



Information and Communications Technology

Growth Industry Profile



Information and Communications Technology (ICT) is the world's fastest growing industry, with global revenues in excess of \$3 trillion.

The ICT industry generates a wide range of products and services used to handle information and aid the communication of voice, image or data, using various transmission media. ICT products include computers, work stations, transmission equipment, switches and cables, while ICT services include software development, data processing, storage and retrieval, computer maintenance, telecommunications services and specialist computer consultancy, to name a few.

ICT is an industry that is constantly expanding its coverage to take advantage of the increased capacity and decreasing size of microprocessors and other components that power computers, mobile telephones, printers, scanners, copiers, video and broadcast equipment.

ICT is a major element of the NSW services sector in its own right, in terms of employment, value of production and exports. It is even more important in supporting high growth industries in all areas of the economy, by virtue of the higher value addition and lower costs that ICT-driven products and services can deliver.

Investment by organisations in ICT has become an integral strategy for staying competitive in business, helping companies lift their productivity, achieve operating efficiencies and increase financial returns.

Worldwide ICT spending is predicted to grow at a compound annual rate of 6.3 per cent through to the end of 2010, providing commercial opportunities for Australia's ICT companies and career opportunities for skilled ICT personnel.



ICT – Supporting an Innovative Economy

Information and communications technology (ICT) is a unique industry sector. It has provided the building blocks for the modern economy, created tens of thousands of quality jobs for the State and will help determine the competitive position of NSW into the future.

The dominance of our service industries, the increasing sophistication and breadth of the State economy and the growing importance of online commerce have established NSW as the primary base for the nation's ICT industry.

Our world class telecommunications infrastructure, leading research and development facilities, advanced educational institutions and highly skilled and multilingual workforce offer a solid base upon which to sustain and expand NSW's role in the global economy.

The NSW Government is supporting a bright future for ICT in NSW. It is committed to maintaining collaborative alliances between government, business and research communities to enhance ICT innovation. The Government is also working to reduce the cost to business of utilising ICT-related intellectual property from the tertiary and research institutions it supports.

NSW Government activity in the ICT sector includes support for:

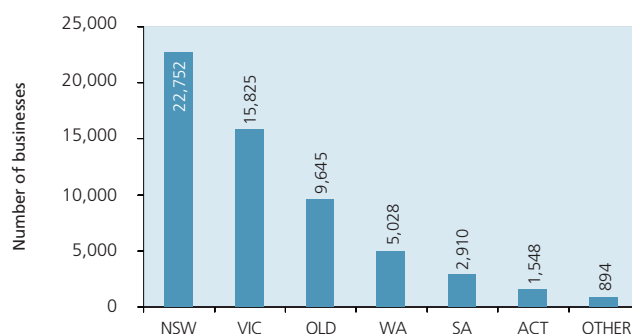
- ongoing research and development of new technologies
- the development of innovative start-up companies
- identifying export opportunities
- nurturing skills in ICT through training and education at all levels
- technology platforms and industry development through clustering
- attracting and anchoring ICT investment by major companies and major international ICT events.

This profile showcases the achievements of the NSW ICT sector and the NSW Government's commitment to it. The sector is one of NSW's key growth drivers, improving productivity and competitiveness right across the economy, and playing an important role in the quality of life of the wider community.

Key statistics

- Latest available Australian data shows that ICT accounts for 4.6 per cent of Australia's GDP – more than agriculture, forestry and fishing, and slightly less than mining.
- Australia was ranked third in the Asia Pacific for its e-business capabilities, and tenth world-wide, of the 69 economies surveyed by the Economist Intelligence Unit in 2007.
- Many of the world's top ICT companies in Australia have chosen Sydney for their Australasian base, including AOL, BenQ, CSC, Hewlett-Packard, IBM, Microsoft, Nokia, Oracle, Panasonic, Gartner, Samsung, SAP, SingTel Optus, and Sun Microsystems.
- Sydney, a major global internet exchange point and telecommunications hub, is serviced by deep sea fibre optic cables that link high speed metro and intra-city fibre cable networks.
- Of the 11 universities in NSW, about half are engaged in leading-edge ICT research such as internet and wireless technologies, laser and photonics, telecommunications, nanotechnology, smart manufacturing and quantum computing.
- ICT underpins all forms of business in NSW. In 2005–06, 89 per cent of businesses in NSW used a computer, 81 per cent used the internet, while 32 per cent reported placing orders for goods and services via the internet.

