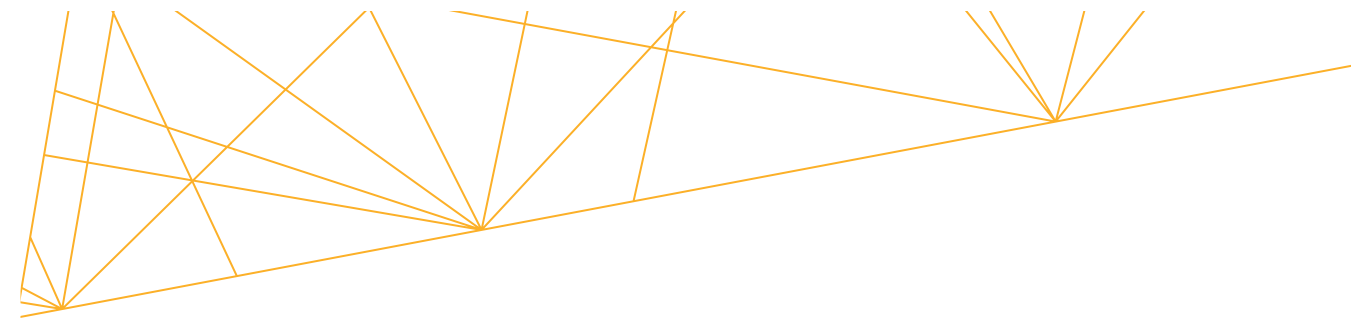




Australian Government
IP Australia

Australian Intellectual Property Report 2019





WELCOME TO THE AUSTRALIAN IP REPORT 2019

As Minister for Industry, Science and Technology, I am pleased to introduce the 2019 edition of the Australian Intellectual Property (IP) Report.

IP is at the heart of the digital economy, which is enabled by technological progress. By highlighting recent trends in IP activity, this report therefore informs public discussion on innovation and entrepreneurship at large. The addition this year of a digital report with enhanced data visualisations is a welcome tool for promoting greater understanding of IP statistics.

The latest statistics reveal that applications for all IP rights continued to grow in 2018. Australian residents have demonstrated strong growth (around nine per cent) in applications for patents and design rights. Non-resident applications for trade marks grew particularly strongly by around 11 per cent, indicating Australia's attractiveness to the global business community.

A well-functioning IP system fosters innovative activity and encourages the creation of new ideas. The OECD has identified weak IP rights as a factor hampering international co-operation in science, technology and innovation, but Australia's IP rights are relatively strong and well regarded, providing a potential source of economic advantage. An efficient IP system based on optimal policy settings will enhance Australia's international competitiveness and support economic growth.

IP Australia is raising awareness of IP rights and their value for businesses and the broader community. In that spirit, this year's report highlights the contributions of female inventors. I am confident that the research and analysis produced by IP Australia, and showcased in this report, provides insights that will support decision-making over the coming years.

Hon Karen Andrews MP
Minister for Industry, Science and Technology
1 April 2019



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INTRODUCTION

In 2018, Australia retained its standout position among advanced economies of experiencing 26 years of continuous economic growth.¹ The IP system plays a part in this, as innovation is a crucial driver of productivity and economic growth. IP rights, being a tool for incentivising the creation of new ideas, are part of the framework conditions that support innovation and entrepreneurship.

Investment in IP and applications for IP rights can be viewed as indicators of innovative and entrepreneurial activity in general. IP Australia administers four IP rights, each of which plays a distinct role. Patents (Chapter 2) trace the rate and direction of technological progress. Trade marks (Chapters 3 and 6) make visible

our investment in intangible assets, these being ever more important to trade among advanced economies. The use of design rights (Chapters 4 and 7) underscores the role of aesthetic innovation across diverse industries. Innovation in agriculture, including the plant varieties protected by plant breeder's rights (Chapter 5), underlies Australia's leading position in global agricultural production.

In 2018, patent and trade mark applications grew by more than three per cent. Applications for design rights increased by just over one per cent from a record high level in 2017. The demand for plant breeder's rights (PBRs) grew by 12 per cent to return to its 2016 level.



As in recent years, most applications for patents, designs and PBRs originated overseas. Residents remain the leading applicants for trade marks, though growth in trade mark applications was entirely attributable to non-residents.

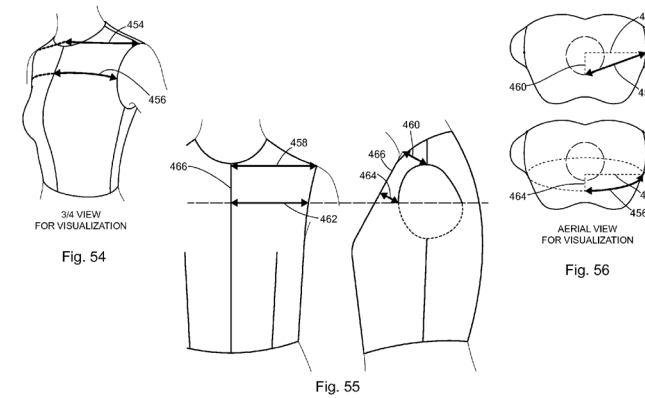
Chapters 6 and 7 of this report showcase research and analysis undertaken by IP Australia. In Chapter 6, we present the results of a study on ‘trade mark cluttering’, a situation that happens if a trade mark register becomes cluttered with out-of-use and overly broad trade marks. The analysis finds that Australia’s register is not cluttered; however, there is increasing evidence of applicant behaviour that could lead to cluttering in the future.

Chapter 7 provides a summary of a joint study between IP Australia and The University of Melbourne, which explored the use of design rights within Australia and how Australia compares to its international peers. This research shows that Australia’s design labour force is small, relative to Australia’s size as an industrial economy, although reasonably productive in generating design rights. The analysis also shows that Australia lags several of its peers both in the rate at which its design force is growing and in its rate of growth in design registrations.

This year, with the seventh edition of the Australian IP Report, we are publishing—for the first time—a fully digital report with interactive data visualisations. These allow readers to focus on specific aspects of trends in IP activity while presenting them in an appealing visual form.

By stimulating public discussion on IP through this report, we aim to provide a forum for engagement. In this spirit, we welcome your comments, suggestions and questions.

- Web: www.ipaustralia.gov.au/economics
- Email: chiefeconomist@ipaustralia.gov.au
- Twitter: @IPAustralia_OCE



Number:
2013263167

Patent application type :
Standard

Application status:
GRANTED

Paid to date:
2019-05-08

Invention title:
System and method for drafting garment patterns from photographs and style drawings

PATENTS

Patents reward inventors and protect inventions: with patent protection an invention cannot be commercially produced, used, distributed, imported or sold without the patent owner’s consent.

There are two types of patents available in Australia: the standard patent and the innovation patent. The owner of an invention protected by a standard patent can exclude others from using the patented invention in Australia for up to 20 years (or 25 years for some pharmaceutical patents).² The innovation patent is Australia’s second-tier patent, having a lower threshold to acquire protection, lower cost and a shorter (eight-year) protection term than the standard patent.

To be eligible for patent protection, a patent application needs to satisfy a number of criteria under the *Patents Act*. These include,

- novelty (the invention must not already exist elsewhere)
- non-obviousness (for standard patents, the invention must demonstrate an ‘inventive step’ beyond existing knowledge)
- usefulness (the invention must have a specific, substantial and credible use)
- patent eligible subject matter (for example, human beings and the biological processes for their generation are not patent eligible subject matter).

