Overview of the Australian ICT industry

November 2006
Key facts

ICT industry profile

- In 2004-05, total revenue in Australia from the production of ICT goods and services was $54.4 billion.[1]
- Sixty per cent of this revenue was from telecommunications services.
- ICT industries in Australia earned a total income of $103.3 billion in 2004-05, ICT specialist firms accounted for 89.1 per cent of this total.[2]
- In 2002-03, ICT gross domestic product (GDP) accounted for 4.6 per cent of Australia’s total GDP.

ICT trade

- Australia’s total ICT goods [3] exports in 2005-06 remained relatively steady at $2.17 billion, declining 1.8 per cent from the previous year. This occurred despite an 18 per cent decrease in the value of exports to New Zealand – Australia’s largest ICT export market.[4]
- Imports of ICT goods approached $17 billion in 2005-06. This compares to $15.5 billion in 2004-05.
- Data for 2004-05 indicates that Australia continues to maintain a positive trade balance in computer and information services of $106 million, both imports and exports experienced a slight rise.[5]
- China remained Australia’s largest source of imports, increasing by 26 per cent from 2004-05 levels. While software remains a small portion of Chinese imports to Australia, the value of those imports tripled.

ICT employment

- According to the Australian Bureau of Statistics (ABS) Labour Force Survey there were
approximately 371,150 people employed in ICT related positions across the economy in August 2006. Nearly 92 per cent of these people were employed full-time.

- Males represented 84.5 per cent of ICT employees. Female employees were most represented in the occupations of computing support technicians (26.2 per cent), computing professionals (18.8 per cent) and IT managers (22.7 per cent).[6]

- Of the settlers arriving in Australia during 2004-05 who stated an occupation, 5,197 were computing professionals, making up 19 per cent of the total professionals arriving in that period.

**ICT research and development**

- Total ICT research and development (R&D) expenditure in Australia is nearly $3 billion[2] per annum, accounting for approximately 25 per cent of gross expenditure[8] on R&D.

- Organisations outside the ICT business sector[9] are responsible for more than half of all ICT R&D expenditure. These organisations are using ICT R&D to economically develop their businesses and to achieve other social, environmental and defence goals.

- Australian ICT R&D expenditure is concentrated in the research field of information, computing and communication sciences, accounting for approximately 74 per cent of private and 77 per cent of public expenditure, respectively.

ABS data is used with permission from the Australian Bureau of Statistics (www.abs.gov.au).

**ICT industry profile**

In 2004-05, ICT income was $87 billion, which represented 84.2 per cent of the $103.3 billion total income generated by Australian ICT industries according the Australian Bureau of Statistics (ABS) survey of ICT industries. Industries with the highest ICT income included telecommunications services ($34.9 billion), computer wholesaling ($20.7 billion) and computer consultancy services ($19.5 billion).[10]

Total revenue from the Australian production of ICT goods and services in 2004-05 was $54.4 billion.[11] The value of production cannot be compared with previous years due to changes to the basis for compiling data for this survey.

**Figure 1: ICT industry revenue ($ billion) from the production of ICT goods and services, 2004-05 (Total: $54.4 billion)**

![Figure 1: ICT industry revenue ($ billion) from the production of ICT goods and services, 2004-05 (Total: $54.4 billion)](image)

Source: ABS, Information and Communication Technology, Australia, 2004-05. Cat. 8126.0

ICT gross domestic product (GDP) represents the total market value of ICT products
produced in Australia after deducting the cost of goods and services used in the process of production. According to the ABS ICT Satellite Account, ICT accounted for $36.2 billion or 4.6 per cent of total GDP in 2002-03.\textsuperscript{[12]} ICT GDP in 2002-03 contained several ICT related activities such as wholesale trade ($5.2 billion), telecommunication services ($16.5 billion), computer services ($9.8 billion) and ICT related activity in other industries ($4 billion).

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ICT trade

\textbf{Figure 2: Total ICT goods - imports and exports (1995 to 2006)}

![Graph of ICT goods imports and exports](chart.png)

Source: STARS database

\textbf{Exports}

Exports of Australian ICT goods stabilised in 2004-05 ($2.21 billion) and 2005-06 ($2.17 billion) following a period of decline commencing in 2001-02. Notably this occurred despite an 18 per cent decrease in exports to New Zealand which is Australia’s major ICT export market. This decline in exports to New Zealand was offset by expansion of many minor export markets for Australia, for example Spain, Chile and Fiji, which reflects an increasingly diverse global ICT market.

