



# Australian Intellectual Property Report 2013





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# 1. Introduction

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In today's global economy, a well-functioning intellectual property (IP) system can foster innovation and encourage the flow of ideas and technology domestically and across borders.

Countries that are global innovation leaders now invest more in ideas than they do in machines and factories.<sup>1</sup> The rights that protect these ideas are significant business assets as well as a key component of Australia's innovation system.

The fundamental role of an IP system is to provide an incentive to invest in innovation. This is achieved by granting temporary exclusive commercial control to the inventor in exchange for public disclosure of information about their invention. A well-functioning IP system gives innovators and investors confidence that their innovations will be protected from imitation while permitting public disclosure of those new ideas.

IP rights provide protection only in the countries that grant them, and Appendix A outlines how they operate in Australia.

This report provides a collation of data and information about the IP system in Australia, where Australia sits in the global IP system, and how it measures up against other countries. It is the first in a regular series of publications about the IP system. Future editions will:

- provide regular updates of the data presented in this edition;
- provide expanded datasets as these become available; and
- provide detailed analysis of particular aspects of the IP system.

All the data, graphs and statistics are available free online at [www.ipaustralia.gov.au](http://www.ipaustralia.gov.au). We welcome all comments and queries about this report. Please contact us by:

- telephone 1300 65 1010 (local call cost within Australia) or +61 2 6283 2999 (international call); or
- email to: [ipreport@ipaustralia.gov.au](mailto:ipreport@ipaustralia.gov.au)

IP Australia is the Government agency that administers IP rights and legislation relating to patents, trade marks, designs and plant breeder's rights in Australia.

IP Australia also promotes awareness of IP, provides advice to Government on the development of IP policy and contributes to international negotiations and cooperation to support the global IP system.

The Attorney-General's Department administers copyright separately.



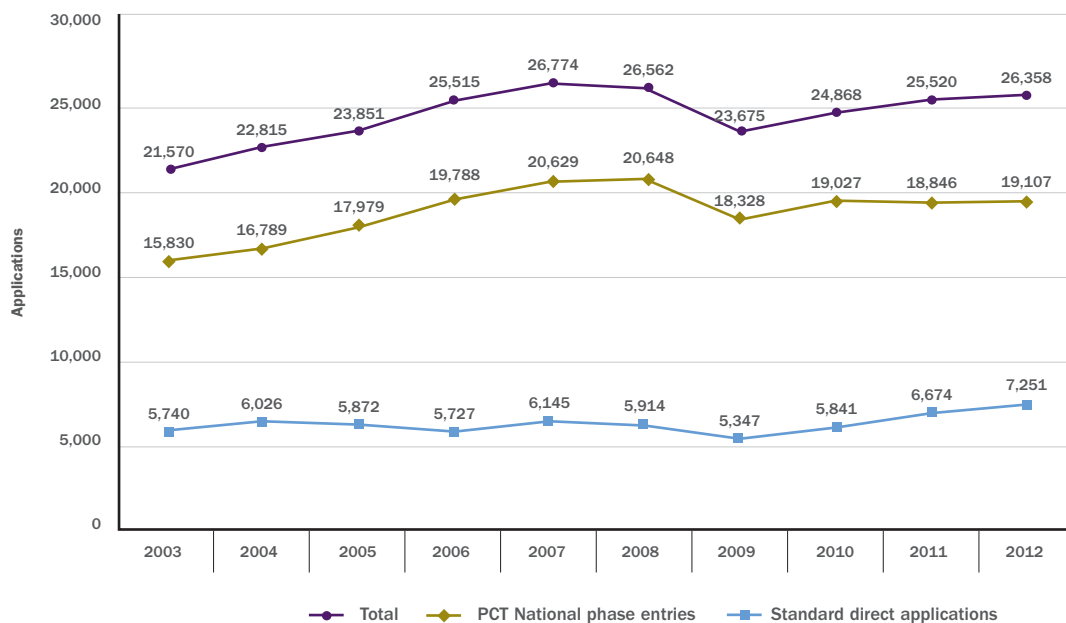
## 2. IP applications in Australia

Overall, applications for patents and trade marks in Australia dipped during the global financial crisis (GFC). Patent filings have since recovered and trade mark and design filings now exceed pre-GFC levels.

From 2011 to 2012, we have seen growth in patent and trade mark filings from Australian applicants as well as applicants from the United States of America (US) and Asia, but a decline from most major filing countries in Europe. The majority of patent, design and plant breeder's rights are filed by non-residents, and the majority of trade marks are filed by Australian residents.

**PATENTS:** In Australia, there are two routes to apply for a standard patent: either directly with IP Australia, or through an international filing system under the Patent Cooperation Treaty (PCT).<sup>2</sup> Following the GFC in 2008-2009, the demand for Australian patents from both of these routes declined. PCT applications have been relatively flat since 2010, but the number of direct applications to IP Australia has rebounded strongly – with 36% growth over the last three years (Figure 1). These movements partly reflect an increased number of US residents filing directly with IP Australia rather than through a PCT application.

*Australian patent applications have recovered since the global financial crisis*



**Figure 1: Standard patent applications at IP Australia, 2003–12**

PCT = Patent Cooperation Treaty. Source: IP Australia

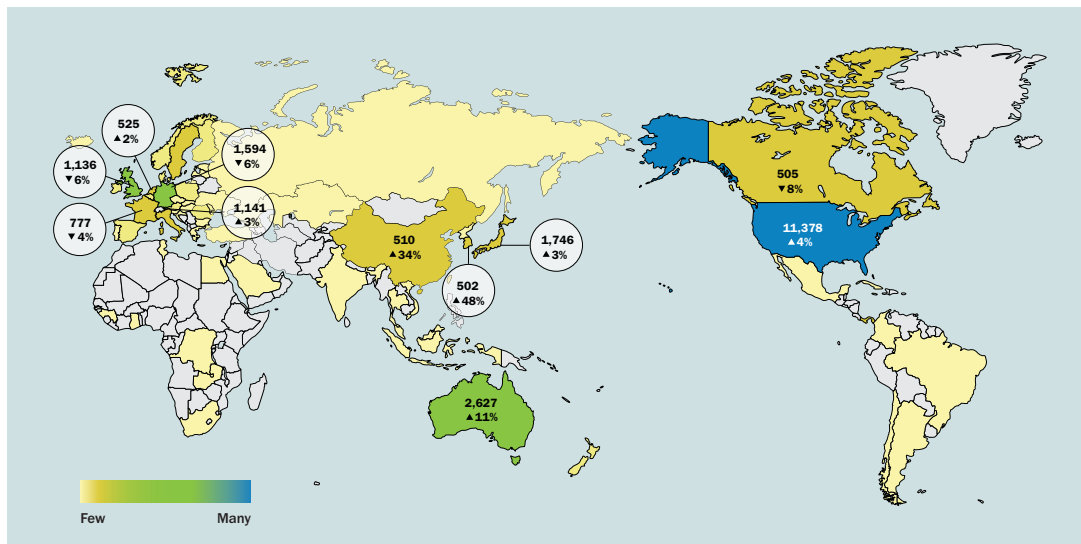
**90% of patent applications are from non-residents**

In 2012, IP Australia received 26,358 standard patent applications (PCT national-phase entries and standard direct applications). Of these, 90% were from non-residents and the remaining 10% were from Australian residents.

- Among non-Australian residents, US residents filed the highest number (11,376), followed by Japan (1,746) and Germany (1,594).

Figure 2 shows the top countries of origin for patent applications in Australia. The colours indicate the number of filings, increasing from few filings (light yellow) to many filings (blue). Percentage changes from 2011-2012 are also noted. For instance, applications from South Korea increased by 48%, China by 34%, Australia by 11% and the US by 4%.