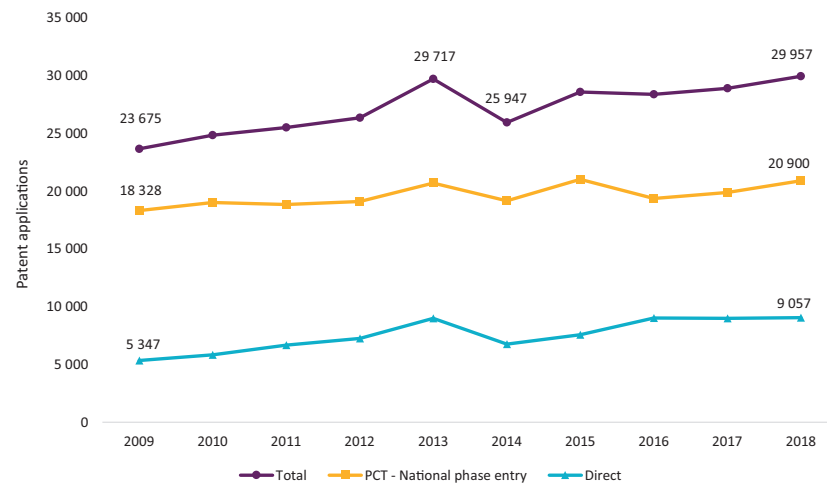
Standard patent applications: Figure 1 shows the total number of standard patent applications received by IP Australia between 2009 and 2018, and subtotals by filing route. Patent applications may be filed in Australia directly with IP Australia,



or via an international application which is processed in Australia under the Patent Cooperation Treaty (PCT).³

In 2018, IP Australia received 29 957 standard patent applications—up more than three per cent from the previous year. Patent applications in Australia have grown steadily since 2009, except for the sharp fall in 2014. That fall offset the sharp rise in 2013 due to an anticipated legislative change at the time.

Figure 1: Standard patent applications filed in Australia, 2009-18

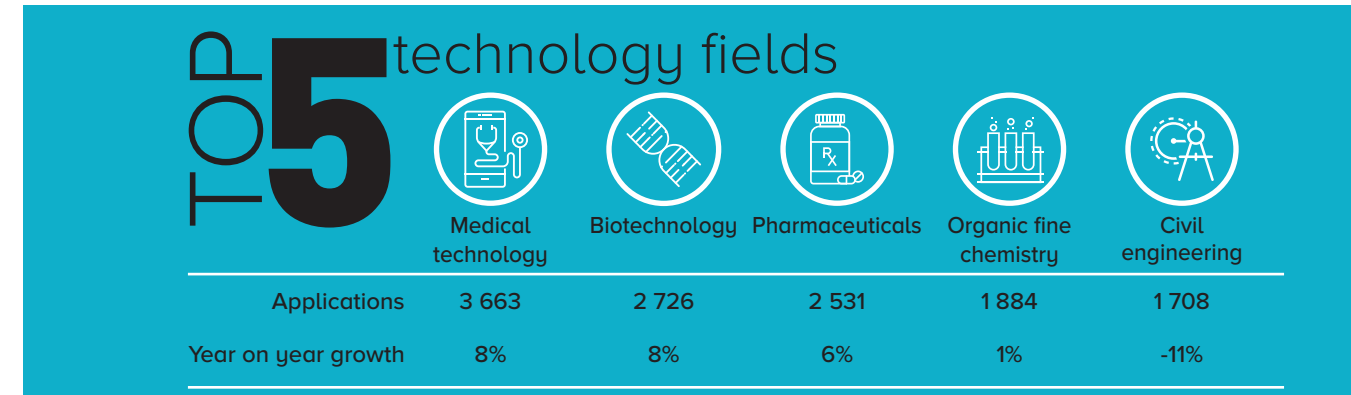


In recent years, worldwide patent applications have been growing strongly, averaging around eight per cent annual growth between 2010 and 2016. However, growth slowed abruptly during the year that followed, increasing by just one per cent from 3.13 million in 2016 to 3.17 million in 2017 according to the latest World Intellectual Property Organization (WIPO) data. Applications with IP Australia increased by two per cent over the same period, ranking Australia eighth among the Organisation for Economic Co-operation and Development (OECD) countries in terms of patent growth.

Country of origin: Consistent with recent years, non-residents accounted for 91 per cent of standard patent applications in 2018. Residents nevertheless demonstrated faster growth (nine per cent) in applications than non-residents (three per cent). The moderate growth in non-resident applications is partially attributable to filing behaviour by US applicants, who accounted for 45 per cent of applications but saw no growth in 2018.⁴ Japan, Germany and the UK are the remaining top five countries of origin by total applications (Figure 2).

States and territories: Figure 3 shows the number of resident applications for standard patents in 2017 and 2018 by states and territories. Unsurprisingly, the three largest states—New South Wales (NSW), Victoria (VIC) and Queensland (QLD)—jointly account for over 80 per cent of all resident filings.

Figure 2: Patent applications 2018: Top 5



Top 5 applications in Australia by country of origin

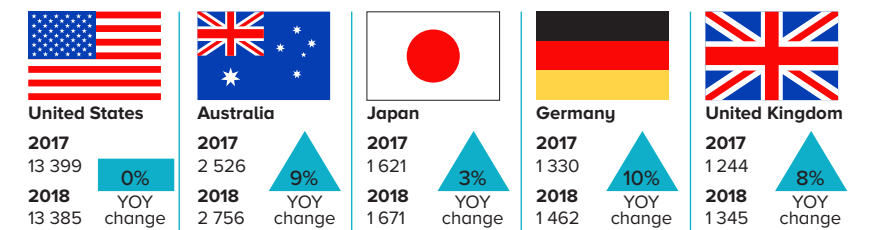
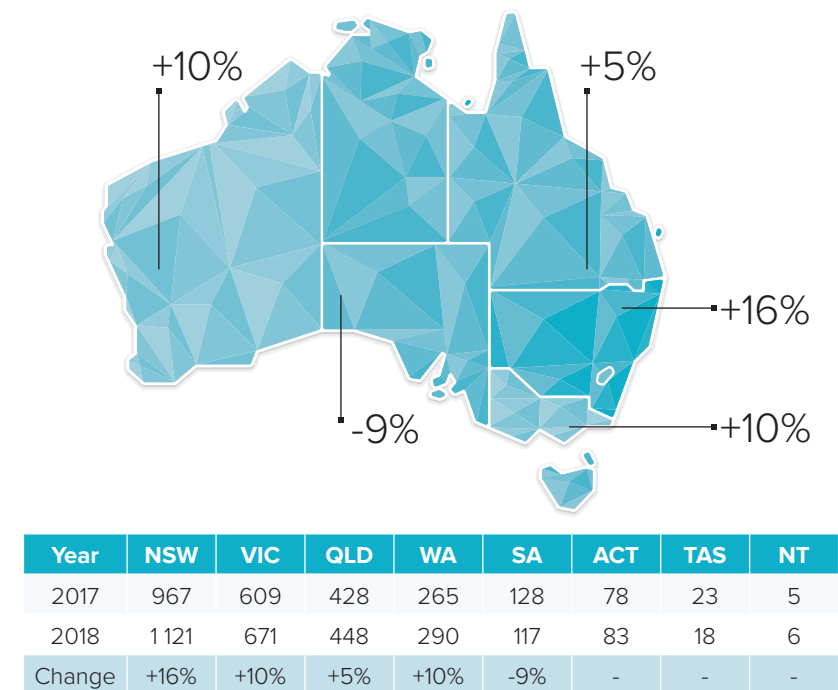


Figure 3: Standard patent applications, states and territories, 2017 and 2018



Technology: Patents are oriented towards the protection of technologies and are assigned to technology fields according to WIPO’s technology concordance table.⁵

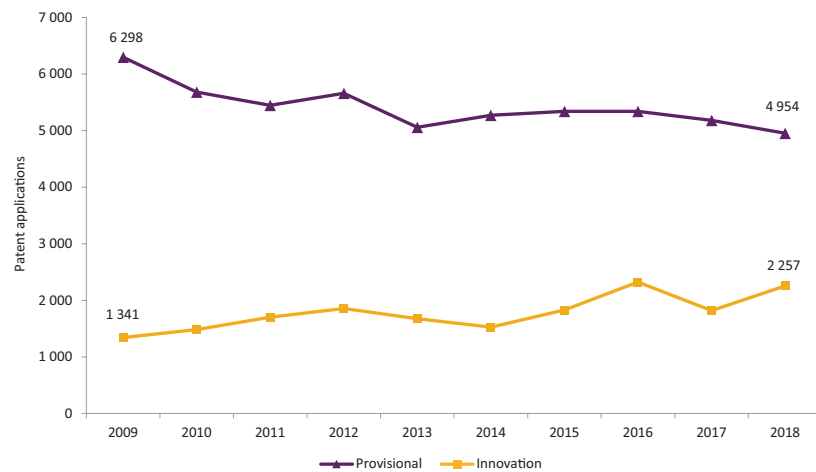
With 3 663 patent applications, up eight per cent from last year, Medical technology was the leading field in 2018 (Figure 2). Applications for Biotechnology and Pharmaceuticals also grew strongly. Civil engineering, on the contrary, saw a sharp decline. These trends are consistent with global changes—such as an ageing population and the consequent growing demand for medical goods and services—as well as technology life cycles.