Number of ICT Specialist Businesses (June 2007)¹



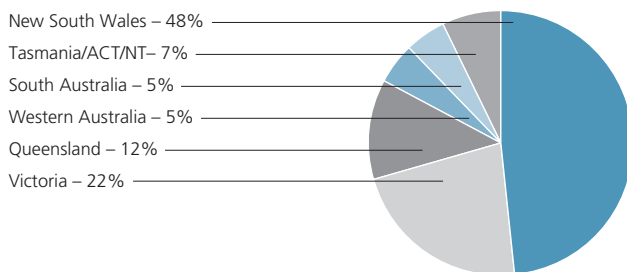
¹ Multi-state organisations are counted in each state in which they operate
Source: ABS – 8165.0 – Counts of Australian Businesses, including Entries and Exits, Jun 2003 to Jun 2007



NSW ICT strengths

- NSW accounts for 39 per cent of ICT businesses and 40 per cent of industry value-added output in Australia.
- NSW dominates telecommunications services, accounting for 47 per cent of the national total.
- NSW accounts for 59 per cent and 57 per cent of national industry value-added in ICT wholesale trade and computer services respectively.
- The State's ICT labour force is large and diverse. NSW has 40 per cent of people employed in ICT specialist businesses in Australia. These frontline businesses derive more than half of their income directly from ICT activity.
- Over 140,000 people in NSW are employed in ICT occupations, about 38 per cent of the national total. This includes 88,500 computer professionals and technicians, and 51,900 electronic engineers/technicians and communication technicians. Victoria has a 26 per cent share and Queensland 15 per cent.
- NSW leads all other Australian States and Territories in ICT research capabilities, being the headquarters of the National ICT Centre of Excellence (NICTA), as well as five national centres of excellence in ICT-related research fields, two cooperative research centres, four R&D facilities under the National Collaborative Research Infrastructure Strategy (NCRIS), and the Australian Centre for Advanced Computing and Communications (ac3).
- NSW leads Australia's ICT services exports. In 2006–07, NSW exports of ICT services exceeded \$1.1 billion, 48 per cent of the national total.

Australia's ICT Services Exports 2006–07



Source: ABS cat 5368.0 International trade in Goods and Services, 2006–07

NSW is well positioned to prosper from the future growth and development of Australia's ICT sector as Australia's most populous State, and with Sydney internationally recognised as Australia's global city.

NSW has firms with competitive strengths in specialist niches in the ICT industry, such as:

- automation technologies
- banking and finance solutions
- digital media and content and film solutions
- engineering design
- health and education
- medical devices
- mining applications
- security solutions
- smart internet based technologies
- wireless and communications.

Australian Information Industry Association Members' Report, 2006.

Opportunities for ICT also arise from the State's broader industry strengths in business services, financial and insurance services, advertising and media, commercial broadcasting, retail, mining, education-related and professional services, construction services and services related to the transportation sector.

The outlook for attracting further inbound investment in ICT is also positive. Sydney presents an attractive option for global ICT companies seeking an Asia Pacific base, with remuneration levels for locally engaged ICT skilled employees comparatively lower than in major international business capitals including New York, London, Frankfurt, Tokyo and Hong Kong. This makes Sydney a preferred regional destination for knowledge processing services as well as global ICT management services.

NSW offers excellent higher education and vocational training institutions that have created a highly skilled ICT workforce. Currently, there are 14,000 students studying ICT related courses at the 11 universities in NSW. Another 25,800 students are enrolled in computer science and information technology fields of study at NSW TAFE colleges.

The ICT sector in NSW has active and well-supported industry associations including the Australian Information Industry Association, the Australian Computer Society, the Australian Interactive Media Industry Association and the Australian Industry Group. These bodies work closely with Government in developing policies and initiatives relating to the ICT sector.

Company Snapshots

NSW is home to the full spectrum of ICT organisations – from multinationals lured by Sydney's global city status to innovative start-ups growing new operations in Australia's leading ICT State.