**Figure 2: Top international patent applicants to IP Australia in 2012 and change from 2011**

Source: IP Australia

**GRANTED PATENTS:** As with applications, the majority of patents are granted to non-residents.

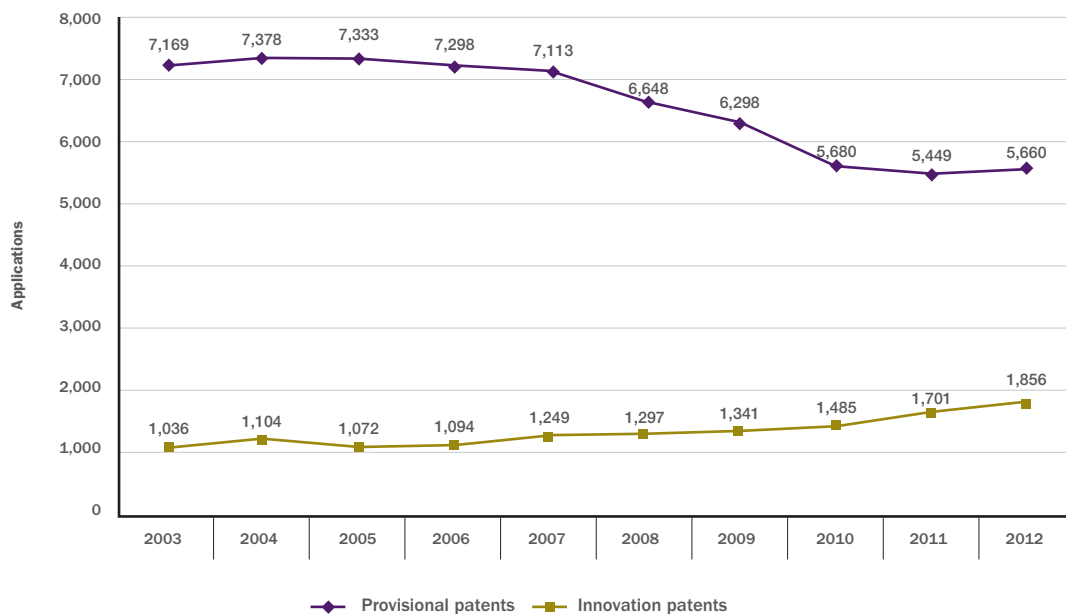
**Table 1: Patents granted to residents and non-residents, 2011 and 2012**

Source: IP Australia

	2011	2012
Australian	1,262	1,311
Non-Australian	16,611	16,413
<b>Total</b>	<b>17,873</b>	<b>17,724</b>

**INNOVATION PATENTS:** The demand for innovation patents has increased in recent years. Filings increased from 1,341 in 2009 to 1,856 in 2012 (Figure 3). Most of this increase reflects non-resident filings and China alone accounts for over half of the overall increase.<sup>3</sup>

*China driving growth in innovation patent filings*

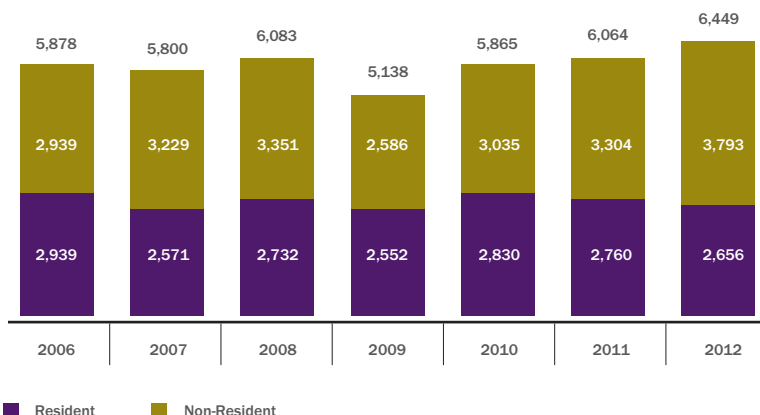


**Figure 3: Innovation and provisional patent applications, 2003–12**

Source: IP Australia

**PROVISIONAL PATENT APPLICATIONS:** The total number of filings began falling in the mid-2000s, but has stabilised in the last three years. Australian applicants accounted for 94% of total provisional filings in 2012.

**DESIGN RIGHTS:** In 2012, IP Australia received 6,449 design applications: 3,793 from non-residents and 2,656 from Australian residents (Figure 4).



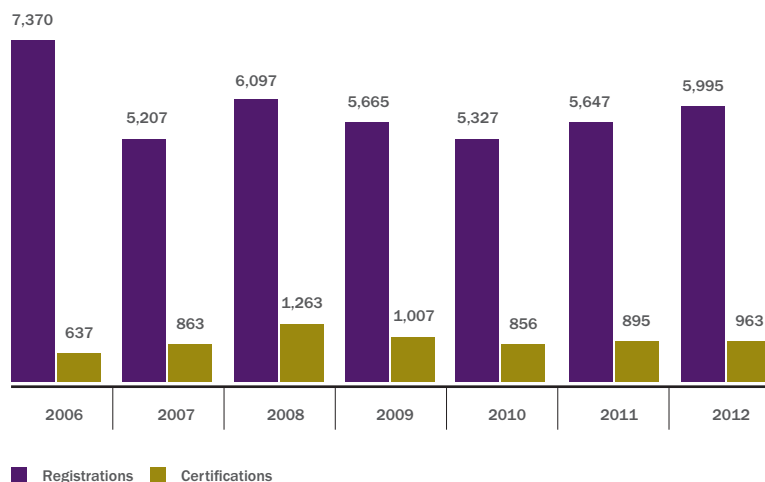
*Growth in design applications due to non-resident filings*

**Figure 4: Design applications, 2006-12**

Source: IP Australia

Design applications from non-residents have been increasing in volume and accounted for 59% of applications in 2012. Applications from Australian residents have declined slightly since 2006.

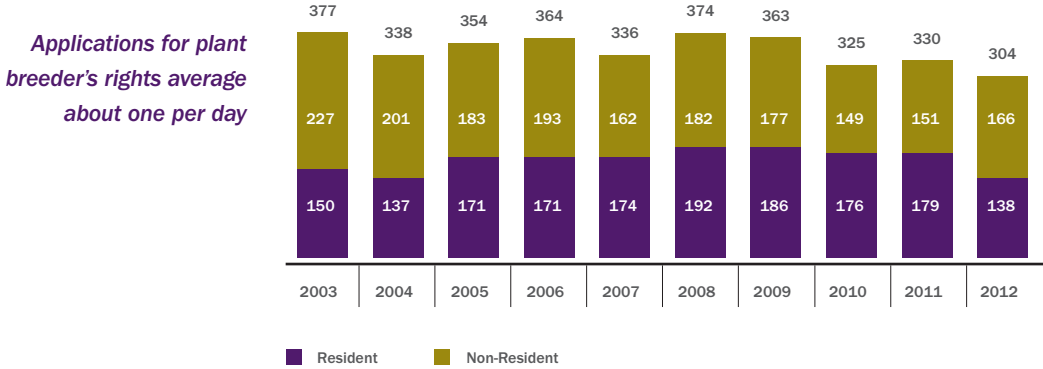
The examination of a design is voluntary, but to defend a design right in court, a successful examination is required to obtain certification. If there is no pressing need to defend the design, applicants often avoid paying the cost of examination, and this is reflected in the low number of certifications in Figure 5.



**Figure 5: Design registrations and certifications, 2006-12**

Source: IP Australia

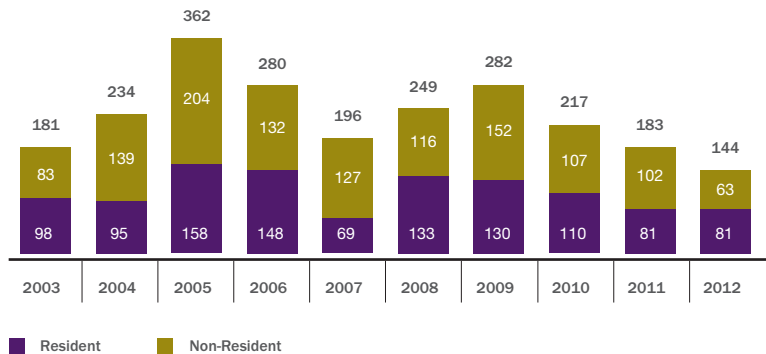
**PLANT BREEDER'S RIGHTS (PBR):** For the last decade, IP Australia received an average of 345 PBR applications per year. In 2012, approximately 45% of PBR applications were from Australian residents (Figure 6).