Provisional applications: Before inventors file for a standard patent, they may submit a provisional application. This allows inventors to claim the earliest possible priority date without their application automatically being published.⁶

Over the past decade, provisional applications have been in decline in Australia—falling by around three per cent per annum. They decreased by five per cent in 2018, down to 4 954, continuing the decline in provisional applications from a peak of 7 382 in 2004. Australian residents are overwhelmingly the primary users of this system, filing 96 per cent of all provisional applications in 2018.

The innovation patent: Figure 4 shows that while applications for innovation patents decreased in 2017, they rebounded in 2018—increasing by 24 per cent—and now exceed the demand in 2015.

Figure 4: Provisional and innovation patent applications, 2009-18



Note: No correlation between the movements in innovation patent and provisional applications is implied, although they are charted in the same figure.

Both resident and non-resident innovation patent applications increased in 2018, by one per cent and 34 per cent respectively. Australian residents are the primary users of the innovation patent, accounting for 51 per cent of all applications in 2018. China (33 per cent) and the US (4 per cent) were the main sources of non-resident applications.⁷

Innovation patents were introduced in 2001 to encourage innovation among Australian small-to-medium-sized enterprises (SMEs). Research by the OCE has found that the innovation patent system has not fulfilled that policy goal.⁸ The Government has accepted the recommendation of the Productivity Commission to phase out the innovation patent.⁹

Patent grants: In 2018, 17 065 standard patents were granted. Table 1 shows the number of patents granted to residents and non-residents in recent years. Grants fell by 25 per cent in 2018 from their level in 2017. The rate of decrease in grants was consistent across resident and non-resident applicant groups. The non-resident share of grants, as with applications, is over 90 per cent and is consistent over the recent years.

Table 1: Patents granted in Australia, residents versus non-residents, 2014-18

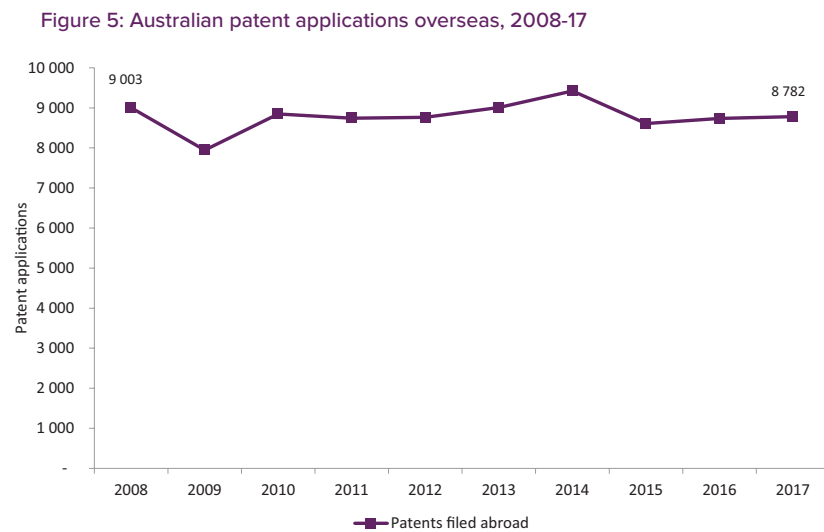
	2014	2015	2016	2017	2018
Resident	1 161	1 598	1 425	1 187	905
Non-resident	18 141	21 500	22 319	21 555	16 160
Total	19 302	23 098	23 744	22 742	17 065

Note: There is a significant lag between filing and outcome. Consequently, data on patent grants in a year corresponds to applications filed in previous years.

Australians filing overseas: IP rights granted in Australia do not provide protection in other countries. In order to protect IP in other countries, Australian inventors must file and be granted applications overseas.

Figure 5 illustrates trends in the number of patent applications filed by Australians from 2008 to 2017 (latest data).¹⁰ Overseas applications by Australians increased by one per cent in 2017, continuing the low growth observed in 2016.

Australian residents on average file more than three patent applications overseas for each domestic application. The US continues to be the most popular destination for Australian applications overseas. In 2017, US-destined filings accounted for 43 per cent of all Australian-origin applications overseas and grew by three per cent from their level in 2016. The next top destination was the European Patent Office (EPO), which received 10 per cent of Australian applications overseas in 2017. China received eight per cent of Australian applications, and New Zealand six per cent.



Source: WIPO IP Statistics Data Center 2018. Retrieved 8 March 2019 from: <<https://www3.wipo.int/ipstats/>>.

The largest increase in applications from Australia occurred with the EPO, rising by nine per cent in 2017. This was followed closely by China with an eight per cent increase in applications.

Australians can file patent applications either directly at national IP offices or via the PCT. Of Australian applications overseas, 31 per cent were filed directly with foreign patent offices while the remainder used the PCT route. This split has remained largely stable over the past 10 years.



Lucy Carol Davis: Facial mask apparatus and method of making

An architect by trade, the world of intellectual property protection is not new to Lucy Carol Davis—she is the daughter of an inventor and has a notebook full of her own ideas covering many fields.

When it came to filing her first patent application, she knew she had to do her homework. With the help of a patent attorney, Davis narrowed down her ideas based on their ability to be patentable as well as considering what would have a potentially large market. The invention selected was a facial mask apparatus and method of making it, combining facial scanning technology with 3D printing to create customised masks for an individual face.

‘I was doing research on 3D printing which was new at the time and I was fairly interested in investing in 3D printing companies,’ Davis explained. ‘My husband complained that his sleep apnoea mask was terribly uncomfortable and he hated wearing it. And I thought it could easily be solved—just print a 3D mask. At the time, the technology of 3D printing was not quite up to my ideas. But now it is.’

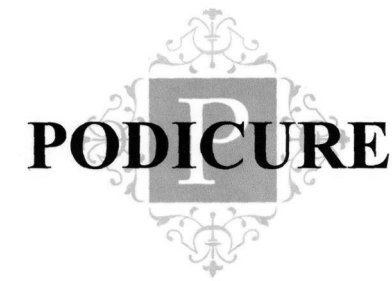
Australia was among the markets in which she chose to seek protection, with the US and Canada among other markets selected. Davis commissioned research to determine countries that had a significant proportion of the population requiring sleep apnoea technology as well as countries with an affluent population that could afford to buy customised masks. The cost of seeking protection was another important factor, with some countries excluded based on the prohibitive cost of seeking protection.

‘But Australia also happens to be the home of ResMed—a sleep apnoea device manufacturer,’ Davis said. ‘They were an important factor in my decision to seek protection in the Australian market. I was hopeful they would be interested in my idea.’

The entire process for Davis—from applying to being granted protection—took six years. But she believes the effort was worth it. For those seeking to follow her path, she has advice to assist on the journey.

‘It is quite an expensive process—financially and in time—to get a patent. So do your pre-patent application work to find out about the market and determine if there is a good chance of monetising your idea once it has been granted. And to me it was important to have something that wasn’t trivial—an idea that will serve a need. When there is an outcome you can see, it makes the length of the process easier.’

With her patent granted in Australia and the US, and Canada anticipated soon, work now begins on finding partners and clients to work with, including manufacturing and delivery partners in Australia.