\textbf{Figure 3: ICT goods - exports by selected countries (1993 to 2006)}
Imports

2005-06 saw imports of ICT goods approach $17 billion as businesses and individuals continued to invest in ICT capability in response to broader economic growth. This represents an 8 per cent increase on the previous year.

Organisation for Economic Co-operation and Development data shows that developed nations such as the United States of America, the United Kingdom and France are also significant importers of ICT equipment.

The greatest trend in Australian imports continues to be the prolific rise of imports from China. A further 26 per cent was added to their value in 2005-06. The value of imports from China is now greater than those imported from North America, Europe and Japan combined.

Figure 4: ICT goods - imports by selected countries (1993 to 2006)

Source: STARS database

ICT employment

According to the the ABS survey of ICT industries, there were 274 132 people employed by
Australia’s ICT industries at the end of June 2005. ICT specialist businesses accounted for 89.1 per cent of this employment (244 238 people). The ICT business groupings employing the most people were computer services (41.1 per cent), telecommunications services (27.1 per cent), and wholesale trade (24.6 per cent).[14]

From a different perspective, the ABS Labour Force Survey, reported that there were approximately 371 150 people employed in ICT related positions across the economy in August 2006. This consisted of approximately 253 850 people in direct ICT roles (including IT managers, computing professionals and computing support technicians) and 117 300 in ‘engineering and trades’ occupations. 91.8 per cent of these people were employed full-time.

Of these ICT employees, 84.5 per cent were male. Female employees were most represented in the occupations of computing support technicians (26.2 per cent), computing professionals (18.8 per cent) and IT managers (22.7 per cent).[15] In general, females were more poorly represented in the engineering and trades related occupations.

People under 30 years of age make up 27.7 per cent of all ICT employees, and are most represented in the occupations of computing support technicians (44.4 per cent), electronic and office equipment tradespersons (38.0 per cent), and computing professionals (28.4 per cent).[16]

Migration

Of the settlers arriving in Australia during 2004-05 who stated an occupation, 5197 were computing professionals, making up 19 per cent of the total professionals arriving in that period.

While the total number of professionals settling has increased by 78 per cent over the past 10 years from 1995-96 to 2004-05, the number of computing professionals settling has increased by 339 per cent over the same period. In 2004-05 computing professionals represented over 8.8 per cent of settlers.[17]

ICT labour demand

Olivier Job Index

The Olivier Internet Job Index is a regular survey of recruitment advertising levels around Australia, which includes ICT and non-ICT industry sectors. The Information Technology and Telecommunications (IT&T) and Multimedia, Internet and Graphic Design sectors represented 11.62 per cent of total employment measured by the index in September 2006.

The index reports that the number of IT&T jobs grew by 43.37 per cent in the 12 months to September 2006 compared to a national average of 34.06 per cent, with a further 4.58 per cent (seasonally adjusted) increase from the previous month. The largest IT&T employment categories represented were software development and engineering (30.06 per cent), management and sales (19.74 per cent) and networks communications and security (11.88 per cent).[18]

ICT vacancy index

The Department of Employment and Workplace Relations (DEWR) ICT vacancy index draws data from job advertisements on three Australian ICT online recruiting Internet sites. This provides a measure of demand for ICT skills.

The DEWR ICT vacancy index decreased by 0.6 per cent over the four weeks to mid October 2006, 23.9 per cent higher than in October 2005. Since 2002 the ICT vacancy index has
demonstrated a clear upward trend, rising by over 200 per cent to 304.9 (November 2002 = 100). DEWR’s broader skilled vacancies index rose by 1.2 per cent in October 2006, and is 1.5 per cent higher than in October 2005.\(^{[19]}\)

**ICT research and development**

Expenditure by the Australian private sector significantly outweighs public sector expenditure on ICT research and development (R&D). In 2002-03 business accounted for 86 per cent of total ICT R&D expenditure. The Australian Government accounted for seven per cent and the higher education sector seven per cent.

ICT is a significant component of private sector R&D. It accounted for 36-43 per cent of annual private sector R&D expenditure over the last three years\(^{[20]}\).

Organisations outside the ICT business sector\(^{[21]}\) are responsible for more than half of all ICT R&D expenditure. This ICT R&D is conducted to achieve business goals outside the ICT business sector. For instance, ICT R&D accounts for 98 per cent of the finance and insurance sector’s R&D expenditure and is focused on the development of commercial services\(^{[22]}\).