**Figure 6: Plant Breeder's Rights applications, 2003-12**

Source: IP Australia

Applicants must request official examination of the plant variety. A successful examination leads to a registered PBR. The US, New Zealand and the Netherlands are the most active applicants and together comprised 65% of non-resident applications and registrations in Australia last year. Of the total PBR registrations in 2012, 56% were by Australian residents.



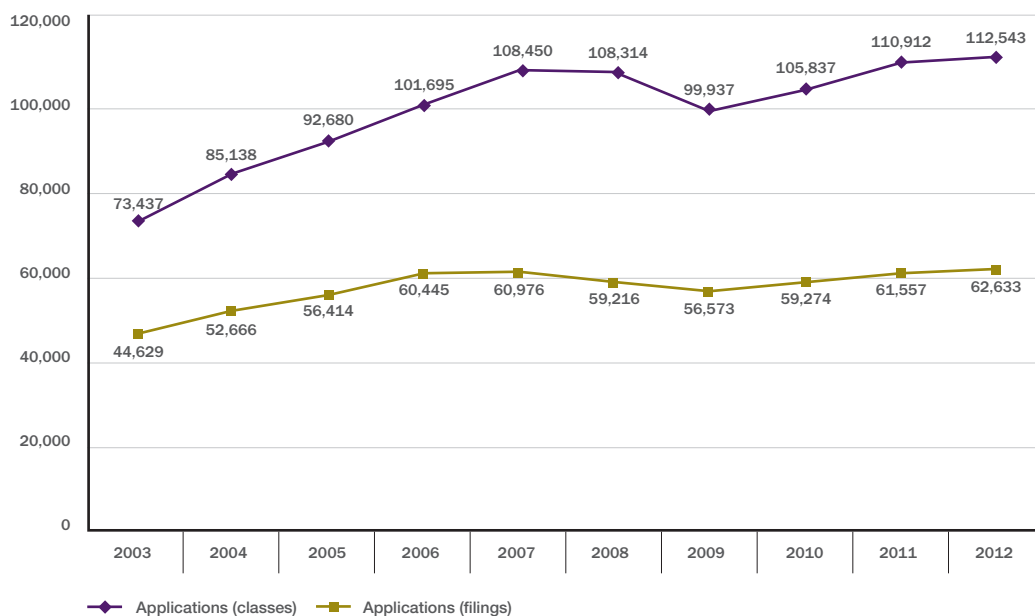
**Figure 7: Plant Breeder's Rights registrations, 2003-12**

Source: IP Australia

**TRADE MARKS:** Trade mark filings dipped at the start of the GFC. The current level of applications (in terms of both classes and filings) exceeds those prior to the crisis (Figure 8).

*Majority of trade mark filing from Australian residents*

The majority of trade mark filings in Australia originate from residents. In 2012, there were 41,106 (66%) applications from Australian residents and 21,527 (34%) applications from non-residents.



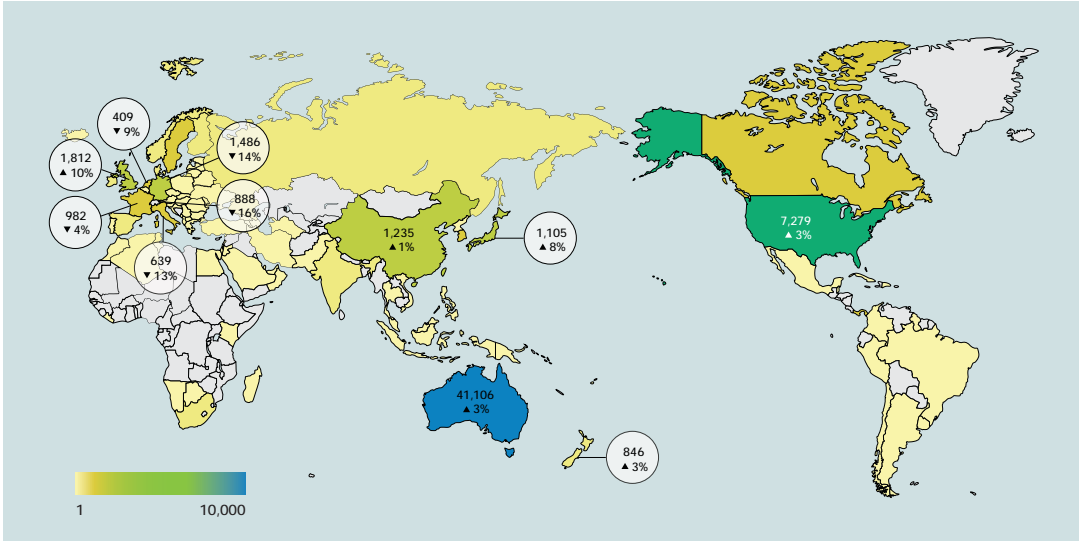
**Figure 8: Trade mark applications, filings and classes, 2003–12**

Source: IP Australia

Applications from the US, the United Kingdom (UK), China and Japan have increased since 2011 while applications from European residents have fallen. The level of foreign applications tends to be more volatile than domestic applications.

Figure 9 shows the total number of filings in 2012 by the first-named applicant’s country of residence. The colours indicate the number of filings, increasing from light-yellow (few filings) to blue (many filings). The numbers and the change in applications from 2011 to 2012 are shown for the top ten countries of origin and Australia.

*Trade mark applications in Australia: Australia and Asia growing. Europe slowing.*



**Figure 9: Trade mark applications (filings) by country of origin in 2012 and change from 2011**

Source: IP Australia



### 3. Australians filing overseas

**Patents:** In 2011, Australian residents filed 8,557 patent applications overseas.<sup>4</sup> The largest destination for Australian patent applicants is the US with 3,767 applications filed in 2011, which is 58% more applications than residents filed in Australia.

On a regional level, 30% of Australian patents filed overseas were in Asia (including China, Japan, India, Singapore, Hong Kong and South Korea), 44% in the US and 10% in Europe.

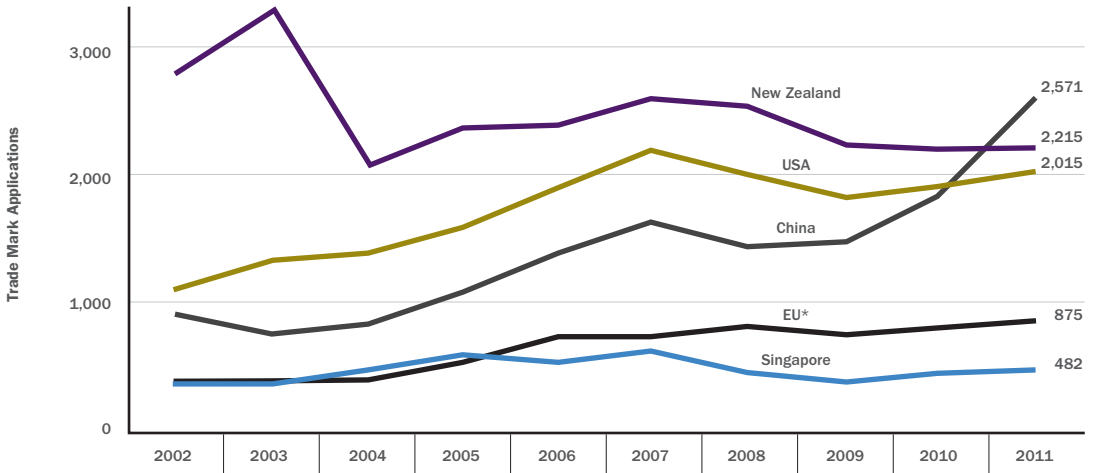
The international patent filing activity of Australians reflects several market factors, such as international differences in market size, commercial opportunities, and investment decisions.