Number:
1129102

Words:
P PODICURE

Status:
Registered/Protected

Priority date:
11 Aug 2006

Classes:
44

Kind:
Figurative

TRADE MARKS

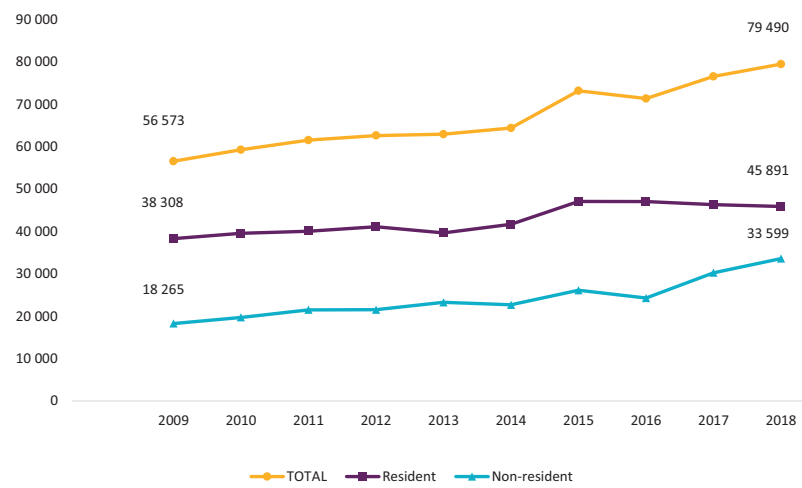
A trade mark is a sign that differentiates a particular product or business in the marketplace. Trade marks are informational signals from producers to consumers. For instance, a trade mark can convey information about the origin of a product or its quality. By helping consumers to distinguish between different products or businesses, trade marks support purchase decisions.

To be registrable, a trade mark must be graphically representable, such is the case for brand names, logos, colours and musical jingles. Registrants can use the ® symbol in association with their trade marks. Trade marks can be renewed indefinitely, with fees payable every 10 years.

Trade mark applications: In 2018, trade mark applications grew by around four per cent to a record high of 79 490 (Figure 6). As in 2017, growth was entirely due to an increase in applications by non-residents, which increased by around 11 per cent while resident applications fell slightly, by less than one per cent. The share of non-resident applications has increased from 32 per cent in 2009 to 42 per cent in 2018.

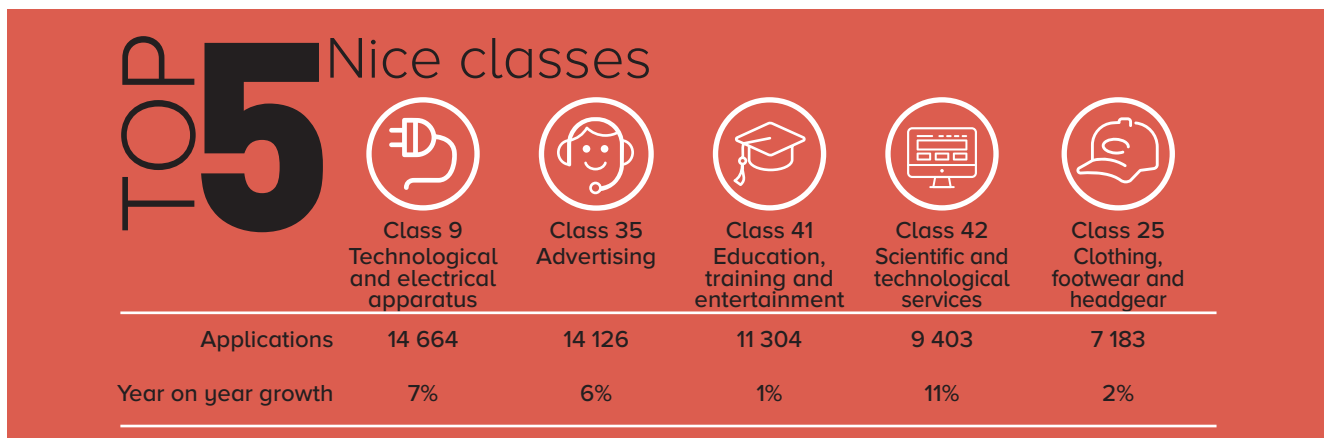


Figure 6: Trade mark applications by residents versus non-residents, 2009-18

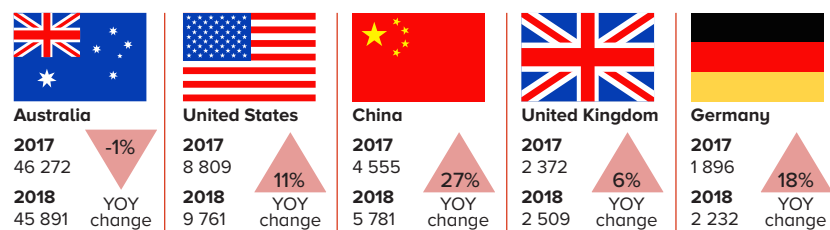


Trade mark applications can be filed either directly with IP Australia or through WIPO’s Madrid system.¹¹ The latter route to filing in Australia is used almost exclusively by non-residents. In 2018, total direct applications increased by one per cent while Madrid applications continued their strong growth recorded in the preceding year, increasing by around 13 per cent. The Madrid share of total applications is now at its highest ever level at 22 per cent.

Figure 7: Trade marks 2018: Top 5



Top 5 applications in Australia by country of origin

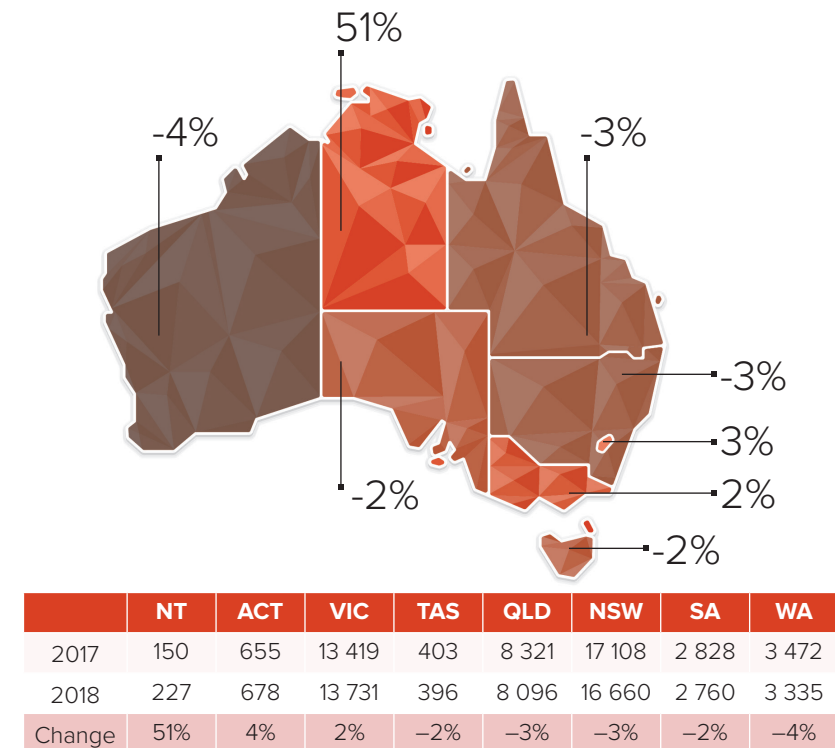


Country of origin: Resident applicants accounted for about 58 per cent of all trade mark applications in 2018. Historically, the vast majority (around 90 per cent) of resident applications come from SMEs and individuals.

With 29 per cent of all non-resident applications in 2018, the US remains the largest foreign source of trade mark applications in Australia (Figure 7). China, the second largest source of non-resident applications, recorded a 27 per cent increase in 2018, bringing its share to 17 per cent. Strong growth in applications from France, Germany and Italy was also observed in 2018.

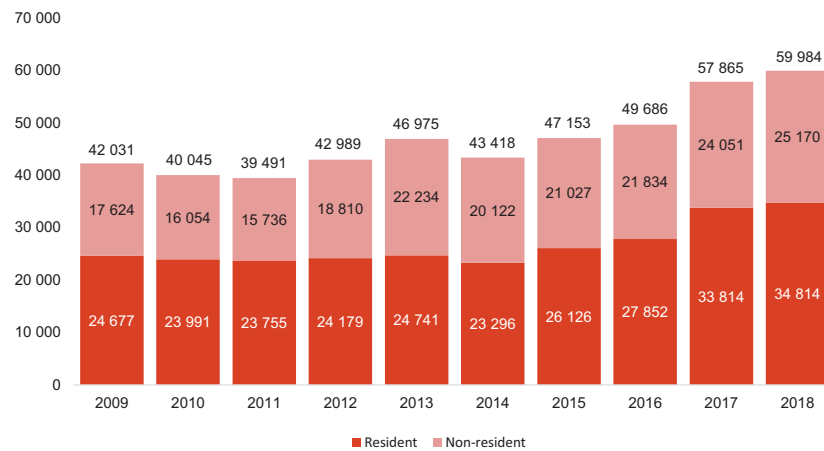
States and territories: In 2018, applications grew most strongly in the territories; by 51 per cent in the Northern Territory (albeit from a low base), and by four per cent in the Australian Capital Territory (Figure 8). Victoria (VIC) was the only state to record an increase in trade mark applications, by 2 per cent, while the remaining states experienced decreases ranging from two to four per cent. Since their 2016 peak, applications in New South Wales (NSW) have fallen in consecutive years. Despite this, NSW remains the largest source of resident trade mark applications. NSW and VIC together—home to 58 per cent of Australia’s population¹²—account for 66 per cent of all resident applications.

