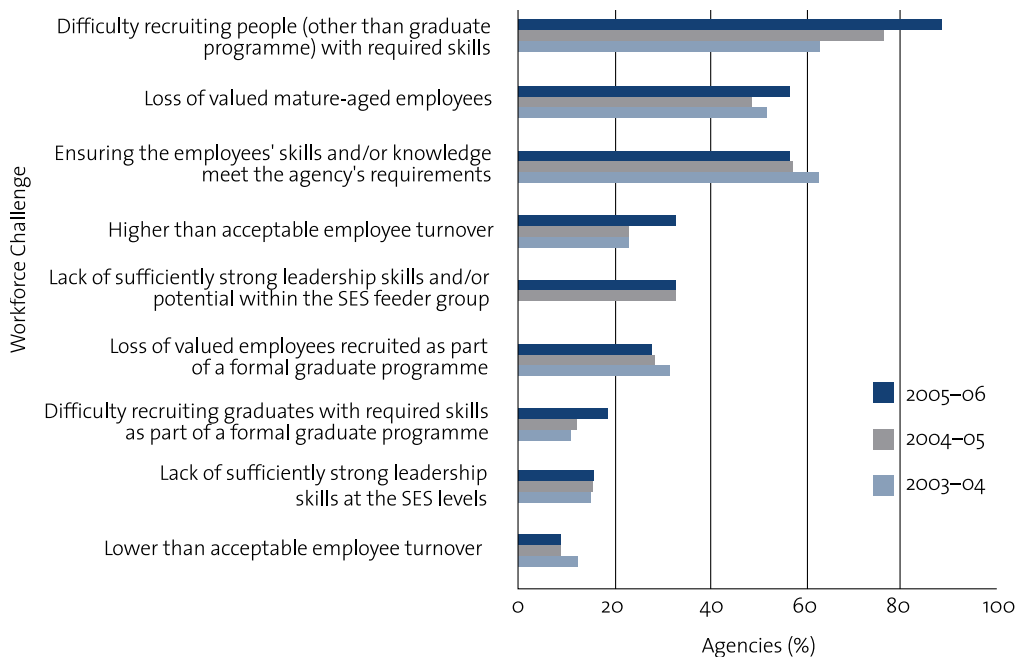
The APS is also facing the challenge of an ageing workforce. Employees who will be eligible for retirement in the next 10 years account for 40.8 per cent of ongoing employees.²⁰ While the age profile of agencies varies, all agencies will need to implement recruitment strategies to manage the number of employees retiring and to ensure knowledge transfer is undertaken to minimise the loss of corporate knowledge.

Retiring baby boomers will be replaced by Gen Ys, who have a different outlook and different drivers. Accordingly, the APS may need to alter its current attraction and retention strategies.

Technology is at the forefront of solutions to deal with some of the biggest challenges facing the Australian community, and both the community and government have increasing expectations about what ICT can deliver. This means that the challenges facing the APS from a shortage of ICT skills are exacerbated by the APS reliance on ICT in administration and programme delivery.

Enhancing public sector capability is a key activity identified in the Government's 2006 e-government strategy, *Responsive Government: A New Service Agenda*, and implicit in this is the need for the APS to continue to attract, develop and retain cutting-edge ICT skills.

Table 3.2: Workforce challenges faced by agencies, 2003–04 to 2005–06²¹



3 Demand for ICT skills in the APS

3.5.1 *Baby boomers*

APS agencies must develop strategies that optimise the contribution and job satisfaction of mature-aged workers.

The Prime Minister, the Hon John Howard MP, made a commitment four years ago to try and increase the participation of mature-aged workers aged 55 to 64 years by 10 per cent to 15 per cent, and has reiterated this priority on many occasions since.²²

A number of APS agencies have included in their workplace agreements commitments to the development of strategies to retain their mature-aged workers, and have specifically identified flexible working arrangements as a means of achieving this.

DEWR has developed a database of family-friendly agreement clauses that agencies can use in their agreement making.

3.5.2 *Gen X/Gen Y*

Some widely held characteristics of Generation X/Generation Y include: independent and resourceful with free agent approach to careers; high expectations of work/life balance; accepting of change and comfortable with diversity; they 'want it now'; and are technologically literate and lifelong learners.²³

These generations tend to be more devoted to their career and not their employer, typically staying in a job for between 2.7 and four years. They do not respond well to the nine to five paradigm of previous generations, demanding greater flexibility in working hours and conditions to accommodate family, study and personal time. They also like to travel and are willing to go where the best jobs and conditions are, a factor that international recruiters are capitalising on as they target young Australians to fill overseas job vacancies.

The APS will need to reflect these trends in its recruitment and retention strategies, particularly in the area of ICT where there are global career opportunities.

3.6 The changing role of the ICT employee

Project management and business and systems analysis require knowledge of ICT, but, just as important, a flair for managing people, budgets, processes, clients and stakeholders. Strong managers may not be particularly good programmers and vice versa.

Demand for ICT skills in the APS 3

Support, help desk and network administration require the ability to grasp technical concepts and learn high-level computer skills, but equally important is the ability to relate to people on their level, understand their requirements and help them feel at ease with the technology. At a Females in Information Technology and Telecommunications (FITT) Seminar held in May 2007, the IT Contract and Recruitment Association indicated that employers are now looking more at well developed 'soft skills' when hiring ICT staff.²⁴

There are opportunities to use many different abilities in the ICT field. For example, technical writing requires an ability to put technical concepts into words and, while programming skills are not needed, it is necessary to have an in-depth understanding of ICT concepts and terminology.