**Trade marks:** Australia's international trade mark filing has shifted towards Asia over the past decade. Figure 10 shows that China is now the leading destination while Singapore replaced the UK in the top five.<sup>5</sup>

More than 50% of Australian trade mark filings overseas are in three countries: China 19%, New Zealand 17% and the US 15%. A further 20% go to other Asian countries.

*Australians file more patents abroad than at home*

*China now the top destination for Australian trade mark filers*



**Figure 10: Top five countries for Australians filing trade marks, 2002-11**

\* Refers to the European Union trade mark office, the Office of Harmonisation for the Internal Market. Source: WIPO

Given that the first step in protecting a new product or service is often trade mark registration, these recent trends may reflect a shift in market focus for Australian businesses.



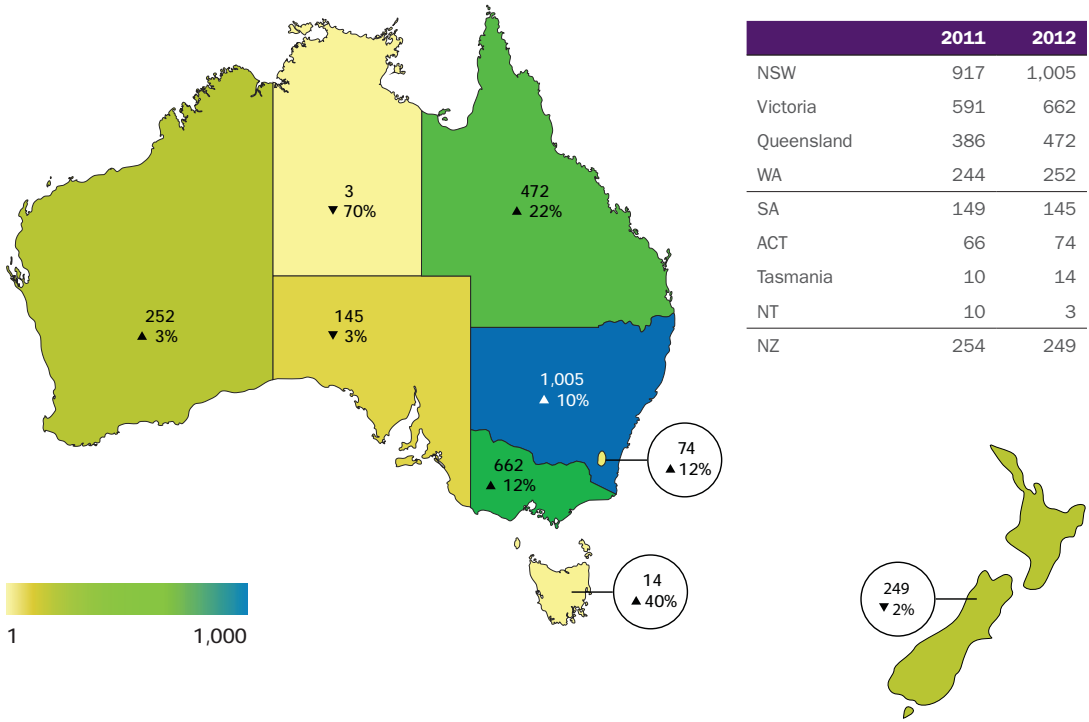


## 4. State of play in Australia

**Patents:** In 2012, the number of patent applications from Australian residents rose in all but one state and one territory. Figure 11 shows that more than 90% of applications originated in New South Wales (NSW), Victoria and Queensland.

The Australian Capital Territory (ACT) has the highest number of applications per person with 200 filings per million residents. Following the ACT were NSW (139), Victoria (119), Western Australia (106) and Queensland (105).<sup>6</sup>

*Strong growth in domestic patent filings*



Double digit growth in patent filings on Eastern Seaboard

Figure 11: Patent applications to IP Australia in 2012 and change from 2011

Source: IP Australia

**Trade marks:** In Australia, the majority of trade mark applications originate in NSW and Victoria. Within these states, the majority of applications originate from their capital cities.

In 2012, trade mark applications in Australia rose by 2.6% from the previous year. Figure 12 shows that the majority of this growth was from Queensland and South Australia.

Applications from Tasmania and the Northern Territory increased by 20% and 30% respectively (although starting from relatively low levels). Applications from Western Australia, NSW, Victoria and the ACT exhibited little change.

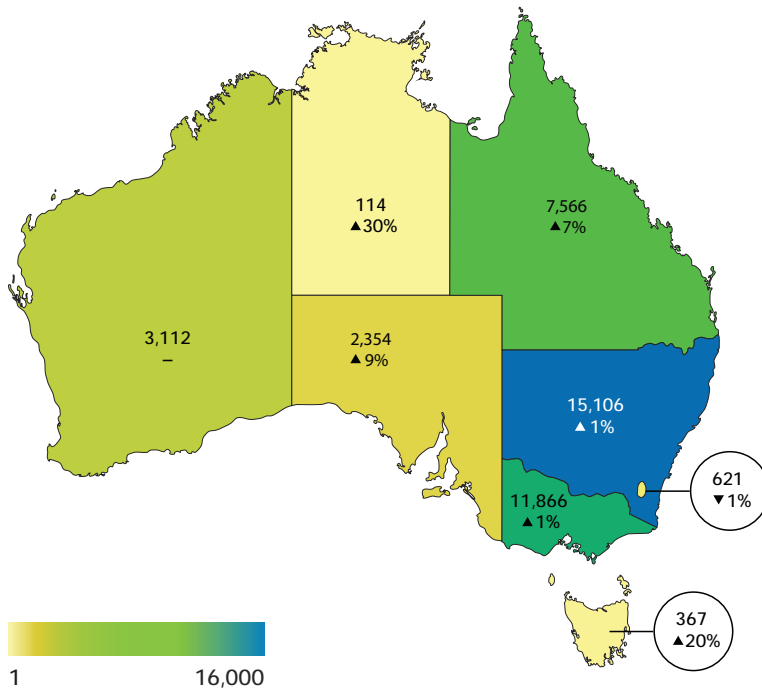


Figure 12: Trade mark filings to IP Australia in 2012 and change from 2011

Source: IP Australia

In terms of number of the filings per million residents, Victoria (2,129) and NSW (2,084) led the states and territories in 2012, followed by Queensland (1,676), the ACT (1,675), South Australia (1,431), and Western Australia (1,304). Tasmania and the Northern Territory each filed less than 1,000 trade marks per million residents.<sup>7</sup>

**Queensland and South Australia driving trade mark growth**



## 5. IP and innovation in Australia

**Australia's IP system is facing some key issues that can affect productivity and growth.**

*Australia's IP system is ranked third globally*

Australia's IP system ranks third globally in the latest Global IP Index which is based on effectiveness and administrative performance (Table 2).<sup>8</sup> Notably, every part of Australia's IP system considered by the Global IP Index is ranked in the top ten.<sup>9</sup>

On a national level, Australia is nearing completion of one of the most comprehensive periods of IP reform. It encompasses legislation, practice, service delivery and stakeholder engagement.

**Table 2: Global IP Index**

Source: TaylorWessing 2012

	Overall ranking	Trade mark	Patent	Copyright	Design	Private data
Germany	1st	1st	1st	3rd	1st	24th
UK	2nd	3rd	2nd	2nd	2nd	19th
Australia	3rd	2nd	3rd	6th	7th	1st
US	4th	6th	4th	1st	5th	17th

According to data from the Australian Bureau of Statistics, innovative firms are using IP rights more. While secrecy is still the most common approach to protecting IP,<sup>10</sup> the data shows that:

- large and medium size innovative firms increased their use of trade marks and copyright between 2008-09 and 2010-11; and
- innovative firms increased their use of patents and design rights in 2010-11.<sup>11</sup>

Evidence shows that firms benefit from using IP rights, and the trend that more firms are using IP rights to protect their ideas suggests potential for continued growth.

