



Research and Development that delivers

Australia offers a network of advanced facilities that can assist in lowering the cost of research. The country also has a dynamic research community with strong linkages between business and the universities.

The 2008 EIU *E-Readiness Report* benchmarked Australia fourth for eReadiness globally after the US, Hong Kong and Sweden.¹ The 2008 EIU *IT Industry Competitiveness Report* also rated Australia highly as the:

- Second most competitive location in the Asia Pacific region after Taiwan (seventh globally):
- First in Asia Pacific (second globally) for Legal Environment
- First in Asia Pacific (eighth globally) for IT Infrastructure
- Third in Asia Pacific (sixth globally) for Human Capital
- Second in Asia Pacific (sixth globally) for Support for IT Industry Development

The 2008 IMD *World Competitiveness Yearbook* also ranks Australia fourth in the world for the development and application of technology (after the USA, Canada and Taiwan but well above Japan and Germany). Australia also figures in the top ten in the world for R&D expenditure per capita for countries with a population over 20 million.²

Quality ICT Research

Australian computer science and engineering academics and researchers are highly regarded by the international community. They have contributed to many leading milestone scientific discoveries and commercial developments. Examples include:

- EFTPOS (Electronic Funds Transfer at Point Of Sale);
- The Black Box Flight Recorder;
- Wireless Local Area Network (WLAN) technology
- The silicon on sapphire semiconductor; and
- The world's first Mobile Location Centre (MLC) capable of pinpointing a mobile subscriber's geographical location in real time to assist emergency services teams.

Australian researchers³ are the first in the world to have developed an integrated transceiver, a complete transmitter and receiver, on a single chip at 60GHz on CMOS. This enables the wireless transfer of audio and video data at up to 5 gigabits per second, ten times the current maximum wireless transfer rate, at one-tenth the cost. In addition, Australian researchers⁴ have developed a unique open-source microkernel solution for embedded systems in mobile phones and broadband internet devices which offers performance combined with strong protection and security features.

Collaborative ICT Research and Development

Industry plays a leading role in developing business solutions through applied ICT technology. Accordingly, the private sector takes a leadership role in ICT R&D in Australia, which is enhanced through the strong support of and collaboration with Australia's world-class universities and government facilities.

¹ EIU, *E-readiness Rankings 2008, Maintaining Momentum*. E-readiness is a measure of the quality of a country's information and communications technology (ICT) infrastructure and the ability of its consumers, businesses and governments to use ICT to their economic and social benefit.

² IMD, *World Competitiveness Yearbook 2008*

³ NICTA's Gigabit Wireless Project - http://nicta.com.au/research/projects/60ghz_wireless

⁴ OK Labs - www.ok-labs.com



Total R&D expenditure by the ICT industry in Australia is around A\$5 billion per annum – accounting for approximately 23 per cent of gross expenditure on R&D (GERD).⁵

By field of research, Engineering and ICT receives more than 50 per cent of all GERD in Australia.⁶

Business Expenditure on R&D (BERD) increased for the eighth consecutive year in 2006-07 to total A\$12 billion – effectively doubling over the past five years.⁷

The majority of Business Expenditure on R&D is conducted in the fields of engineering and technology (A\$6.9 billion or 57 per cent) and information, computing and communication sciences (A\$3.2 billion or 26.3 per cent).⁸

Within information, computing and computer sciences, key areas of R&D expenditure include information systems (45 per cent or \$1,424m) and computer software (38.8 per cent or A\$1,227m).⁹

Businesses in the category ‘information media and telecommunications industries’ reported the second largest growth in R&D expenditure, increasing by A\$341 million, while the category ‘professional scientific and technical service industries’ was also one of the major contributors to R&D expenditure, spending A\$2 billion (or 17 per cent of total BERD).¹⁰

Intellectual Property

Australia is ranked one of the leading nations in the world for political stability and regulatory transparency, including recognition as one of the most effective and advanced legal systems in the world for the protection of intellectual property.¹¹ The 2008 EIU IT Industry Competitiveness report ranked Australia second only after the US in terms of ‘legal foundations for technology development’. Australia also ranked highly for the comprehensiveness, transparency and relatively strong enforcement of intellectual property rights. This provides certainty and security for multinational firms developing new technologies here.

Government Support

The R&D Tax Concession is the principal Government initiative to enhance and increase the amount of R&D being conducted in Australia. It is broad-based, not industry specific, and market-driven, with each company controlling the direction and thrust of their R&D.

The Concession enables Australian companies to deduct up to 125 per cent of eligible expenditure incurred on R&D activities from assessable income when lodging their tax returns. A 175 per cent Incremental (Premium) Tax Concession and R&D Tax Offset is also available in certain circumstances. For instance, multinationals in Australia are eligible to access the 175 per cent Premium Tax Concession on incremental spending on R&D where the intellectual property is not held in Australia.