The perception of ICT work is often of someone sitting alone, computer bound, programming all day. This is no longer true. The roles in ICT have changed—ICT staff work closely with the business, assisting to drive change in the organisation.

Understanding both business and ICT is crucial for all business professionals including executive managers who determine strategic direction and are responsible for the approval and management of projects that are supported by large and complex ICT systems.

The Australian Government has acknowledged the changing role of the ICT professional and is moving to address this shift. The Department of Communications, Information Technology and the Arts (DCITA) May 2006 report *Building Australian ICT Skills* states: 'as ICT is increasingly embedded in business, the need for an understanding of business and market fundamentals has become necessary for ICT professionals' skills. Professionals will work in multidisciplinary teams which will require problem solving abilities, negotiation skills and a capacity to understand the needs of customers and project colleagues'.²⁵

To this end, Finance has been working with tertiary institutions on an ongoing basis to influence the content of their ICT courses so they are more closely aligned with APS needs.

Supply of ICT skills to the APS

4 Supply of ICT skills to the APS

4.1 Factors impacting on supply

Respondents to the Diversiti survey²⁶ were asked to nominate the top five factors that will have the greatest impact on the availability of ICT labour in Australia in the next 12 months. The top factors seen as contributing to the expected tightening of recruitment of ICT skills (in order of concern) are:

- global competition for skilled IT resources/work going off shore (78 per cent)
- competition from other professions (47 per cent)
- continued decline in IT student enrolments (45 per cent)
- candidates being able to keep up-to-date with changing technology (44 per cent)
- inadequate training by employers (32 per cent).

Sixty-nine per cent of respondents felt that retaining talent in the organisation was their biggest concern. Coupled with 61 per cent of respondents indicating that there is a shortage of skilled candidates, it is clear that retaining suitable ICT skills is becoming increasingly important to the success of organisations.

In addition, stronger staff retention and attraction policies can contribute to greater competition and cost pressures between industry and government agencies. It is important for the APS to be a competitive employer, and highlight conditions that make it attractive, without contributing to a 'bidding war' that could create unnecessary cost/salary escalations which would impact right across the market.

4.2 Fewer graduates

A worsening of the graduate skills shortage was indicated in the 2006 Graduate Outlook Survey.²⁷

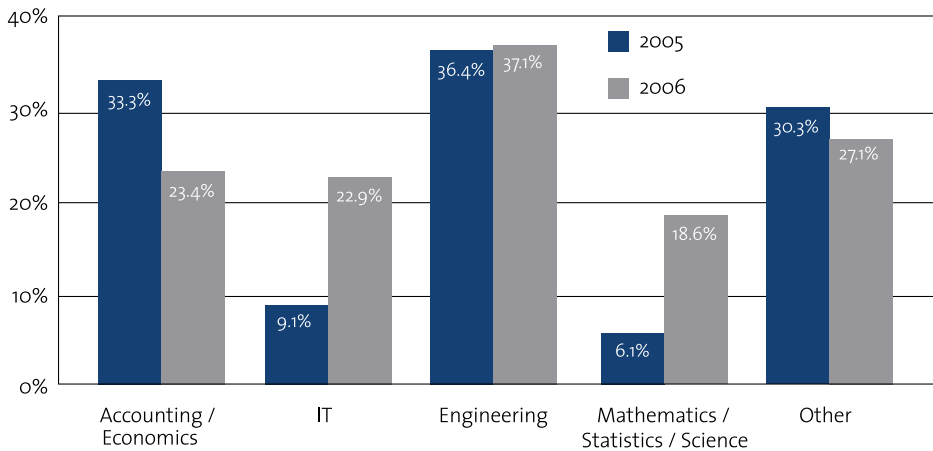
A total of 42.5 per cent of graduate employers stated that they would have employed more graduates in 2006 had more been available, an increase from 33.3 per cent in 2005.

More than half had trouble recruiting graduates from particular disciplines, of which 22.9 per cent had trouble sourcing IT graduates—up from 9.1 per cent in 2005.

The Australian Government faces fierce competition for graduates from the private sector, where some companies employ full-time recruitment teams targeting graduate hiring.