- Trade marks are strongly associated with innovative activity, particularly in knowledge intensive sectors, and can add substantial value to companies.<sup>12</sup>
- Patents have a positive effect on commercialisation efforts.<sup>13</sup>
- Commercialised inventions protected by a patent in Australia are on average 40-50% more valuable than inventions without patents.<sup>14</sup>

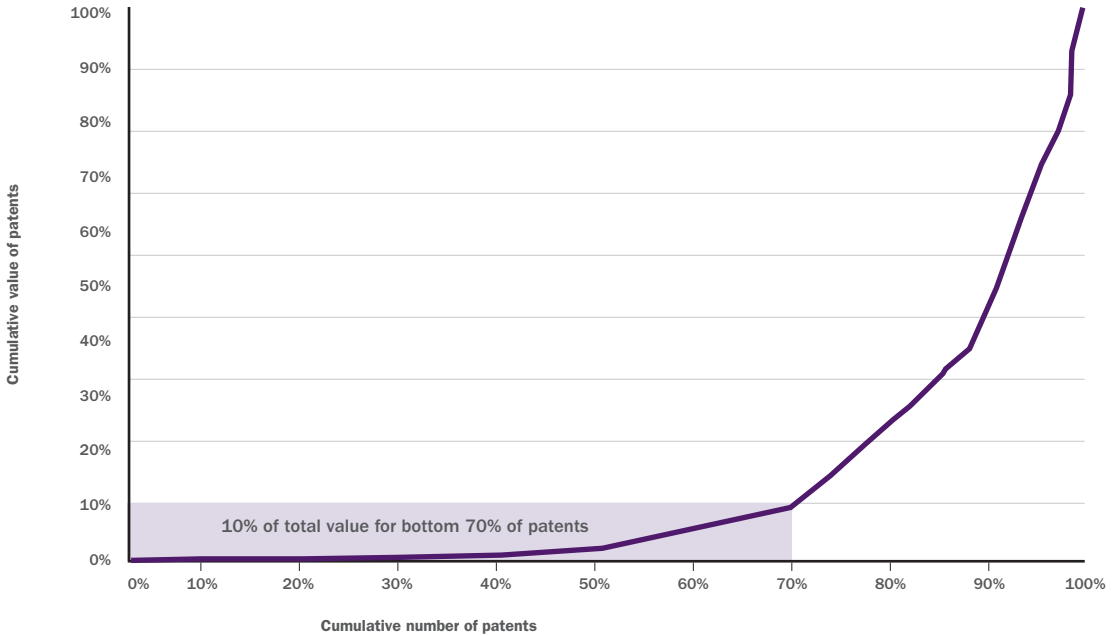
While these figures reflect benefits and increasing use of IP in Australia, other data reveal issues around who receives the majority of returns from patenting and other IP activity.

An often noted observation on IP is the winner-takes-all effect, when blockbuster products dominate the return in areas such as copyrighted films, patented products, trade marked global brands, and designs. This effect is evident in Australia: an estimated 30% of patents capture 90% of patent value (Figure 13).

*Innovative firms are using IP rights more*

*Firms benefit from using IP rights*

*Winner-takes-all effect in IP*



**Figure 13: The cumulative number and cumulative value of patents in Australia**

Source: Jensen, Thomson and Yong 2011<sup>15</sup>

**World trade in IP is rising, but no growth in Australia**

World trade in IP is rising, but there is no growth in Australian figures. On a global scale, royalty and licensing transactions for patents have grown rapidly in volume and as a share of world GDP. While growth in global patent transactions has outpaced world GDP, this is not mirrored in Australia’s economic figures: <sup>16</sup>

- For the past decade, IP transactions in Australia have remained steady, with IP receipts at roughly 0.25% to 0.5% of the current account;<sup>17</sup> and
- IP payments have been 1.0% to 1.5% of the current account, which means Australia pays out more than it earns.

It is worth noting that being a net importer of IP does not necessarily have adverse economic implications. As long as imported knowledge and technology translates into improved domestic productivity, there is scope for significant economic benefits.

Australia's investment in ideas is below that of other developed countries, especially innovation leaders. Such investment is the foundation for creating valuable IP rights.

- The recent Australian Innovation System Report 2012 noted the 'considerable gap between Australia and other OECD countries'.<sup>18</sup>
- In Australia, the intangible stock of capital is equal to only 4% of tangible assets, whereas in the US it is 91%.<sup>19</sup>

Australia is engaging actively in the new research debate about tangible and intangible assets. The underlying relationship between intangible investment and productivity growth suggests current investment in Australia is relatively low.<sup>20</sup>

Since the early 2000s, the world's most advanced economies have shifted from investing in tangible assets (machines and factories) to investing in intangible assets (research and development, design, organisational expertise and branding).<sup>21</sup>

- Australia has not yet made this shift, but investment in ideas is rising.<sup>22</sup>
- Firms report that of all the barriers to innovation they face, access to knowledge and technology is their lowest concern.<sup>23</sup>
- In 2010-11, more than 60% of intangible investment in Australia could be protected by IP rights.<sup>24</sup>

These intangible assets aim to build knowledge and IP, which in turn lead to new products and improved performance and productivity.<sup>25</sup>

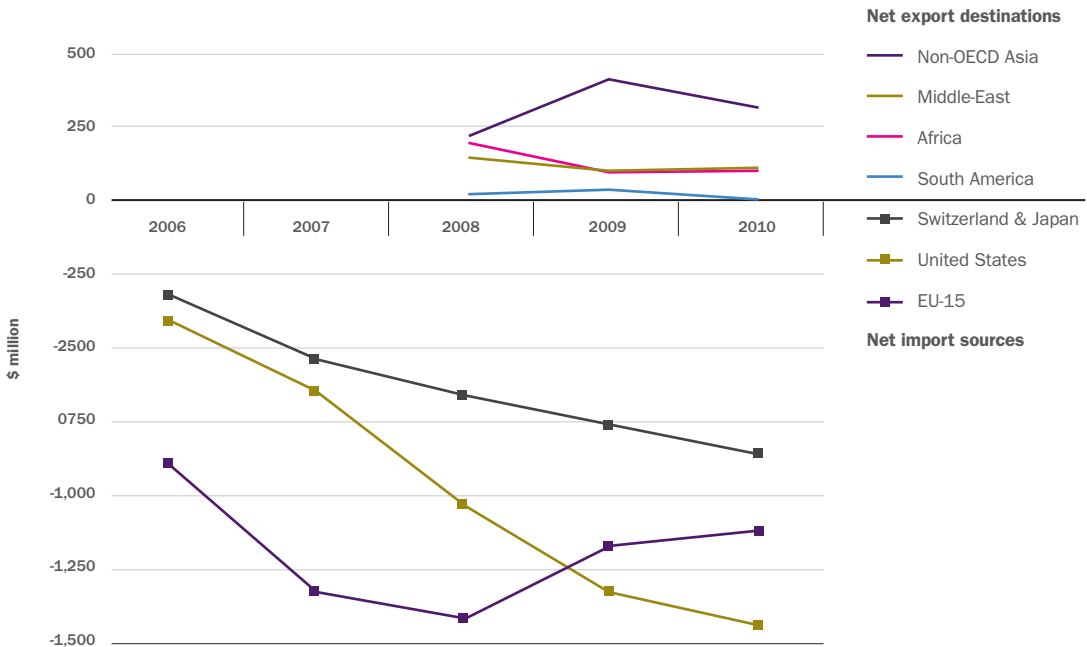
Trade opportunities for technology and IP rights are growing. Australia is currently a net technology importer: OECD estimates suggest that Australia spent \$8.3 billion on technology imports in 2011, but only earned \$4.9 billion exporting IP and technology.<sup>26</sup> The structure of those exports however points to growth possibilities based on certain industry trends:

- Australia's technology trade deficit is driven by Switzerland, Japan, the US and the EU-15;
- Australia holds a technology trade surplus with most Asian countries and the majority of non-OECD countries (Figure 14); and
- foreign companies invest more in conducting research and development in Australia than Australians invest overseas.<sup>27</sup>

*Australia is behind the curve on investment in ideas*

*Trade opportunities for technology and IP rights*

*A net technology trade surplus with non-OECD countries*



**Figure 14: Technology trade balance by region and selected countries**

Source: OECD; (EU-15 = European Union pre-2004 enlargement)

***Innovation, not production, is what drives growth today***

The location and ownership of economic resources — especially IP — increasingly determine who receives the returns from production and trade. For advanced industrialised economies, innovation, not production, is what drives growth today as global supply chains place less importance on assembly locations and greater importance on the origins of key resources and ideas.