Figure 8: Trade mark applications, states and territories, 2017-18



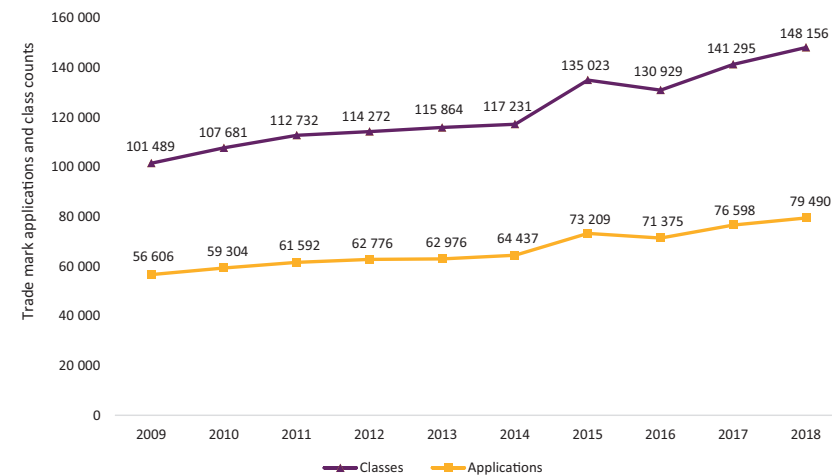
Registrations: A total of 59 984 trade marks were registered in 2018, an increase of around four per cent from its 2017 level (Figure 9). Growth occurred in registrations from both resident (three per cent) and non-resident (around five per cent) applications. The resident-to-non-resident split in registrations is the same as in applications. Although a few large businesses such as Samsung Electronics and ALDI Foods may have multiple registrations, SMEs collectively account for almost two-thirds of all trade mark registrations.¹³

Figure 9: Trade mark registrations by residents versus non-residents, 2009-18



Trade mark classes: The Nice Classification system is an international classification of goods and services which categorises trade marks into 45 classes.¹⁴ A single trade mark application can nominate multiple classes, making it possible to use one trade mark to brand several products falling under different classes. In 2018, a total of 148 156 classes were nominated in the 79 490 trade mark applications filed (Figure 10), an average of 1.9 classes per application.

Figure 10: Trade mark classes and applications filed, 2009-18

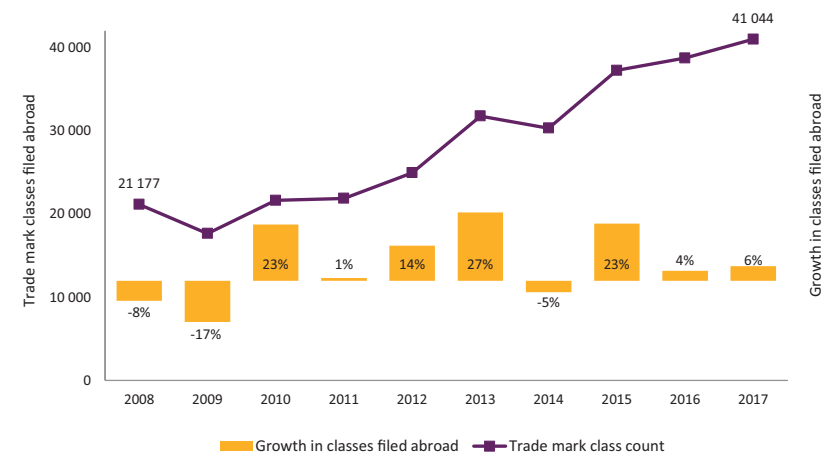


As in previous years, the three classes with the most applications in 2018 were Technological and electrical apparatus, with 14 644 applications (class 9, up eight per cent from 2017), Advertising and business functions, with 14 126 applications (class 35, up seven per cent), and Education, training and entertainment, with 11 304 applications (class 41, up two per cent). Together, these three classes represent 27 per cent of the total number of classes nominated.

Australians filing overseas: In 2017 (latest data), Australian resident entities filed 18 356 trade mark applications overseas, the US being the top destination (with 3 754 applications), followed by New Zealand (2 745).

In 2017, Australians filed for a total of 41 044 classes in their trade mark applications overseas, an increase of six per cent, which continues the strong upward trend in Australian trade mark filings abroad since 2009 (Figure 11). This is indicative of an increasing export interest of Australian businesses in diversified markets.

Figure 11: Level and growth in trade mark classes, Australian-origin filings overseas, 2008-17



Source: WIPO IP Statistics Data Center 2018. Retrieved 8 March 2019 from: <<https://www3.wipo.int/ipstats/>>.

**Alison Abernethy: Declutr—
systems to simplify your life**

Alison Abernethy is a professional organiser based in Canberra. Through her business, Declutr, Abernethy’s role is to not just declutter her client’s lives, but also put into place systems and processes that will help them maintain that level of organisation.

‘What I espouse is that simple systems work,’ she said. ‘But often we need someone else to tell us how to simplify that or make it more systematic.’



To build the business, Abernethy wanted to make sure she was protected in as many ways as possible, explaining her concern was driven by seeing small businesses started by women losing out by not seeking protection.

‘They might start out as a blog and they don’t think they need to protect their IP in any way. But then someone else comes along and trade marks essentially their ideas. I wanted to make sure that, when I set my business up, this could not happen.’

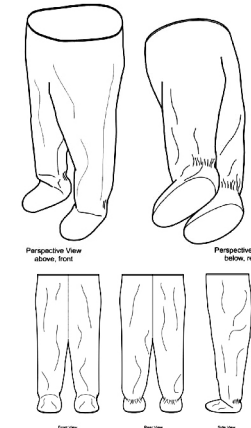
After learning about IP Australia’s TM Headstart service, she contacted IP Australia for support in understanding the options available to her.

‘It was fantastic,’ Abernethy said. ‘The process was so easy. I had initially just put in an application to trade mark the business name, but a helpful examiner from IP Australia explained that it was too close to a real word that could be used in everyday occurrence. So we talked about including the tagline and logo, packaging this up for protection. The examiner could not guarantee protection but explained the best options and why. They were really personable and really good at their job.’

Thanks to this information, her application went through without a problem, with the logo and text becoming a registered trade mark in 2018 and, through her networks, she is encouraging other women to follow her path.

‘Creative women tend to be put off by bureaucracy, but it is important to recognise the importance of IP around ideas. But this process was easy—it was not like filling out a form for Centrelink or Medicare. I had support and understood the steps. If anything, TM Headstart just needs to be promoted more to encourage more women to seek IP protection.’

And with her IP protection in hand, Abernethy has celebrated what she hopes will be the first of many achievements for Declutr.



(11) Registration AU
201613059
(21) Appln/Design
201613059
(22) Lodged:
2016.06.03
(51) Classification:
02-02C
(54) Article/Product Name:
Leggings

DESIGNS

Design rights protect visual features which, when applied to a product, give it a unique appearance. These features may include a product’s shape, ornamentation, pattern or configuration.

Registering a design allows the owner to exclude others from commercially exploiting the design for up to 10 years. For designs to be eligible for protection, they must be new and distinctive—that is, they must be dissimilar in overall impression to designs that constitute prior art.