Supply of ICT skills to the APS 4

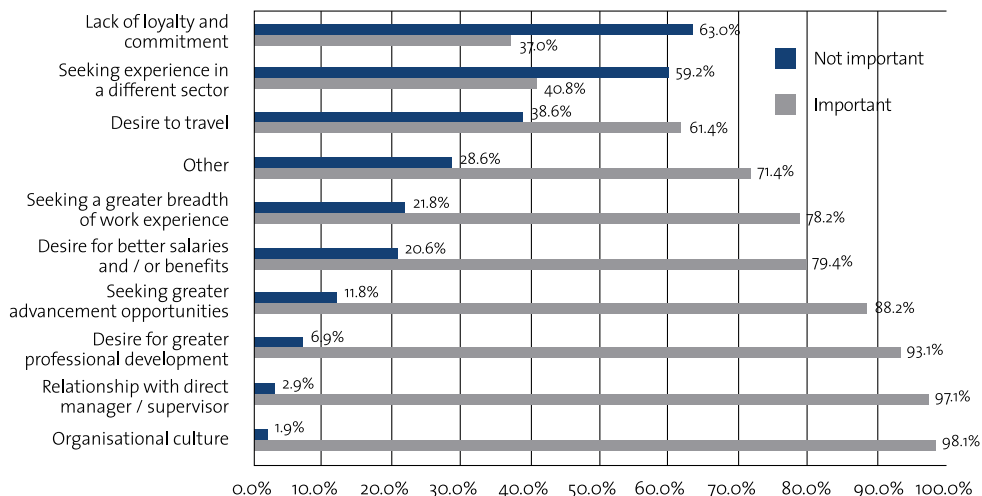
Chart 4.1: Proportion of employers who had trouble sourcing graduates, by discipline of graduate²⁸



Employers identified retaining graduates as a major issue in graduate employment. The 2006 Graduate Outlook Survey asked employers to rate the importance of several factors on a graduate's decision to change employer. The information is summarised in Chart 4.2 below.

Employers deemed 'organisational culture' and a graduate's 'relationship with their direct manager/supervisor' to be the most important factors impacting on a graduate's decision to change employers (98.1 per cent and 97.1 per cent respectively).

Chart 4.2: Important factors in graduate retention²⁹



4 Supply of ICT skills to the APS

4.2.1 *Falling enrolments*

Leading indicators on the supply-side of the ICT skills market indicate that market conditions are unlikely to ease, particularly because they reflect a lack of demand for existing ICT places from potential students. University enrolments in many ICT courses have been falling consistently over recent years and will take time to rebound.

For example, the lack of attractiveness of ICT as a career has led to declining enrolments at both the University of New South Wales and the University of Canberra (see Appendix C), where enrolments in first year ICT courses have declined by around 60 per cent since 2001. Monash University's Faculty of IT has reported a decline in enrolments of around 50 per cent in a similar period. Queensland University of Technology (QUT) and Deakin University have seen similar falls in new enrolments.

Nationally, the number of students completing IT courses has declined from a high of 56,989 in 2002 to 43,483 in 2005 (latest available full-year figures). This figure will reduce further due to the decline in enrolments. Interestingly, the number of students completing post-graduate IT courses has remained steady following a sharp increase in 2002 to 22,096 (see Appendix D).

Initial indications are that ICT enrolments may have stopped declining at some universities in 2007. Even if this is correct, the number of new ICT workers being added each year is unlikely to match the growth in demand. The higher education pipeline means that any future increase in enrolments will take several years to produce additional skilled workers.

To attract increased numbers into their ICT courses, many universities are introducing business units into ICT graduate degrees and creating transitional courses to allow students to blend subjects from both. The University of Queensland has created new subject majors with combinations that will be valued by future employers, for example ICT plus business, ICT plus biology and ICT plus economics.³⁰ The University of Sydney created its Master of Business, Business Information Systems (BIS) major to meet the business needs of the future ICT professional. The University of Canberra offers 'cut-over' courses, allowing non-ICT graduates to fast track through post graduate ICT studies, without extending the time to complete their studies. Other universities are now offering blended ICT courses for the first time, enabling students to extend their studies into ICT application areas without taking longer to complete their degree.

Universities stand to gain a lot by incorporating business skills into ICT courses as it will make ICT more attractive to potential students by balancing the technical load and will deliver strong graduates to the industry.

Supply of ICT skills to the APS 4

4.3 Less students in vocational training

Enrolment numbers in ICT courses at TAFE colleges have also plummeted. For example, TAFE's Sydney Institute, which comprises campuses in the city's centre, east and south, has seen enrolments drop by more than half since 2001.

However, vocational training is an area that has been largely untapped by the Australian Government, and the industry in general. The declining numbers of graduates with ICT skills means vocational training has become a good option to attract new and greater numbers of students into the industry and allow the Australian Government to better manage the entrance of new starters into the APS by providing a second 'stream' of entry level employees. The flow from this second stream can be minimised or maximised depending on the number of ICT graduates available from the university system.

4.4 Lack of interest among secondary students

This decrease in students interested in studying ICT is also reflected at the high school level. Students, teachers, parents and career counsellors/advisors no longer view ICT as a safe, challenging and rewarding career. Instead ICT is seen as involving long hours of backroom drudge work, ordinary pay, poor prospects and the likelihood of periods of unemployment. This perception is reinforced by the lowering of the University Admissions Index (UAI) scores by many universities for ICT courses.

According to the New South Wales Board of Studies, between 2001 and 2005 there has been a 41 per cent decrease in students studying ICT subjects for their Higher School Certificate in New South Wales. This decline is also reflected in the ACT Board of Education statistics which show only 710 students included information technology in their Year 12 Certificate in 2006, down from 1,467 students in 2002.

The decline in enrolments in ICT courses over the past five years is not surprising given the findings of a study by the CIO Executive Council, provided to the Taskforce in December 2006:

- most year 11 and 12 students do not see ICT as a promising career path. Indeed many APS ICT apprenticeship applicants interviewed commented that while ICT was interesting in Year 10, it was boring and held no interest for them in Year 12
- students have little awareness of the ICT industry and primarily think it is working with computers all day with little or no social interaction
- careers advisors know little about ICT and do not promote it as a career option
- students taking ICT in year 12 believe they have their ICT marks 'down-graded' so opt for other subjects that will give them higher marks

- students did not completely understand the boom/bust of the industry and were wary about this happening again
- women may feel intimidated or discouraged to enter a male-dominated industry.