- Australia’s place in the global supply chain is primarily as a raw material supplier, an activity at the bottom of the value chain according to the latest OECD statistics.<sup>28</sup>

While Australia has benefited so far from strong terms of trade in mining and resources, fluctuating global commodity prices jeopardise the sustainability of these economic benefits.



The value of ideas, however, appears to be steadily rising. The iPhone is a good example of this new direction. The iPhone is wholly assembled in China, but this activity only retains 2% of the profits (Table 3).

**Table 3: Distribution of value for the Apple iPhone in 2010**

*Source: Kramer, Linden and Dedrick (2008, 2011, 2011)<sup>29</sup>*

	<b>Share of value on iPhone sales</b>
Technology and brand: Apple	58%
Technology inputs: US, European Union, Taiwan, Japan, South Korea, others	14%
Materials	22%
Labour, non-China	4%
Labour, China	2%

Australia is a high-tech producer in agriculture and has a strong PBR system. However, some of our closest trading partners in Asia have yet to adopt a harmonised PBR system.

- Only Vietnam and Singapore provide equivalent PBR protection in South East Asia.
- Case study evidence suggests that a PBR system is positive but will ‘vary country-by-country and crop-by-crop’.<sup>30</sup>
- Plant breeders seem more likely to release their varieties in overseas countries which offer PBRs.<sup>31</sup>

The lack of a strong and well-functioning PBR system in Asia may limit Australia’s potential in high-tech agriculture and related industries.

Finally, patent backlogs are a global issue with local impacts: there are several million pending patent applications around the world.<sup>32</sup> Delays in granting IP rights can lead to increased uncertainty in the marketplace as well as around technology transactions.

For patents granted in Australia in 2012, it took an average of three and a half years from filing, or national phase entry, to IP Australia granting the patent. Applicants took an average of 17 months to request that the office do the examination. Once requested, it took an average 11 months to deliver the first report, and an additional 14 months to grant (Table 4). These extended periods of time during which the applicant holds their application can add excessive delays.

***Australia’s potential in high-tech agriculture industry limited by lack of strong Asian PBR system***

***Patent backlogs are a global issue with local impacts***

***Patents granted in 2012 took an average 3.5 years to get through the system***

**Table 4: Average time for a patent granted in 2011 and 2012 to move through the system**

*Source: IP Australia, grants only*

Exit pendency	2011 (months)	2012 (months)
1. Average time from filing or national phase entry to exam request	17.0	17.2
2. Average time from exam request to first report	13.0	10.7
3. Average time from first report to patent granted	14.1	14.7
<b>Total</b>	<b>44.1</b>	<b>42.6</b>

Note: Patent applications that were refused or lapsed are not included in the figures.

At present, applicants have 21 months from receiving the first report to resolving their application. The IP reforms will lower that period to 12 months, reducing backlogs and pendency.



## 6. Major Australian reform

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*Australia's Intellectual Property Laws Amendment (Raising the Bar) Act 2012* came into full effect on 15 April 2013, with changes to patents, trade marks, copyright, designs and plant breeder's rights.

To encourage a higher standard of innovation and provide greater legal clarity, the new laws raised the standard required for an invention to be granted a patent.

Exporters also stand to benefit from the higher standards aligning with major trading partners such as the US, Europe and China.

The new laws introduced a provision for Australian researchers that will allow them to experiment with ways to improve existing inventions without infringing existing patents.

The new rules set shorter timeframes to resolve disputes.

The new laws increased penalties for counterfeiting and introduced stronger powers for customs to seize counterfeit imports. The maximum penalty for trade mark infringement increased from two to five years imprisonment, with courts able to award exemplary damages against counterfeiters.

Also for the first time in Australia, trade mark and design matters can be taken to the Federal Magistrates' Court, a less expensive option than previously when these matters had to go to the Federal Court. Consequently, IP rights holders have more options to protect their rights.



## 7. A new research program

This IP report includes comprehensive data on IP activity in Australia and sets out the current state of the system. A number of areas require further research to develop our understanding of the role of IP in the Australian economy.

Over the coming year, IP Australia will focus on:

- building patent and trade mark datasets to make data publicly available;
- the value of international trade in IP;
- investment in design and the use of design rights;
- how trade mark law is applied and understood by consumers;
- the efficiency of the global patent examination system;
- the magnitude of patent backlogs and its effect on the patent system;
- the relationship between foreign direct investment and IP rights;
- the use of domestic and foreign IP in the mining sector.

This research will provide information to examine pressing issues such as the patent backlog and the use of IP rights by Australian firms, while exploring more complex trends. Linked datasets will provide valuable information about the role of firm characteristics and use of IP rights. Such datasets do not currently exist for Australia.<sup>33</sup>

In partnership with the Intellectual Property Research Institute of Australia (IPRIA) at The University of Melbourne, IP Australia is working to create datasets that can link patents and trade marks to company performance. Once developed, these datasets will be made available online to establish a basis for continued research in IP.

We will engage with stakeholders, interested academics and other government departments on this research agenda and welcome your feedback on the proposed agenda. We intend to deliver reports on these issues over the next 12–18 months.

We hope this report and its data will encourage more research and discussion towards developing a better understanding of IP in the Australian economy.

Our next report will update the available data and focus on the value of international trade in IP.



## Appendix: The four IP rights

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IP Australia is the Australian Government agency that administers IP rights and legislation relating to patents, trade marks, designs and plant breeder's rights. The Attorney-General's Department administers copyright separately.

The economic logic behind all IP rights is to promote innovation and investment in new ideas by giving inventors and innovators exclusive commercial control over their work for a limited time. IP rights provide protection only in the countries that grant them.

## Patents

A patent is available for all types of innovation, as long as nothing similar has been invented anywhere else in the world. A device, substance or process can be patented if it is proven to be new, inventive and useful. For a patent to be successfully granted, IP Australia must examine it and the invention must also:

- be novel, meaning the idea or technology cannot exist publicly anywhere else yet;
- be patent eligible subject matter, as some things cannot be patented;<sup>34</sup>
- surpass an ‘inventive step’ so that invention is not obvious; and
- have a specific, substantial and credible use.

An Australian patent holder can exclude anyone else from using the patented technology in Australia. This exclusion can apply to manufacturing, as well as selling that technology and any commercial activity around the technology.

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<b>Patent application cost:</b>	<b>\$370</b>
<b>Total cost including attorney fees:</b>	<b>\$8,000+</b>
<b>Duration:</b>	<b>20 years</b>
<b>Renewal:</b>	<b>every year</b>

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### The innovation patent

An innovation patent has a lower application fee and does not require examination, unless the innovation patent owner needs to enforce it. Innovation patents last for up to eight years, and are a quick and relatively inexpensive way to obtain protection that is similar to a standard patent.

### Provisional patent applications

It is also possible to file a provisional patent application for either a standard or innovation patent. This type of application offers no protection other than an option to claim a priority date in a later patent application.



## Design rights

A design, such as a shape, configuration or pattern, gives a product a unique visual appearance: if it is new and distinctive, it can be registered with IP Australia. To enforce a design right in court, it must be successfully examined, meaning it must be:

- a new design compared to any design in the world; and
- distinctive from any other published design, online or in circulation.

A registered design that has been certified after examination allows the holder to exclude others from using the design in any commercial way within Australia. Examples of registered designs include the look, shape and feel of a mobile phone, the design of a unique windsurfer or innovative fishing gear.

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<b>Application cost:</b>	<b>\$350</b>
<b>Optional examination cost:</b>	<b>\$420</b>
<b>Duration:</b>	<b>10 years</b>
<b>Renewal:</b>	<b>once, after 5 years</b>

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## Plant breeder's rights

Plant breeder's rights (PBRs) are used to protect new varieties of plants that are distinguishable, uniform and stable. In Australia, PBRs include water-efficient wheat and Pink Iceberg Roses. As well as meeting a set of criteria to pass examination, PBRs must also:

- be distinct from other varieties of the same plant;
- be uniform and stable;
- not have been exploited or sold outside certain time limits; and
- have an identified breeder and an acceptable name.