Alcatel provides communications solutions to telecommunication carriers, internet service providers and enterprises for delivery of voice, data and video applications in over 130 countries. The company recently established its Fibre-to-the-Premise Centre of Excellence in Sydney. The centre is Alcatel's fourth centre of excellence in Australia. The other three centres are dedicated to supporting Alcatel's business in the area of Intelligent Networks, Next Generation Networks and Operations Support Systems in Australia. The centre's full-time personnel will form 'virtual teams' with other Alcatel staff around the world, including over 300 software engineers from the company's service delivery facility in Sydney.

Atlassian Software is a Sydney-based global leader specialising in online collaboration for technical teams, with over 10,000 customers in more than 98 countries. The company has successfully filled the gap between free open source software and high-cost enterprise software, by developing a number of organisational collaboration products, with over 90 per cent of its business revenue now derived from export markets. Atlassian's JIRA and Confluence software suites are the leading products in their respective markets globally. JIRA is an issue-tracking software that helps define, track and manage the issues and tasks that emerge during a project allowing full-text searching, adaptable dashboards and advanced filtering functions. Confluence is the world's most popular commercial enterprise wiki solution.

IBA Health is the leading health IT provider in Australia, China, India, the Middle East, New Zealand, South Africa and South-East Asia and also has installations in New Zealand, Singapore, Sudan, and the UK. IBA Health's solutions automate critical areas of healthcare activity



providing reliable, instant access to patient and business information. IBA's applications replace cumbersome manual processes making healthcare management easier and more cost efficient, leading to better patient care. With revenues in the range of \$380 million, the Australian Stock Exchange listed company recently acquired iSoft, a UK-based leading healthcare software company which had well established markets in Europe and the Asia Pacific.

Machinery Automation and Robotics (MAR)

designs, builds and integrates automated manufacturing and industrial solutions. It incorporates advanced robotics applications across a wide range of industries including food, beverage, brewing, meat, automotive, water treatment and filtration and metals industries. MAR's expertise in world-leading hardware and software platforms, especially its skills in analysis, design, programming, systems integration, risk management and fault finding, have helped secure an impressive list of global customers including Tooheys, Cadbury Schweppes, Arnott's, Tomago Aluminum, Darrell Lee, Huhtamaki and Bluescope Steel.

Unisys is the world's fourth-largest computer services company. The company has a long history of technology innovation in Australia. Burroughs, one of the predecessors of Unisys, was first registered in Australia in 1938. Since then, thousands of Australians have been trained and employed by Unisys, and many millions of dollars directly invested in the Australian ICT sector. With its Asia Pacific headquarters in Sydney, Unisys employs about 2,000 people in Australia, and nearly 2,500 across the South Pacific. Sydney is home to the Unisys Managed Services Outsourcing Centre, which is one of the most sophisticated and secure managed services centres in the Southern Hemisphere. Unisys also has a Unisys Technology Centre, a Logistics and Repair Centre, and a Centre of Excellence for E-Business in Sydney that it established in partnership with the NSW Government.

New South Wales and Sydney's world class skills and infrastructure has helped position IBM to continually attract work from overseas. In fact, in 2006, IBM generated exports of A\$576 million for Australia. IBM employs more than 5,000 people across 13 NSW locations, including our headquarters in Sydney, and each year we invest over \$40 million in research and development. GLEN BOREHAM, CEO AND MANAGING DIRECTOR, IBM AUSTRALIA AND NEW ZEALAND



ICT Research and Development

National Information and Communications Technology Australia (NICTA)

NICTA is the national Centre of Excellence in Information and Communications Technology headquartered in Sydney. This centre is a world-class research and training institution which helps position NSW as the leading ICT hub in the Asia Pacific region. NICTA's research is driven by four themes: 'Embedded Systems', 'Making Sense of Data', 'Managing Complexity' and 'Networked Systems'. During the period 1 January–31 December 2007, NICTA invested \$33 million in NSW. As of December 2007, 42 per cent of NICTA research projects were located within the State. NICTA currently employs over 100 full-time researchers across two research laboratories in NSW, and has one major project plus two spin-out companies located in the State.

Centre of Excellence for Autonomous Systems

Robotics – or autonomous systems – has the potential to offer benefits and solutions in a range of areas. The Centre of Excellence for Autonomous Systems in Sydney is the second largest centre of its kind in the world, with more than 150 research staff and PhD students. The centre's research applies to industries such as mining, transport, construction, aerospace, forestry, and health and to hazardous activities such as bushfire fighting, search-and-rescue, and defence. The centre is a leader at putting science to work in the real world, attracting more than \$10 million of industry funding in the past three years.