4.5 Gender imbalance

The proportion of women to men in the ICT industry has fallen steadily in the past five years, from 26.6 per cent in 2001 to 20 per cent in 2005, according to the Department of Employment, Science and Training. Women are leaving and not being replaced, which is exacerbating the limited supply of ICT skilled workers.

Having a proportionate number of women in ICT is seen as crucial to the industry:

Women are articulate, excellent communicators and very good at analysis. Without them IT will be without the balance that is required for it to mature as other industries have. We do not want to see our industry be stereotyped as males doing geeky, nerdy work.³¹

Con Colovos, Executive Director, CIO Executive Council

Other governments and the private sector are taking innovative measures to attract more females into the industry. For example, the Victorian Government recently organised its second *Go Girl, Go for IT* event where more than 2,000 secondary school girls came to engage with technology, to spark their interest and erase preconceptions. Google Australia has recently awarded the local Anita Borg scholarship \$10,000 to support a woman undergraduate or graduate student for the 2007 academic year. Google Australia also held its second open-house day, inviting women only.

4.6 Retaining current APS employees

The APS needs to promote its employment conditions to attract new recruits. Just as importantly it needs to reinforce the positives of an ICT career among current staff.

For example, the flexible working hours that support work/life balance combined with access to part-time work and extended unpaid leave periods, the fact that the Australian Government contributes the equivalent of 15.9 per cent of employees' salaries to their nominated superannuation fund and also allows salary sacrificing to superannuation.

Particular emphasis could be placed on existing ICT staff, staff working on programmes with a significant ICT component, and women returning to the APS workforce.

To keep pace with private sector remuneration packages, APS agencies should consider other incentives including those recommended by the Taskforce—assisting with HECS debt, encouraging up-skilling and offer extra pay for staff who gain additional ICT-related skills such as project management.

Appendices



A The Taskforce

Background

In its October 2005 report, *Managing and Sustaining the APS Workforce*, the Management Advisory Committee (MAC) noted the need to address an emerging imbalance in the Australian Public Service (APS) between the supply and demand for specialist employees, including ICT workers.

To gain a full understanding of the shortage of ICT skills in the APS, the report recommended:

The Department of Finance and Administration, through AGIMO, and working with existing interdepartmental processes and relevant professional associations, will take a leadership role in establishing an ICT Professional and Skills Development Group.

The group, known as the ICT Professional and Skills Development Taskforce, was convened on 25 October 2005 with the aim of improving the recruitment, retention and development of ICT specialists in the APS.

Terms of reference

Role of the Taskforce

The key aim of the Taskforce is to improve the attraction, recruitment and retention rates of professional ICT employees in the APS.

Membership of the Taskforce

Department of Finance and Administration (Chair)

Australian Public Service Commission

Australian Bureau of Statistics

Department of Defence

Department of Health and Ageing

Department of Foreign Affairs and Trade

Australian Taxation Office

Department of Communications, Information Technology and the Arts

Department of Employment and Workplace Relations

Department of Veterans' Affairs

Department of Education, Science and Training

Centrelink

ComSuper

GeoScience Australia (representing small to medium sized agencies).

Observers:

Office of Government ICT, Department of Public Works, Queensland Government

ACT Government

Responsibilities of Taskforce members

The responsibilities of Taskforce members are to:

- promote the work of the Taskforce across agencies
- collate and present relevant information and views from other agencies
- provide feedback to other agencies and in their agency
- develop timely advice and strategies
- implement CIOC and IMSC agreed activities.

Meetings of the Taskforce

| | |
|-----------|------------------|
| Meeting 1 | 21 October 2005 |
| Meeting 2 | 21 February 2006 |
| Meeting 3 | 20 April 2006 |
| Meeting 4 | 8 June 2006 |
| Meeting 5 | 17 August 2006 |
| Meeting 6 | 2 November 2006 |
| Meeting 7 | 30 January 2007 |
| Meeting 8 | 19 April 2007 |
| Meeting 9 | 10 June 2007 |

Governance arrangements

The Taskforce reports to the Secretaries' Committee on ICT (SCICT) through the Chief Information Officer Committee (CIOC). The SCICT in turn reports to MAC. Secretariat services are provided by Finance.

The Taskforce also provides 'for information' reports to the Cross Jurisdictional Chief Information Officers' Committee (CJCIOC).

A The Taskforce

Taskforce initiatives that informed this report

The Taskforce identified a number of initiatives to address the widening gap between supply and demand of ICT skills in the APS. Through Finance, the Taskforce has commenced several initiatives with immediate benefits and others that will deliver benefits in three to four years, including the following activities.

Piloting an APS-wide ICT apprenticeship programme

A pilot single cohort APS apprentice programme commenced in February 2007 and has placed over 70 apprentices in 10 APS agencies. The two-year programme, specifically targeted at high school qualified people, is providing the apprentices with a balance of on-the-job experience, formal training and an introduction to public administration. Upon completion of the programme, the apprentices will be eligible to apply for APS3 positions in the APS.