A PBR gives the owner exclusive rights to exclude others from commercially using and selling a variety: consequently, it provides the opportunity for the right holder to collect royalties while directing the production, sale and distribution of varieties. Other plant breeders can freely use parts of a registered PBR to experiment with, use non-commercially or develop a new variety for commercial use.

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<b>Application cost:</b>	<b>\$345 per class</b>
<b>Examination:</b>	<b>\$1,610</b>
<b>Duration:</b>	<b>20 years</b>
<b>Renewal:</b>	<b>every year</b>

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## Trade marks

A trade mark can be a trade name, logo, sound, product colour, scent or any other distinctive mark within a particular class of goods and services. In Australia, there are 45 distinct classes. Registered trade marks are legally allowed to use the ® symbol, but to be registered in Australia, a trade mark must:

- be distinct in its class, and not cause confusion with other marks;
- be non-descriptive and non-promotional, so 'good shoes' cannot be registered; and
- avoid common usage words as the whole trade mark.

A trade mark allows the holder to exclude others from using the registered mark in the same class, which is why there is only one triangular shaped chocolate bar. Different firms can have the same trade mark in different classes, such as the 'Lotus' trade mark name which is used by software, automobile and door companies in Australia.

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<b>Application cost:</b>	<b>\$120 per class</b>
<b>Registration fee:</b>	<b>\$300 per class</b>
<b>Duration:</b>	<b>perpetual</b>
<b>Renewal:</b>	<b>every 10 years</b>

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- 1 OECD (2010). OECD innovation strategy: getting a head start on tomorrow. <http://www.oecd.org/sti/theoecdinnovationstrategygettingaheadstartontomorrow.htm>. Leading European innovation nations include Finland, Germany, Denmark, Sweden for 2010 and 2011, as defined by the European Union’s *Innovation union scoreboard* ([http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index\\_en.htm](http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm)). For the United Kingdom, see NESTA (2012). *Innovation index 2012*. ([www.nesta.org.uk/home1/assets/features/innovation\\_index\\_2012](http://www.nesta.org.uk/home1/assets/features/innovation_index_2012)). For the United States, see Corrado C, Hulten C and Sichel D (2006). *Intangible capital and economic growth*. NBER Working Paper 11948; and for innovation leaders see OECD (2010). *Measuring innovation: a new perspective*.
- 2 The Patent Cooperation Treaty (PCT) is an international patent law treaty concluded in 1970 and has more than 146 contracting states, including Australia. The PCT provides for a unified patent application procedure in each member country. A PCT application does not itself result in the grant of a patent but rather establishes a filing date in all contracting states. A PCT application must be followed up with the appropriate steps to proceed towards granting of one or more patents. The PCT procedures essentially leads to a standard national or regional patent application, which may be granted or rejected according to applicable law, in each jurisdiction in which a patent is desired. See *Patent Cooperation Treaty Resources*, WIPO ([www.wipo.int/pct/en](http://www.wipo.int/pct/en)).
- 3 Discussed on the Patentology blog on 6 February 2013 (<http://blog.patentology.com.au/2013/02/junk-patents-dumped-on-australia-as.html>).
- 4 Data from World Intellectual Property Organization (<http://ipstatsdb.wipo.org/ipstats/patentsSearch>). Data only available up to 2011.
- 5 Data from World Intellectual Property Organization (<http://ipstatsdb.wipo.org/ipstats/patentsSearch>). Data only available up to 2011.
- 6 Using IP Australia data for filings in 2012, and ABS Australian Demographic Statistics population figures for end of second quarter 2012 ([www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0](http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0)).

Patents per million	
Australian Capital Territory	200
New South Wales	139
Victoria	119
Western Australia	106
Queensland	105
South Australia	88
Tasmania	27
Northern Territory	13

- 7 Using IP Australia data for trade mark filings and ABS Australian Demographic

Statistics population figures for end of second quarter 2012 ([www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0/](http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0/)).

	Trade marks per million
Victoria	2,129
New South Wales	2,084
Queensland	1,676
Australian Capital Territory	1,675
South Australia	1,431
Western Australia	1,304
Tasmania	717
Northern Territory	491

- 8 TaylorWessing (2012). *Global Intellectual Property Index* ([www.taylorwessing.com/ipindex](http://www.taylorwessing.com/ipindex)). The results are the statistical output from a worldwide survey of IP owners and users giving more than 14,000 assessments, as weighted against 50 objective factors such as published data by jurisdiction about the number of patent or trade mark filings and grants, the value of royalty fee payments, research and development expenditure and the origin of counterfeits as seized by customs.
- 9 Australian Government (2012). *Australia in the Asian century*, page 9 (<http://asiancentury.dpmc.gov.au/sites/default/files/white-paper/australia-in-the-asian-century-white-paper.pdf>).
- 10 See the last three years of “Selected characteristics of Australian business surveys”  
 ABS (2010). 8137.0 – *Selected characteristics of Australian business, 2008–09* ([www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/8167.0Main%20Features32008-09?opendocument&tabname=Summary&prodno=8167.0&issue=2008-09&num=&view=](http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/8167.0Main%20Features32008-09?opendocument&tabname=Summary&prodno=8167.0&issue=2008-09&num=&view=)).  
 ABS (2011). 8137.0 – *Selected characteristics of Australian business, 2009–10* ([www.abs.gov.au/ausstats/abs@.nsf/Products/8167.0~2009-10~Main+Features~Business+Structure+and+Arrangements?OpenDocument](http://www.abs.gov.au/ausstats/abs@.nsf/Products/8167.0~2009-10~Main+Features~Business+Structure+and+Arrangements?OpenDocument)).  
 ABS (2012). 8137.0 – *Selected characteristics of Australian business, 2010–11* ([www.abs.gov.au/ausstats/abs@.nsf/Products/8167.0~2010-11~Main+Features~Business+Structure+and+Arrangements?OpenDocument](http://www.abs.gov.au/ausstats/abs@.nsf/Products/8167.0~2010-11~Main+Features~Business+Structure+and+Arrangements?OpenDocument)).
- 11 See ABS (2012). *Business structure and arrangements* summary of the 8158 survey, at [www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/8167.0Main%20Features32008-09?opendocument&tabname=Summary&prodno=8167.0&issue=2008-09&num=&view=](http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/8167.0Main%20Features32008-09?opendocument&tabname=Summary&prodno=8167.0&issue=2008-09&num=&view=).
- 12 For international evidence, see Schmoch U (2003). Service marks as novel innovation indicator. *Research Evaluation* 12(2):149–56; Mendonça S, Pereira T and Godinho M (2004). Trademarks as an indicator of innovation and industrial change. *Research Policy* 33(9):1385–404; Greenhalgh C and Rogers M (2005). “Trade marks and market value in UK firms”. IPRIA Working Paper ([www.oiprc.ox.ac.uk/papers/EJWP1305.pdf](http://www.oiprc.ox.ac.uk/papers/EJWP1305.pdf)); and Millot V (2011). *Firms’ intangible assets. who relies on trademarks*. “Analysis of French and German firms’ trade marking behaviour”. University of Strasbourg, presented at DRUID 2011 conference, ([http://druid8.sit.aau.dk/acc\\_papers/mrfhruoxl97gjekxq4ajhh8ln9o2.pdf](http://druid8.sit.aau.dk/acc_papers/mrfhruoxl97gjekxq4ajhh8ln9o2.pdf))

For Australian evidence see the presentation by Webster E (2009). *Do Australian*

companies value trade marks and designs? A look at the evidence. Intellectual Property Research Institute of Australia, presentations on 24/8 and 25/8 2009 ([www.ipria.org/events/seminar/docs/Value%20of%20Trade%20Marks%20and%20Designs%20-%20B%20Webster%20%20Presentation.pdf](http://www.ipria.org/events/seminar/docs/Value%20of%20Trade%20Marks%20and%20Designs%20-%20B%20Webster%20%20Presentation.pdf)).