**Table 1: Business sector ICT R&D expenditure, 2003-04 financial year**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Contribution to ICT R&amp;D expenditure (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT sector</td>
<td>45</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>23</td>
</tr>
<tr>
<td>Manufacturing(^{[23]})</td>
<td>10</td>
</tr>
<tr>
<td>Communication services(^{[24]})</td>
<td>9</td>
</tr>
<tr>
<td>Property and business services(^{[25]})</td>
<td>8</td>
</tr>
<tr>
<td>Wholesale trade(^{[26]})</td>
<td>3</td>
</tr>
<tr>
<td>Other(^{[27]})</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Extracted from business R&D data purchased from the Australian Bureau of Statistics (ABS) by the Department of Communications, Information Technology and the
Arts.

The public sector conducts ICT R&D for a variety of reasons. Only 15 per cent of public ICT R&D is focused on the development of new product offerings and services for the ICT business sector\(^2\). The remaining 85 per cent of public ICT R&D is focused on achieving other economic, defence, environmental and social goals.

Australian ICT R&D expenditure is concentrated in the research field of information, computing and communication sciences, accounting for approximately 74 per cent of business and 77 per cent of public expenditure.

<table>
<thead>
<tr>
<th>Field of research</th>
<th>Contribution to public sector ICT R&amp;D (per cent)</th>
<th>Contribution to business sector ICT R&amp;D (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information, computing and communications sciences(^{29})</td>
<td>77</td>
<td>74</td>
</tr>
<tr>
<td>Communication technologies</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Electrical and electronic engineering</td>
<td>9.5</td>
<td>11</td>
</tr>
<tr>
<td>Computer hardware</td>
<td>0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Extracted from R&D data purchased from the ABS for 2003-04 (business) and 2002-03 (public).

Endnote

2. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.

4. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.

6. All ICT trade data derived from the Department of Foreign Affairs and Trade STARS database

8. It should be noted that the STARS database captures some but not all of software imports and exports as the definition is restricted to packaged software. A significant amount of software is classified as a service export and hence does not appear in these figures.

10. ICT services were generated by taking the aggregate of communication services, computer and information services and personal, cultural and recreation services in the ABS document, *International Trade in Goods and Services, Australia*, Cat. 5368.0.55.003

4. Total ICT R&D is the sum of private and public sector expenditure on ICT research fields. Total ICT R&D was calculated using private sector data for 2003-04 and public sector data for 2002-03 purchased from the ABS.

6. Gross expenditure is the sum of all research fields for both the public and private sectors. Gross expenditure was calculated using the data sets purchased from the ABS.

8. The ICT industry includes manufacturers, wholesale and retail traders, and service providers. ICT industry data is extracted from ABS data sets using the following ANZSIC codes: 2841, 2842, 2849, 2852, 4613, 4614, 4615, 7120, 7831, 7832, 7833 and 7834.

10. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.

12. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.


16. Countries for comparison were chosen on the basis of being major ICT trading partners with complete data sets.

18. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.

20. ABS, *Information and Communication Technology Australia* 2004-05, Cat. 8126.0 (published 25/9/2006). This survey is conducted every two years.


24. Birrell, Rapson and Smith (May 2006), *Australia’s net gains from international skilled movement*, Centre for Population and Urban Research, Monash University. This report is available online at: www.immi.gov.au/media/publications/research/index.htm#b


30. Birrell, Rapson and Smith (May 2006), *Australia’s net gains from international skilled movement*, Centre for Population and Urban Research, Monash University. This report is available online at: www.immi.gov.au/media/publications/research/index.htm#b


34. DEWR *Vacancy Report*, October 2006, available online at: www.workplace.gov.au

36. The years 2000-01 to 2003-04 are calculated using data purchased from the ABS.

38. The ICT industry includes manufacturers, wholesale and retail traders, and service providers. ICT industry data is extracted from ABS data sets using the following ANZSIC codes: 2841, 2842, 2849, 2852, 4613, 4614, 4615, 7120, 7831, 7832, 7833 and 7834.

40. Extracted from socio-economic objective data for 2003-04 purchased from the ABS.
6. Excluding ICT manufacturers (denoted by ANZSIC codes 2841, 2842, 2849 and 2852).

8. Excluding telecommunications services (denoted by ANZSIC code 7120).

10. Excluding ICT services (denoted by ANZSIC codes 7831, 7832, 7833 and 7834).

12. Excluding ICT wholesale (denoted by ANZSIC codes 4613, 4614 and 4615).

4. Includes: mining; electricity gas and water; construction; retail; accommodation cafes and restaurants; transport and storage; education; health and community services; cultural and recreational services.

6. Extracted from socio-economic objective data for 2002-03 purchased from the ABS.

8. The information, computing and communications sciences research field is made up of information systems, artificial intelligence and signal and image processing, computer software, computation theory and mathematics, and data format.

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