The apprentices attend the Canberra Institute of Technology to study for a Certificate IV in IT (General) where they are provided with an opportunity to undertake learning in key IT areas, including programming, software support, testing, IT analysis, database administration, network management and website administration.

This strategy supplements existing graduate recruitment with an alternate source of IT entry level staff. Recruitment of these apprentices revealed that the applicants would not have been attracted to, or recruited by, the APS through any other channel.

The majority of the applicants had strong ICT skills but did not intend to study ICT at a tertiary institution. Other major drivers for their interest in an APS ICT apprenticeship were:

- obtaining a certification without incurring a HECS debt
- on-the-job experience in conjunction with formal qualifications
- the APS as an employer.

As regional ICT centres are established, this will be an important means of sourcing ICT entry level staff and ensuring the viability of local ICT educational programmes.

Finance is liaising with educational institutions and professional and industry associations such as the Australian Computer Society (ACS), Australian Information Industry Association (AIIA), Computing Technology Industry Association (CompTIA) and the Chief Information Officer Executive Council to inform the development, operation and promotion of these programmes.

Mentoring existing APS ICT staff

The Australian Government Chief Information Officer, Ms Ann Steward, and Centrelink's Chief Information Officer, Mr John Wadeson, participated in Stage II of Dell's Women in IT Executive Mentoring (WITEM) Program during 2006 by taking on mentees from Centrelink and the Department of Education, Science and Technology (DEST) respectively.

Given the success of the pilot involvement, the APS is now involved in the WITEM Stage III Program, due to start in the third quarter 2007. Stage III is a Canberra-based program with both public and education sector participation.

Further stages are planned to cover other APS ICT employee groups including apprentices, cadets, and Chief Information Officers of small agencies.

The Taskforce anticipates the success of this program will extend beyond those directly involved as mentors and mentees, with exponential growth throughout the participating agencies.

Promoting ICT careers in the APS

In September 2006, a new ICT career awareness programme was launched on the IT Pro Australia website. The website promotes ICT career opportunities and highlights the APS as an ICT employer that can provide attractive conditions of service such as career diversity, flexibility in work hours and employer-supported training. The site also provides tips on how to apply for ICT jobs in the APS and showcases public servants who have been able to apply their skills and experience in different and interesting ways. These web pages are also available on the Australian Computer Society (ACS) website.

Finance has developed over 20 profiles of APS staff with interesting ICT careers, which are hosted on a rotational basis on the IT Pro Australia and the ACS websites. Profiles for additional candidates nominated by APS agencies will be progressively developed. The web page content has also been provided to Canberra tertiary institutions and the Canberra Institute of Technology as information for their students, at their open days and other promotional events.

Discussions are also underway about publishing APS ICT promotional material on the planned APS recruitment portal. This will further improve access to APS ICT career information for job seekers, tertiary institutions, schools and career advisors.

Discussions have also been held with other jurisdictions, industry, educational institutions and professional and industry associations such as the ACS, AIIA, CompTIA and the CIO Executive Council to ensure a cooperative and consistent approach to promoting ICT careers.

In particular, the Victorian Government has made its 'ICT: start here, go anywhere' campaign available for wider use.

A The Taskforce

Developing ICT skills demand and supply metrics and project management accreditation

In August 2006, the Australian Government Chief Information Officer, Ms Ann Steward, invited agencies that have, or are about to commence, initiatives with a significant ICT component to participate in a Roundtable discussion on the nature and impact of ICT skills shortages.

The Roundtable identified ICT skills in high demand in agencies, and explored a common approach to supplying those skills in a way that meets the immediate needs of each agency and protects the ongoing requirements of other agencies.

An assessment of agency needs from third quarter 2006 to second quarter 2007 showed a high demand for project managers and system analysts, and people with skills with specific development tools such as .NET and J2EE.

The Roundtable met again in October 2006 to discuss the findings of the analysis and agreed that ICT project management was an area requiring immediate whole-of-government attention.

In particular, Chief Information Officers identified the need to improve project management skills for ICT projects and for large programme delivery projects. They agreed that any work done for ICT project management is likely to have a positive flow-on to programme management across the wider APS.

The Roundtable identified that private sector ICT project managers are significantly better skilled than their APS counterparts. On projects involving joint private sector and APS project teams, this gap in knowledge and skills leads to added costs and timeframes in implementing large projects. Private sector ICT project managers must spend significant time and effort to ensure that APS staff can work effectively with the rigour required from established project management methodology. Improving the quality and number of project managers in the APS will lessen dependence on external suppliers and assist in more effective management of major projects involving a mix of public and private sector expertise.

The Roundtable is currently reviewing project management accreditation programmes and options to improve the availability of skilled project managers.

Working with educational institutions

To ensure ICT courses and course content are more closely aligned with APS needs, Finance has held discussions with Canberra educational institutions. The Taskforce has been encouraged by the consistent message that new courses could be offered if there

was sufficient market demand, and that course content could be reviewed to align more closely with APS needs.

Finance worked closely with the Canberra Institute of Technology on the development and approval of its Certificate IV and Diploma course curricula. The work will ensure that ICT courses reflect the needs of the Australian Government and enable the APS to promote itself to students as an ICT employer of choice.