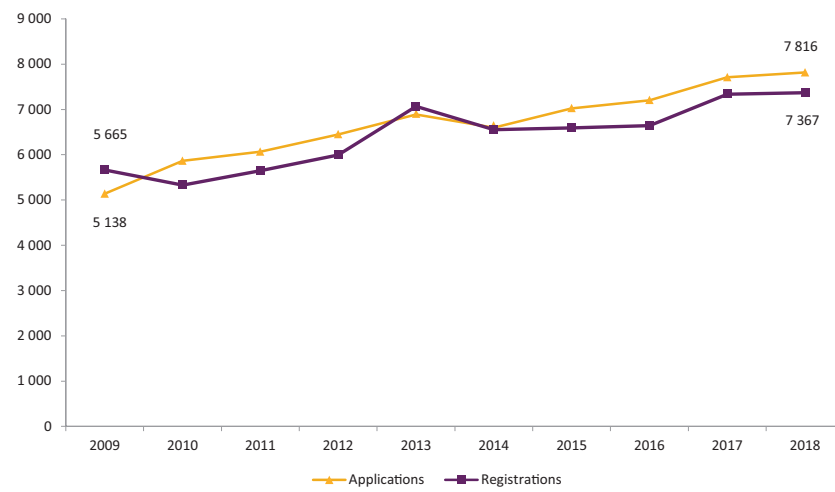
In Australia, designs are not substantively examined upon registration. To enable their enforcement, design rights must be certified via a substantive examination process.

Design right applications and registrations:

The number of design right applications reached a record high in 2018, increasing to 7 816 from 7 708 in 2017. The 2018 growth rate in applications, being around one per cent, is well below the five per cent average annual growth experienced over the past decade.

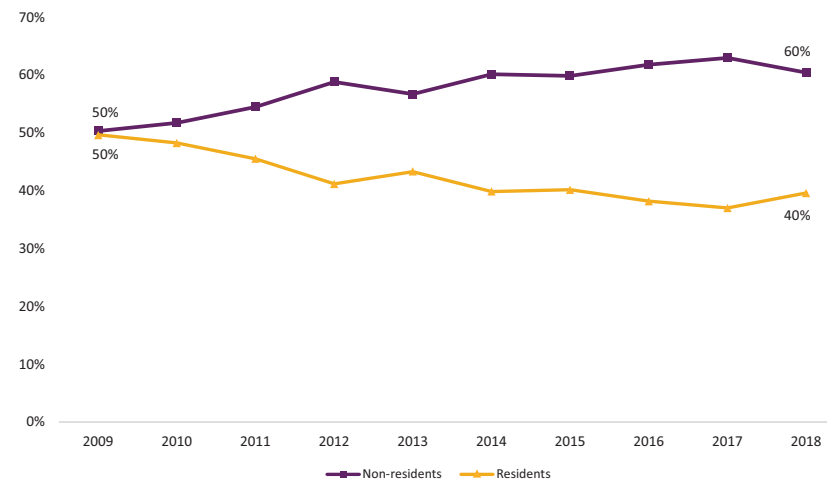
Figure 12 shows that design registrations tend to increase as applications increase over time. Registrations and applications reached ten-year highs in 2018. Growth in registrations and applications flattened after an upsurge in 2017. The 7 367 designs registered in 2018 amounted to an increase of less than half a per cent above the 7 337 registrations in 2017.

Figure 12: Design right applications and registrations, 2009-18



Country of origin: In 2018, 3,095 design applications were from Australian residents, while the remaining 4,721 applications were from non-resident applicants. The share of applications filed by Australian residents has steadily decreased over the past decade (Figure 13), from 50 per cent in 2009 to 40 per cent in 2018.

Figure 13: Share of design applications by residents versus non-residents, 2009-18



While non-residents accounted for a larger share of total applications in 2018, their applications fell by nearly three per cent from their level in 2017. In contrast, resident applications increased by over eight per cent in the same period.

The US remains the largest foreign source of design right applications, accounting for around a quarter of all applications in 2018. The second- and third-ranked countries were China and the UK.

Top applicants: In 2018, the top 10 applicants, from whom came the largest numbers of applications, represented a diverse range of countries and industries. Australian-based fashion house Zimmerman Wear was the top applicant, filing a total of 118 applications in 2018. US-based SharkNinja was ranked second and was the top non-resident applicant, filing 66 applications. Whereas Zimmerman Wear’s applications mainly focused in Clothing, SharkNinja’s applications spanned multiple product classes including Machines, Appliances for preparing food and drink, Packaging, and Household goods.

Companies renowned for their design capabilities featured among the ten top-ranked applicants for design rights—Fisher & Paykel Healthcare from New Zealand ranked third; Google from the US ranked fourth; and Cartier International from Switzerland ranked fifth.

Top product classes: The Locarno Classification System is the framework of product classes used internationally and in Australia to classify registered designs. In 2018, the Locarno class to which the highest number of design applications was attributed was Means of transport or hoisting (class 12). Eight per cent of all class attributions went to this class, which encompasses all land, sea, air and space vehicles including their component parts and accessories. The second-ranked class was Articles of clothing and haberdashery (class 2), which received slightly less than eight per cent of all class attributions.

Analysing the Locarno classes of applications provides insight into the focus of different applicant groups. Chapter 7 of this report summarises a study, by IP Australia and The University of Melbourne, which shows that resident and non-resident applicants differ markedly in the types of designs they register.

Danka Stijepovic: Lamp design

Danka Stijepovic is a designer based in Dee Why (NSW) with a passion for sustainable architecture. Her work ranges from residential architecture to urban and town planning, with a portfolio of work that includes the design of a shipping container kiosk.

To support her business, and to add her own unique design style to her work, Stijepovic designs original pieces of furniture. And in 2018 Stijepovic registered her first design for protection in Australia—a lamp inspired by mid-century Danish design.

‘As a building designer, I was always interested in interior design,’ she said. ‘The process began two years ago from an initial hand drawn image and then to a CAD design. I then had to find the right carpenter or furniture maker willing to make a prototype of each lamp—both floor and table versions.’

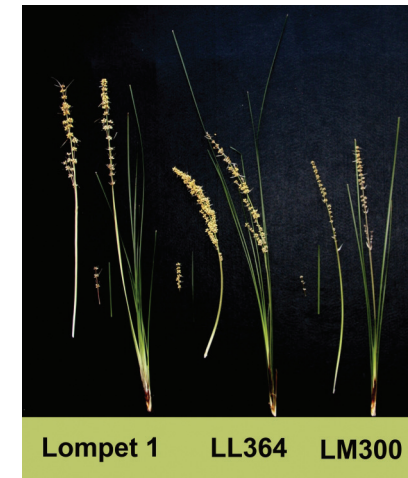
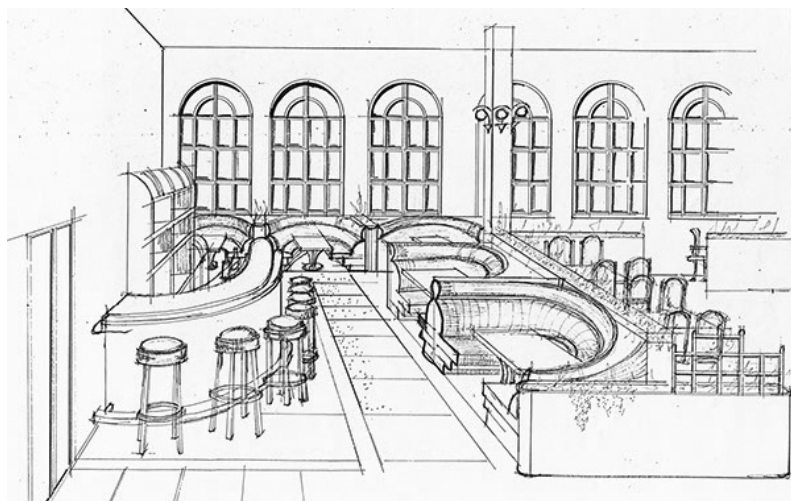
Advice from friends and colleagues was that protecting her design would be a good move to build her business. Despite initially being overwhelmed by the legally complicated topic of design protection, Stijepovic sought guidance from IP Australia and the Copyright Council to determine whether design protection was important and how to achieve it. And she applied independently for protection.

‘It was a long journey and every step was hard,’ she said. ‘But once it’s done, it’s a nice feeling of accomplishment.’

With the lamp now registered, Stijepovic is now in the marketing stage, preparing marketing materials and identifying the best avenues for sales.

And her advice for others seeking to protect their designs?

‘Just go for it. At times, it feels like it is a mixture of luck mixed with lots of work. But try to find the best way and support to accomplish each of the steps along the process. As the old saying goes—where there’s a will, there is a way!’