Centre of Excellence for Quantum Computer Technology

The Centre of Excellence for Quantum Computer Technology is an Australian multi-university collaboration undertaking the science and engineering required to develop the fundamental building blocks for the construction of quantum computing devices.

Quantum computers will have the ability to be millions of times more powerful than today's supercomputers with their encryption potential playing an important role in security applications, the financial sector and in communications. The creation of a quantum computer is a long term research goal, but the intellectual property being developed has immediate applications in the microelectronics industry.

Centre of Excellence for Ultrahigh Bandwidth Devices for Optical Systems (CUDOS)

The CUDOS research program aims to provide information delivery hundreds of times faster than is possible today. CUDOS's mission is to replace the router and other electronic components in today's networks with a photonic chip that would remove the need to convert light to electronic signals, be the size of a thumbnail, cost much less than a router and consume very little power. This technology has particular applications in Australia, considering the need for broadband communications over long distances to link regional communities with major urban centres, and would present strong export opportunities for NSW.

Australian National Fabrication Facility

Established in 2007, under the National Collaborative Research Infrastructure Strategy (NCRIS), the facility links seven university-based nodes with a total of 17 member institutions nationally. NSW is home to three of these nodes that complement Australia's world-class strengths in design and development of nanostructured electronic materials, silicon quantum computing and microphotonic devices. The centre enables users to process hard materials (metals, composites and ceramics) and soft materials (polymers and polymer-biological moieties) and transform these into structures that have applications in sensors, medical and communication devices used by the automotive, communications and defence sectors.

Home to over 42 per cent of the nation's ICT businesses and employing more than 120,000 technology professionals, NSW is a powerful force in Australia's IT sector. Microsoft Australia employs more than 750 people, with over 450 based in its national headquarters in Sydney. As a future facing nation with a passion for technology and innovation, Australia and NSW offer Microsoft and its employees exceptional opportunities to pursue commercial and personal success. TRACEY FELLOWS, MANAGING DIRECTOR, MICROSOFT AUSTRALIA



NSW Government Support

Growth of the ICT industry is at the heart of the NSW economy's performance and the NSW Government recognises this significance through its programs and services. The NSW Government's support for the ICT sector is based on cooperation between government and industry in these key areas:

Strengthening the ICT industry through programs such as the Australian Technology Showcase, the Exporters Network and other small business programs. These have supported the entrepreneurial and business capabilities of more than 600 local ICT companies, helping them to accelerate their business growth and access world markets.

Nurturing new ICT products and services by supporting leading research and development organisations, linking ICT companies with universities and research



Riverside Corporate Park in the North Ryde technology corridor

organisations and assisting ICT companies in NSW to access public and private sector funding. NICTA's research collaboration with NSW companies, creation of five spin-out companies and the lodgement of over 40 patent applications arising from its innovative research are examples of the outcomes achieved.

Facilitating alliances and clusters by providing knowledge, guidance and support to regionally-focused clusters in Western and Northern Sydney, Sutherland, Hunter, Illawarra, Central Coast and the Coffs Coast regions and technologically-focused clusters including NSW.Net, Embedded Systems Australia and the Open Source ICT industry cluster. These clusters of ICT companies stimulate networking, create business opportunities, and boost the process of technology and information transfer between growing companies.

Expanding ICT Infrastructure through the NSW Government ICT Strategic Executive Plan "People First – A new direction for ICT in NSW". This plan determines priorities for ICT funding across the whole of government, and is expected to create positive flow-on impacts for NSW companies.

Attracting and growing investment by working with major ICT companies to grow their operations by bringing new high-value functions to the State. The Government worked with IBM to bring its e-innovation centre to Sydney, which now employs over 500 people. Of the multinational ICT companies with operations in Australia servicing the Asia Pacific, 76 per cent are in NSW.

Promoting NSW as a competitive leader in ICT, undertaking targeted overseas business missions, supporting technology companies through its business development programs and by raising awareness within the ICT business community of export opportunities. The NSW Government will continue to work with industry to support major international ICT tradeshows such as CeBIT Australia, CommunicAsia, NASSCOM Leaders Forum and Consumer Electronics Show.