Partnerships with ACT secondary schools will be established to increase the amount of work-based training provided to students as a part of their course. This could involve a cooperative working arrangement with schools through the ACT Government's *Adopt a School* programme through which agencies will have the option of providing practical assistance to students and teachers.

Working with the ICT industry

Finance has been actively working with the major ICT industry groups to influence the ICT agenda. This work is reflected by AGIMO's representation on the:

- Industry Leadership Group, recently formed to implement the remaining recommendations of the 2006 Building Australian ICT Skills Report of the ICT Skills Foresighting Working Group
- ACT Commission, ICT Working Group to develop an ACT strategy for skills development
- Australian Computer Society Professional Partner Program.

Hosting a better practice seminar

On 27 September 2006, AGIMO hosted a better practice seminar for APS staff that highlighted the increasing national demand for ICT skills and the diminishing availability of these skills.

Participating in the ICT Careers Expo

To help turn around negative perceptions among students about ICT career prospects and to address the decline in enrolments in ICT courses, the Taskforce has worked to promote ICT careers through interstate and local careers expos. In particular, it conducted an ICT Careers Expo as a part of the 2007 Canberra Careers Market to promote ICT careers to Canberra Secondary Students in Years 10 to 12.

Finance worked cooperatively with industry, professional and industry associations, the education sector and the ACT Government to develop material for the Expo.

A The Taskforce

Some students will be attracted to careers in the APS and others will be attracted to careers in industries that support the APS. In both cases, the pool of ICT employees in the ACT will be larger, more stable and will result in less competition for resources and higher levels of available skills. This ongoing initiative is aimed at high profile ICT and recruitment expos in the 2007–08 financial year.

Investigating panel contracts

The Roundtable agencies showed a strong interest in whole-of-government panel contracts for ICT-skilled contractors.

Although panel contracts take considerable effort to establish and manage, there is general agreement that the benefits outweigh the disadvantages, providing substantial cost savings and significantly reducing the time required to engage resources.

Finance has prepared how-to guides on panel contracts. There are several possible approaches to establishing panel contracts for use by multiple agencies:

- agencies can join (piggy-back) the existing contractual arrangements of other arrangements as long as the potential use by other agencies has been specified in the tender documentation at the start of the procurement process, and forms a part of the terms of an existing contract that an agency intends to join
- several agencies can form a cluster and go to the market with a single procurement request. The agencies intending to form the cluster must be specified in the tender documentation at the start of the procurement process and must be mentioned in the terms and conditions of the resultant contract
- a whole-of-government contract can be established by a lead agency.

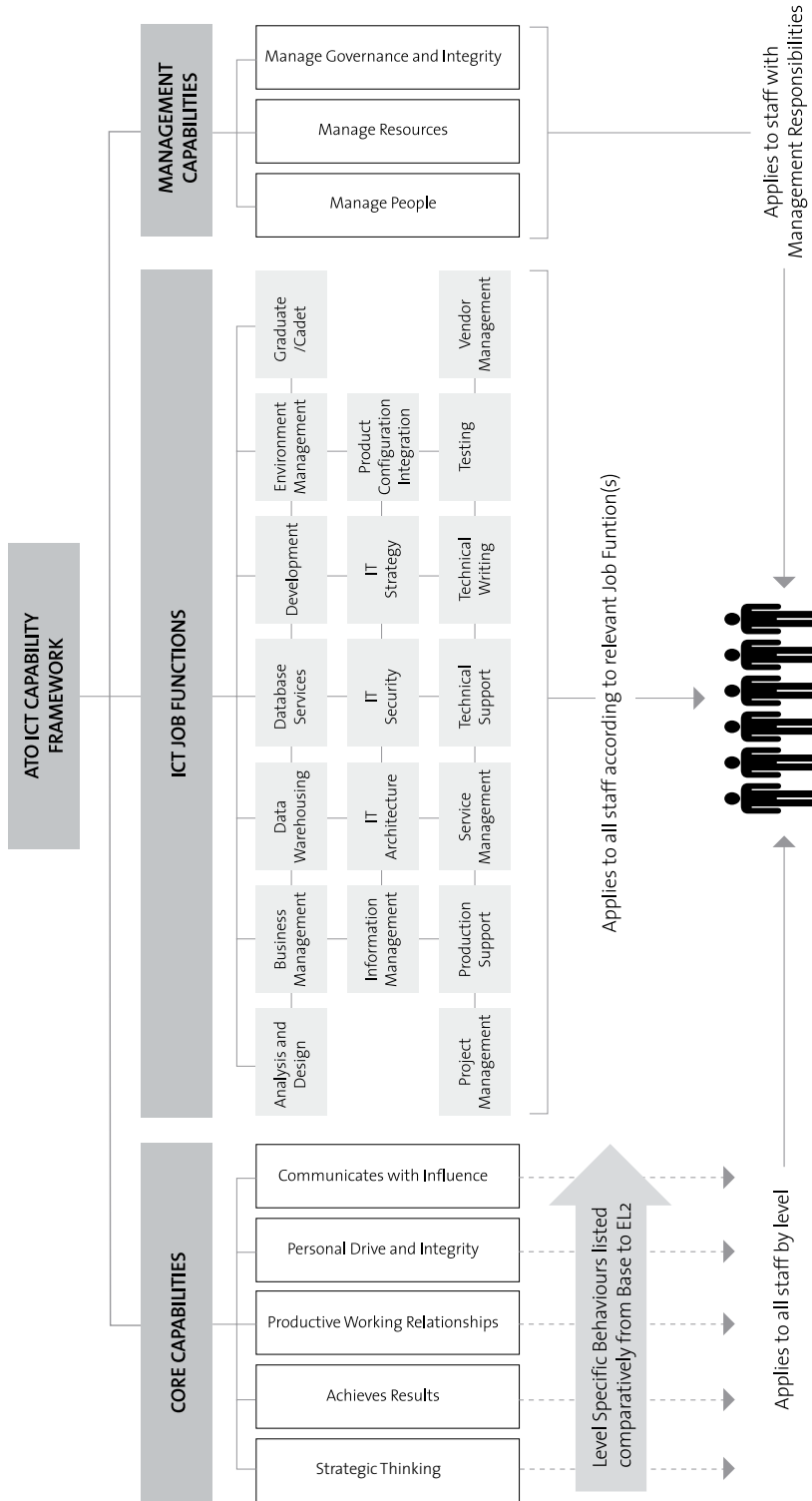
The use of panel contracts could be closely linked with AGIMO's investment and planning work to provide better demand information to participating agencies to enable informed decisions on the scheduling of projects competing for high demand skills.