Spiny Headed Mat Rush (Lomandra longifolia)

Variety:
Lompet1

Application no:
2014/167

Received:
22-Jul-2014

Accepted:
04-Sep-2014

PLANT BREEDER’S RIGHTS

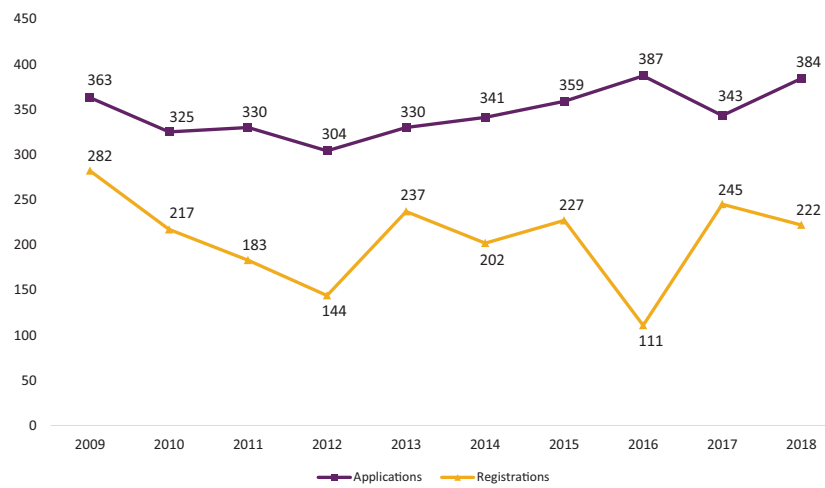
PBRs enable plant breeders to protect new varieties of plants for commercial ends. Rights holders are protected so that they can experiment in plant breeding, or direct production of improved varieties and market materials for their propagation. PBR owners can exclude others from commercially using both a registered variety and the variety’s name.

PBRs provide a maximum duration of 25 years of protection for eligible plant varieties. To receive protection, a plant variety must be clearly distinguishable, uniform and stable on propagation. In addition, a plant variety must be clearly identified, as must the person or persons responsible for its breeding.

PBR applications and registrations: In 2018, 384 PBR applications were filed in Australia. In the same year, 222 applications were registered at IP Australia. To be registered, an application must pass a substantive examination process and, in some cases, a comparative growing trial.

Figure 14 shows growth trends in PBR applications and registrations over the past decade. In 2018, PBR applications grew by 12 per cent, returning to their 2016 level. Registrations fell by around nine per cent, from 245 in 2017 to 222 in 2018.

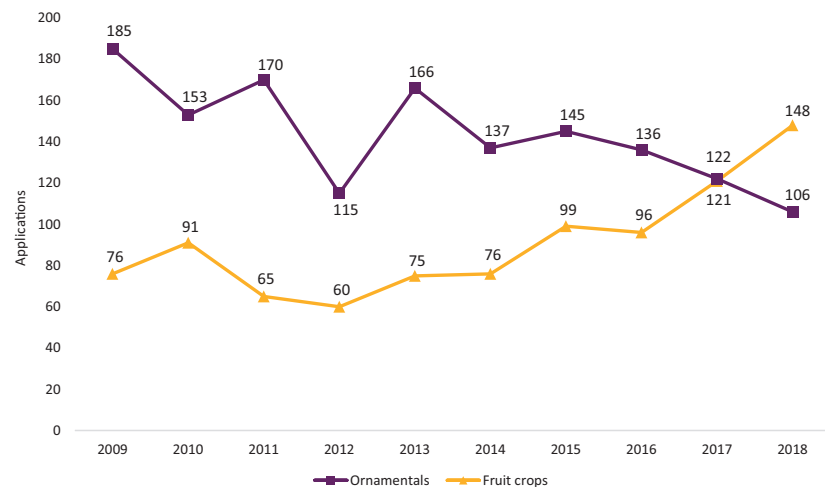
Figure 14: PBR applications and registrations, 2009-18



Plant varieties: Two plant groups—ornamentals and fruit crops—were the strongest performers in both applications and registrations in 2018. Fruit crops comprised 39 per cent of applications and 18 per cent of registrations. Ornamental plant varieties accounted for 28 per cent of applications but nearly half of registrations (48 per cent).

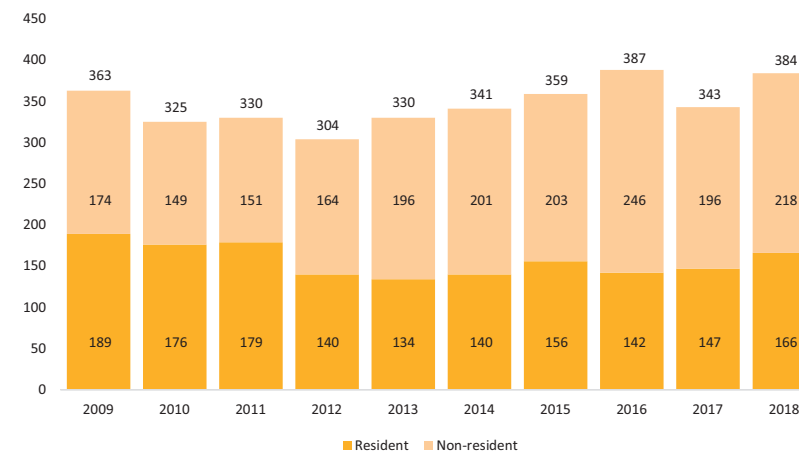
In terms of applications, fruit crops are on a growth path, whereas applications for ornamentals appear to be in decline (Figure 15). Over the past decade, PBR applications for fruit crops have increased at a compound annual growth rate of seven per cent. In comparison, PBR applications for ornamentals have decreased at a compound annual growth rate of five per cent.

Figure 15: Applications for PBRs in fruit crops and ornamentals, 2009-18



Country of origin: Figure 16 shows the number of PBR applications, by applicant group, for the period 2009-18. Non-resident applications accounted for the majority share (57 per cent) of total applications in 2018. Growth was reasonably consistent in resident and non-resident applications.

Figure 16: PBR applications by residents versus non-residents, 2009-18



In 2018, the US retained its position as the largest foreign source of both PBR applications and PBR registrations in Australia. Of the total applications filed with IP Australia, the US accounted for nearly a quarter, followed by the Netherlands which filed more than a tenth.

In 2017 (latest data), WIPO ranked the Netherlands and the US second and third, respectively, as origin countries for PBR applications filed worldwide. Both countries recorded growth in worldwide applications in 2017.¹⁵ Consistent with these trends, both countries increased their share of total applications filed with IP Australia in 2018.

According to the WIPO data, Chinese applicants were the most active in filing PBR applications worldwide in 2017. However, Chinese applicants filed almost exclusively at their home office, whereas plant breeders from the Netherlands and the US filed most of their applications overseas.¹⁶

Karen Martin: Pink blush custard apple

It has been more than 20 years since a unique variety of custard apple was bred at Yanalla Farms on Queensland’s Sunshine Coast. Called *pink blush*, this variety matures late into the traditional custard apple season and turns orange-pink in appearance when it’s hit by the sun.

With the guidance and support of friends and colleagues who had been through the process of filing for plant breeder’s rights, Karen Martin and her husband Robert discovered the business opportunities protection could help them achieve. In 2015, they sought protection for pink blush, with the variety officially registered in 2017.

And the work now begins to develop a market and demand for their variety.

‘For us, it’s a building process,’ Martin explained. ‘We now have a future we can build on and see different opportunities. There will be new income streams that we will have from this plant—which is us selling the fruit, licensing the plant to other commercial growers—and once that is done, we will set up a marketing group. That will allow us to control the number of growers and the quality of the fruit, and to be a price shaper to help create a niche market in which our product can be sold at a higher price.’