- 13 Webster E and Jensen P (2011). "Do patents matter for commercialisation?" *Journal of Law and Economics* 54(2):431–53.
- 14 Jensen P, Thomson R and Yong J (2011). Estimating the patent premium: evidence from the Australian Inventor Survey. *Strategic Management Journal* 32:1128–38; see page 1134.
- 15 This is based on Figure 1 in Jensen P, Thomson R and Yong J (2011). Estimating the patent premium: evidence from the Australian Inventor Survey. *Strategic Management Journal* 32:1128–38, with thanks to P Jensen for sharing the raw data in the figure. The high mid-point is taken as \$100 million, which seems conservative given the EU survey's patent value second highest range was €100–300 million and the final bracket was more than €300 million (Gambardella A, Giuri P and Mariani M (2005). *The value of European patents: evidence from a survey of European inventors*. Report for the European Commission (ref: HPV2-CT-2001-00013), [http://ec.europa.eu/invest-in-research/pdf/download\\_en/patval\\_mainreportandannexes.pdf](http://ec.europa.eu/invest-in-research/pdf/download_en/patval_mainreportandannexes.pdf)). Data is linearly interpolated for the curve.
- 16 WIPO (2011). *The changing face of innovation 2012*, page 61 and figure 1.26 ([www.wipo.int/ipstats/en/wipi/index.html](http://www.wipo.int/ipstats/en/wipi/index.html)).
- 17 Australian Bureau of Statistics (2012). Account 5302.0 balance of payments and international investment position.
- 18 DIISRTE (2012). *Australian innovation system report, 2012*. DIISRTE ([www.innovation.gov.au/Innovation/Policy/AustralianInnovationSystemReport/AISR2012/index.html](http://www.innovation.gov.au/Innovation/Policy/AustralianInnovationSystemReport/AISR2012/index.html)).
- 19 This excludes the stock of residential houses, which can be volatile as investment in housing is cyclical. When residential housing stock is included, the Australian intangibles are 3% of tangible assets and 43% in the United States.

Australia: This report uses the National Balance Sheet (series 30.16) produced by the ABS for 2010–11 data and takes the non-financial fixed assets of \$8,871 billion, and deducts IP products, research and development, mineral exploration, computer software and artistic originals, which are all intangible assets. Private dwellings are deducted to get a fixed asset base of \$6939 billion. This is compared with de Rassenfosse's estimate of the intangible assets in 2010–11 of \$249 billion (de Rassenfosse G (2012). *Intangible assets and productivity growth*. Report for the Australian Government Department of Industry, Science, Research and Tertiary Education). This makes intangible assets 4% of tangible assets.

United States: This report uses the United States national accounts fixed asset table 2.1 (in section 2 at [www.bea.gov/iTable/iTable.cfm?ReqID=10&step=1](http://www.bea.gov/iTable/iTable.cfm?ReqID=10&step=1)) on the current costed private fixed assets, and uses line 1 'private fixed assets' of \$35 193 billion for 2011. Software (line 6) and mineral exploration (line 55) are deducted, which are both intangible assets. The stock of residential structures (line 68) is also deducted. This gives a total fixed asset balance of US\$15.9 trillion. This is compared with Hassett and Shapiro's intangible asset estimate of US\$14.5 trillion (Hassett K and Shapiro R (2012). *What ideas are worth: the value of intellectual capital and intangible assets in the American economy*. Sonecon paper from [www.sonecon.com/docs/studies/Value\\_of\\_Intellectual\\_Capital\\_in\\_American\\_Economy.pdf](http://www.sonecon.com/docs/studies/Value_of_Intellectual_Capital_in_American_Economy.pdf)). This makes intangible assets 91% of tangible assets in the United States in 2011.

- 20 OECD (2010). *OECD innovation strategy: getting a head start on tomorrow*. (<http://www.oecd.org/sti/theoecdinnovationstrategygettingaheadstartontomorrow.htm>.)
- 21 Intangible assets are sometimes referred to as 'knowledge based capital', but for the purpose of this report and simplicity of exposition, 'intangibles' are used throughout this report. The report also uses the OECD definition of intangible investment as set out in OECD (2010). *Measuring innovation: a new perspective*, which derives from the work at the European Commission's COINVEST project, and Corrado C, Hulten C and Sichel D (2006). *Intangible capital and economic growth*. NBER Working Paper 11948.
- 22 See de Rassenfosse G (2012). "*Intangible assets and productivity growth. Report for the Australian Government Department of Industry, Science, Research and Tertiary Education*".
- 23 See DIISRTE (2012) *Australian Innovation System Report 2012*. Canberra: DIISRTE, page 10, Chart 1.6 sourced from the ABS.
- 24 Given estimates of intangible investment in the Australian national accounts and de Rassenfosse G (2012). *Intangible assets and productivity growth*. Report for the Australian Government Department of Industry, Science, Research and Tertiary Education, which can be covered by IP rights.
- 25 OECD (2010). *OECD innovation strategy: getting a head start on tomorrow*. (<http://www.oecd.org/sti/theoecdinnovationstrategygettingaheadstartontomorrow.htm>)
- 26 OECD (2012). *Quality review of the technology balance of payments database*. OECD Working Party on Globalisation of Industry, DSTI/IND/WPGI(2012)3 by Desnoyer-James I and de Backer K; raw data kindly shared by Desnoyer-James I.
- 27 OECD (2012). *Quality review of the technology balance of payments database*. OECD Working Party on Globalisation of Industry, DSTI/IND/WPGI(2012)3 by Desnoyer-James I and de Backer K; raw data kindly shared by Desnoyer-James I.
- 28 OECD (2013). *Measuring trade in value added research* ([www.oecd.org/industry/industryandglobalisation/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm](http://www.oecd.org/industry/industryandglobalisation/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm)) or the Australia Country note at [www.oecd.org/sti/industryandglobalisation/TIVA%20Australia.pdf](http://www.oecd.org/sti/industryandglobalisation/TIVA%20Australia.pdf).
- 29 Linden G, Kraemer K and Dedrick J (2009). Who captures value in a global innovation network? The case of Apple's iPod. *Communications of the ACM* 52(3):140–44; Kraemer K, Linden G and Dedrick J (2011). Capturing value in global networks: Apple's iPad and iPhone. Research funded by the Alfred P Sloan Foundation and the US National Science Foundation ([http://pcic.merage.uci.edu/papers/2011/Value\\_iPad\\_iPhone.pdf](http://pcic.merage.uci.edu/papers/2011/Value_iPad_iPhone.pdf)); and Linden G, Dedrick J and Kraemer K (2011). Innovation and job creation in a global economy: the case of Apple's iPod. *Journal of International Commerce and Economics* 223–240.
- 30 See UPOV (2005). UPOV Report on the impact of Plant Variety Protection. UPOV: Geneva; ([http://www.upov.int/export/sites/upov/about/en/pdf/353\\_upov\\_report.pdf](http://www.upov.int/export/sites/upov/about/en/pdf/353_upov_report.pdf))
- 31 See UPOV (2005). UPOV Report on the impact of Plant Variety Protection. UPOV: Geneva; ([http://www.upov.int/export/sites/upov/about/en/pdf/353\\_upov\\_report.pdf](http://www.upov.int/export/sites/upov/about/en/pdf/353_upov_report.pdf))
- 32 WIPO (2012). *World Intellectual Property Indicators, 2012* ([www.wipo.int/ipstats/en/wipi](http://www.wipo.int/ipstats/en/wipi)).

- 33 For example, the United States has a linked dataset between the USPTO and the census, the United Kingdom has a linked dataset of IP rights to the Office for National Statistics, and the OECD manages a patent database linking Patstat (the European Patent Office's publicly available world patent database) to company data. The Intellectual Property Research Institute of Australia has a number of surveys linked to patent numbers.
- 34 See the ACIP Review of Patentable Subject Matter, chapter 7 for a summary of what is patentable in Australia. <http://www.acip.gov.au/library/Patentable%20Subject%20Matter%20Issues%20Paper.pdf>