In January 2008, the Australian Government commissioned a Review of the National Innovation System. The recommendations were presented in August 2008:

http://www.innovation.gov.au/innovationreview/Documents/NIS_summary_web3.pdf

⁵ ABS, Cat No 8112.0 Research and Experimental Development, All Sector Summary 2006-07. Figure includes the sum of private and public expenditure in the Information Media and Telecommunications and Professional, Scientific and Technical Services sectors.

⁶ ABS, Cat No 8104.0: Research and Experimental Development, Businesses, Australia, 2006-07, October 2008; ABS, Cat No 8112.0: Gross expenditure on R&D, by sector–by research field 2006–07

⁷ ABS, Cat No 8104.0: Research and Experimental Development, Businesses, Australia, 2006-07, October 2008

⁸ ABS, Cat No 8104.0: Research and Experimental Development, Businesses, Australia, 2006-07, October 2008; ABS 8112.0, Gross expenditure on R&D, by sector–by research field 2006–07

⁹ ABS, Cat No 8104.0: Research and Experimental Development, Businesses, Australia, 2006-07, October 2008

¹⁰ ABS, ‘Business Spending on research and development reaches \$12 billion: ABS’, 14 October 2008

¹¹ EIU *IT Industry Competitiveness Report*, 2008; World Competitiveness Yearbook 2008



The review ranged across a number of key themes including innovation in business, fostering Australia's talent pool, excellence in national research, information and market design, and taxation.

National ICT Research Infrastructure

Australia is home to high quality research infrastructure and facilities. Many Multinational Enterprises (MNEs) already have established facilities in Australia for R&D including, NEC, Novell, Alcatel, Honeywell and Toshiba.

To foster an innovative culture and enrich Australia's competitiveness, the Australian Government has assisted in the creation of major national research centres. The most significant centres for ICT research are:

CSIRO – ICT Centre

www3.ict.csiro.au

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's largest publicly funded research agency and one of the largest and most diverse research organisations in the world. The CSIRO ICT Centre is the hub for ICT research at the CSIRO. Australian industries are enthusiastic adopters of ICT solutions so the Centre focuses its ICT research in areas where its work has the potential to create competitive advantage for Australia, as well as leading to globally adopted solutions. The Centre actively develops partnerships with businesses and governments to create paths to market for their research results.

National ICT Australia (NICTA)

www.nicta.com.au

Australia's ICT Centre of Excellence, NICTA is Australia's premier ICT specific research body, employing 300 researchers and over 200 PhD students in strategically important areas of ICT. NICTA works in close collaboration with industry and other research institutions to solve problems and make breakthroughs in ICT which can be put to use for public good.

The Defence Science and Technology Organisation (DSTO)

www.dsto.defence.gov.au

DSTO is responsible for ensuring expert, impartial and innovative application of science and technology to meet national security needs.

ICT Cooperative Research Centres (CRCs)

The Cooperative Research Centres (CRC) program focuses on collaborative links between industry, research and educational organisations.

Australasian CRC for Interaction Design (ACID)

(QLD) www.interactiondesign.com.au

ACID conducts research in interaction design and user experience design. It focuses on suburban communities, creative communities, virtual communities, indigenous communities and new models of television advertising. Audience research is the core activity of the program which is then translated into other initiatives, including content production, application development and hardware solutions.



Capital Markets CRC

(NSW) www.cmcrc.com

The Capital Markets CRC brings together 23 domestic and international Partners including four Sydney-based universities and has established a range of companies offering market integrity and efficiency enhancing solutions. With a focus on the design and operation of cross market, real-time fraud detection services in the securities markets, the CRC examines security market design/microstructure, compliance systems, experimental markets, corporate governance and securities legislation. Research covers data mining, data management, data visualisation and language technology with the disciplines of finance, accounting and the law.

CRC for Spatial Information

(VIC) www.crcsi.com.au

Focused on spatial information applications, the CRCSI is actively involved in IP generation and driving the utilisation of spatial solutions across sectors, including utilities/ infrastructure, health, agriculture, insurance, banking, finance, entertainment and retail. Based in Victoria, with nodes in WA and QLD, the CRC has many industry partners and helped establish the Australian Spatial Consortium (<http://spatialconsortium.org.au>).

Smart Services CRC

(NSW) www.smartservicescrc.com.au

Smart Services CRC is focused on addressing challenges across services including customer service needs, ecosystems for service delivery and services of the future. Covering services in areas such as media, finance and government (including health), initial projects are undertaking R&D in Audience and Market Foresight, Social Media: tools for User-Generated Content, Personalisation, Multi-channel Content Distribution & Mobile Personalisation, Immersive Multi-media Services, Common Business and Service Frameworks, Service Aggregation, Service Delivery Framework, One-Stop Personalised Financial Services, Education and New Media, and Services 2020. Based in NSW and with research nodes in Melbourne, Sydney and Brisbane, the CRC partners include 6 universities (NSW, QUT, RMIT, Swinburne, Sydney, Wollongong) and industry participants such as Infosys, RACQ, SAP and Telstra.

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