The panel contracts could also assist agencies, service providers and labour supply companies with greater certainty on the type, number and timing of high demand and short supply skills that will be required.

Whole-of-government panel contracts for specialised and high demand ICT skills could be managed by a designated group, possibly under an outsourced arrangement.

ATO ICT Capability Framework

B



University of Canberra First Year Enrolments

C

University of Canberra
Actual enrolment numbers by year, by gender with % female (continued)
Count as of May for 2006—Source: UC statistical website

Graduate Course

| Year | GDBI | | | MBI | | | MT | | | | | | |
|--|--------|------|-------|----------|---|------|-------|----------|--------|------|-------|----------|---|
| | female | male | total | % female | female | male | total | % female | female | male | total | % female | |
| 2001 | | | | | | | | | | | | | |
| 2002 | | | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | | |
| 2004 | 1 | 1 | 2 | 50.0% | 2 | 6 | 8 | 25.0% | 0 | 3 | 3 | 0.0% | |
| 2005 | 2 | 2 | 4 | 50.0% | 8 | 10 | 18 | 44.4% | 3 | 6 | 9 | 33.3% | |
| BIT Bachelor of Information Technology | | | | | MIT Master of Information Technology | | | | | | | | GDBI Graduate Diploma of Business Informatics |
| BBI Bachelor of Business Informatics | | | | | MT Master of Technology | | | | | | | | |
| BSE Bachelor of Software Engineering | | | | | MBI Master of business Informatics | | | | | | | | |
| GC Grad Certificate – 1 semester full time bachelors degrees are 3 semesters full time (or equivalent) | | | | | GD Graduate Diploma – 2 semesters full time masters degrees are 3 semesters full time (or equivalent) | | | | | | | | |

University Students Completing Information Technology Courses by Year and Gender

Source: DEST Selected Higher Education

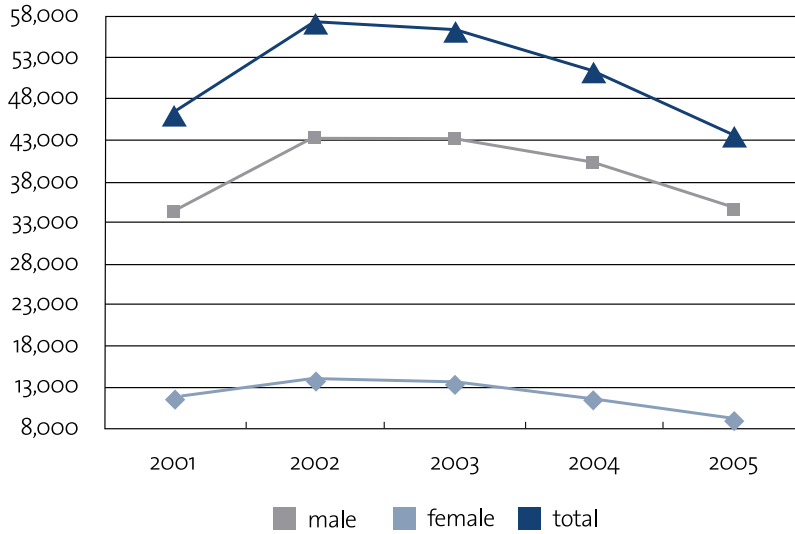
| Year | Under Graduate Course | | | Graduate Course | | | | |
|------|-----------------------|--------|----------|-----------------|--------|--------|----------|--------|
| | female | male | % female | total | female | male | % female | total |
| 2001 | 11,664 | 34,249 | 34.1% | 45,913 | 4,248 | 11,230 | 37.80% | 15,478 |
| 2002 | 13,888 | 43,101 | 32.2% | 56,989 | 5,926 | 16,170 | 36.60% | 22,096 |
| 2003 | 13,243 | 42,952 | 30.8% | 56,195 | 5,109 | 15,700 | 32.50% | 20,809 |
| 2004 | 11,340 | 40,014 | 28.3% | 51,354 | 4,521 | 16,859 | 26.80% | 21,380 |
| 2005 | 8,973 | 34,510 | 26.0% | 43,483 | 4,064 | 16,852 | 19.40% | 20,916 |

D National figures – Students completing IT courses

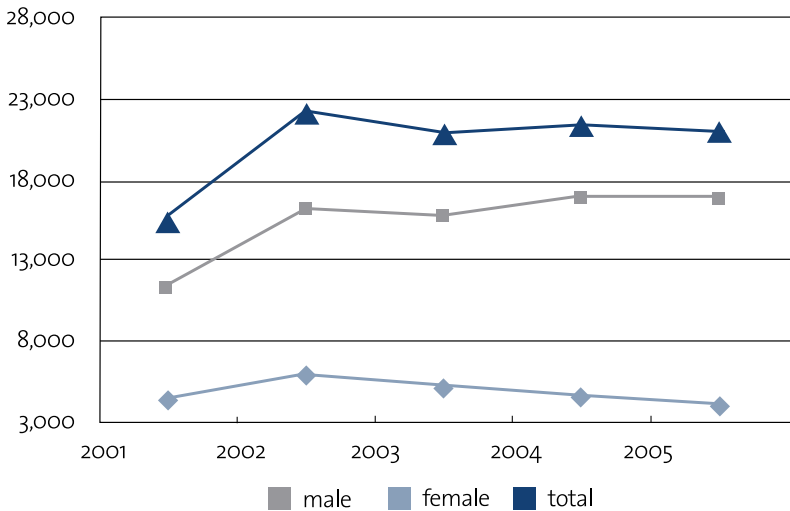
National figures – Students completing IT courses

D

Under Graduate Course



Graduate Course



End notes

- ¹ Lynelle Briggs, *Securing the Australian Public Service's ICT Workforce*, keynote address to the Australian Government Information Management Office Better Practice Seminar: ICT Skills in the APS—buying in a sellers' market, 27 September 2006.
- ² Public Service Act 1999, Part 4, Division 1, 22(8) *Engagement of APS employees*, p. 14.
- ³ Management Advisory Committee Report 5, p. 78.
- ⁴ Australian Public Service Commission, *State of the Service Report 2005-06*, 2006 p. 171.
- ⁵ Briggs, p.3.
- ⁶ The ATO ICT Capability Framework is an evolving document. To obtain the current version contact Ms Lyn Chapman, Director of Workforce Strategy ICT – Human Services, Australian Taxation Office on 02 6216 5154 or email lyn.chapman@ato.gov.au, Ms Chapman will guide you on the challenges and timeframes in introducing this document to your agency.
- ⁷ AGIMO, *Responsive Government: A New Service Agenda*, March 2006.
- ⁸ CCS Technology Recruiters, *IT Recruitment and Retention Report*, Autumn 2006 p. 9.
- ⁹ Candle ICT, Market Analysis 2007, p.2.
- ¹⁰ Hays Specialist Recruitment, *Hays Salary Survey and Guide 2006*, p.90.
- ¹¹ The Department of Employment and Workplace Relations Vacancy Report for February, 2007.
- ¹² Australian Public Service Commission, *State of the Service Report 2004-05*, 2005 p. 151.
- ¹³ Australian Public Service Commission, *State of the Service Report 2005-06*, 2006 p. 173.
- ¹⁴ AGIMO, *Responsive Government: A New Service Agenda*, March 2006.
- ¹⁵ CCS Technology Recruiters; *IT Recruitment and Retention Report*, Autumn 2006 p 3.
- ¹⁶ Internedium, *Labour Hire Quarterly Services Report 2006-07*
- ¹⁷ CCS Technology Recruiters; *IT Recruitment and Retention Report*, Autumn 2006 p. 15.
- ¹⁸ Diversiti, *Diversiti IT Hiring Influence Report 2006*, June 2006 p. 31.
- ¹⁹ Ambit, *Ambit Salary Index Information Technology*, 2006 p. 1.
- ²⁰ Australian Public Service Commission, *State of the Service Report 2005-06*, 2006 p. 22.
- ²¹ Australian Public Service Commission, *State of the Service Report 2005-06*, 2006 p. 172
- ²² The Age, 30 July 2002 and 4 March 2006 as quoted in Hudson, *The Evolving Workplace: The Seven Key Drivers of Mature-aged Workers*, 2006 p. 3.
- ²³ Hudson, *The Generational Mirage?*, 2005, p.7.
- ²⁴ Tay, L 2007, 'IT goes soft for career oriented women', *COMPUTERWORLD*, 4 May 2007
- ²⁵ DCITA, *Building Australian ICT Skills*, May 2006 p. 23.
- ²⁶ Diversiti, *Diversiti IT Hiring Influence Report 2006*, June 2006 p. 27.
- ²⁷ Graduate Careers Australia, *Graduate Outlook 2006: a snapshot*, October 2006.
- ²⁸ Graduate Careers Australia, p. 7.
- ²⁹ Graduate Careers Australia, p. 11.
- ³⁰ Courier Mail, *Technology takes aviation to school*, 16 December 2006 p. 32.
- ³¹ Hilderbrand, J 2005, 'Women escaping nerdy IT', *Daily Telegraph*, 29 December, p.18.