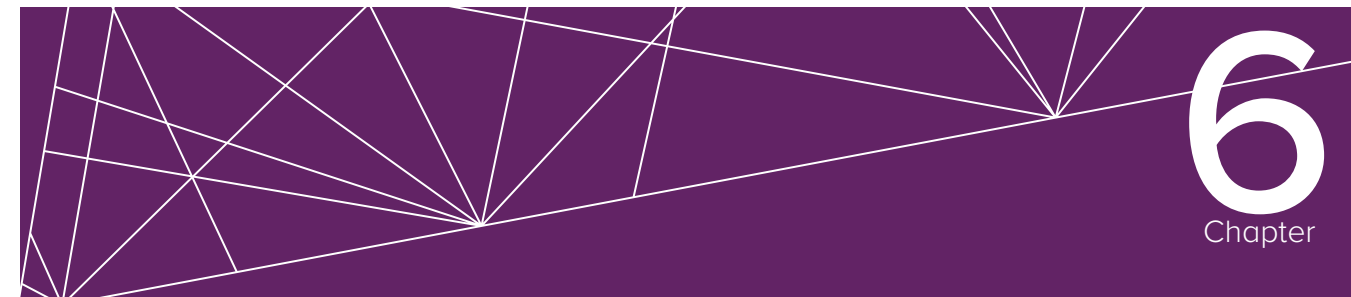
There are additional hurdles still to go through, with the next step being to seek additional IP protection, including trade mark protection for a brand that will be well-recognised. And they will also be looking at international protection.

‘That’s the most complicated part that I am still trying to get my head around,’ Martin said.

But as she can see the potential market opportunities, these are processes Martin intends to go through—with additional support and a lot of market research.

For other plant breeders thinking about applying for plant variety protection, Martin shared words of advice.

‘Don’t release your variety early,’ she said. ‘Don’t even give a cutting to friends. We didn’t do that and it wasn’t until the plant breeder’s rights were approved that we started talking about the plant. But you also need to speak to people that have gone through the process. You can learn from their experience to help create shortcuts to the process.’



TRADE MARKS: IS AUSTRALIA’S REGISTER CLUTTERED?

Trade mark cluttering occurs when a trade mark register contains many unused or overly broad marks that block the same or similar marks from being registered. Cluttering of a register increases the costs to other applicants of creating and registering new trade marks.¹⁷

The 2016 Productivity Commission inquiry into Australia’s *Intellectual Property Arrangements* highlighted trade mark cluttering as a potential problem in Australia. In responding to the Commission’s report, the Australian Government asked IP Australia ‘to undertake further research and analysis to determine the sources and extent of any clutter on the trade marks register’ before developing potential reforms.¹⁸

In investigating this issue, IP Australia’s Office of the Chief Economist (OCE) examined the available evidence, consulting externally through academic seminars and internally, to determine the extent of trade mark cluttering in Australia.

Trade mark cluttering in Australia is not an immediate concern

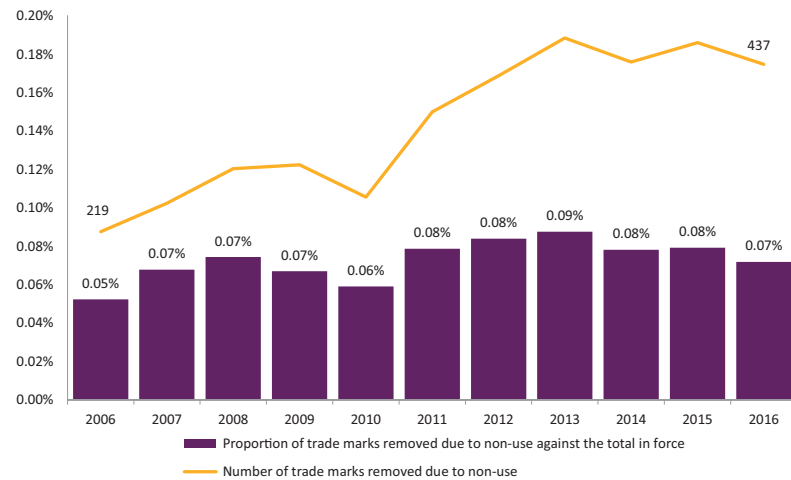
Measuring trade mark cluttering is challenging as it is difficult to know if a trade mark is still in commercial use or if it is unjustifiably blocking use by others. The OCE’s research creates and develops a new and comprehensive set of measures to probe the trade mark cluttering situation in Australia. Overall, our results suggest that there is a low incidence of cluttering in IP Australia’s trade mark register, although there is evidence of applicant behaviour that can lead to additional trade mark cluttering in the future.

A very small number of marks are removed due to non-use

The Australian *Trade Mark Act (1995)* allows a third party to challenge and remove another person’s trade mark under certain conditions where a mark is not being used.¹⁹ When someone is petitioning to remove a trade mark from the register because it is not being used, we considered this an indicator of possible clutter.

Figure 17 illustrates that although the number of marks removed due to non-use doubled, from 219 in 2006 to 437 in 2016, these represent less than 0.1 per cent of the total marks in force each year. This proportion has not increased over the last 10 years, indicating that the increased number of non-use marks which are actively removed for being unused does not represent a deterioration of the Australian trade mark register.

Figure 17: Annual number of trade marks removed due to non-use, and their proportions against the total number of marks in force in the same year, from 2006 to 2016

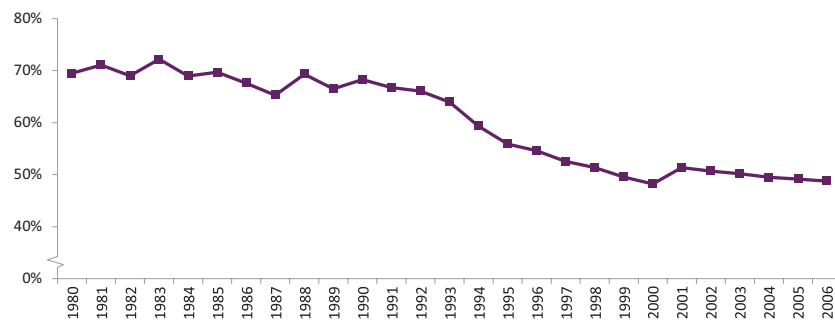


A potential source of trade mark cluttering has been growing

Once trade marks are registered they are automatically valid for the first ten years and can be renewed every ten years. The trade marks not renewed after ten years could arguably be identified as non-use trade marks. While we know that the mark was not commercially useful in the eleventh year, it might also have been unused in the tenth or ninth year. It is almost impossible, though, to know exactly when a mark stopped being used.

The renewal rate after the first ten-year registration term has dropped from around 70 per cent in the 1980s to 50 per cent in the 2000s (Figure 18). This has occurred during a period of strong growth in trade mark registrations within Australia, the total marks in force rising by more than 60 per cent, from 391 450 in 2005 to 635 355 in 2017.²⁰ The number of potential non-use trade marks which remain on the register during their first ten years has been increasing, and this has likely contributed to trade mark cluttering in Australia.

Figure 18: First renewal rate by trade mark filing year, 1980-2006



Other indicators also support our key finding

A number of indirect indicators of trade mark cluttering are also included in our research. The first, inspired by work in the US, is a study of single-word marks for popular words in the registers of the United States Patents and Trademarks Office (USPTO) and IP Australia. In both countries there are lists of the most popularly used words, and we compare these to the trade mark registers in each country to see how ‘full’ the register is.

These popular words indicate demand for trade marks as applicants seek concise, easily understood marks to support their brand. Our analysis finds that there are fewer single-word trade marks registered in Australia than in the US. For example, of the most popular 1 000 words, 81 per cent are registered in the US but only 56 per cent are registered in Australia (see Table 2). This may indicate that the Australian trade mark register is less crowded than its US equivalent, or that the relative value of a market niche is greater in the US than in Australia.

Table 2: Proportion of most frequently used words matching active single-word marks

Trade mark office	Number of most popular words	Ratio of most frequently used words matched as single-word marks
IP Australia	1 000	56%
USPTO		81%
IP Australia	5 000	47%
USPTO		69%
IP Australia	10 000	41%
USPTO		62%

Despite the data indicating a low level of clutter, the average number of words registered in an Australian trade mark has been increasing, from below 1.5 before 1980 to above two after 1990. It appears that new applicants are filing marks that contain more words and are more complex than single-word marks. A possible reason for this change in behaviour is that popular single-word marks are already in the register, precluding their registration. More complex marks may be less effective to applicants, as research indicates that concise trade marks are more valuable to their owners.²¹

Another aspect of clutter is the scope of protection, where a trade mark is registered in NICE classes which are not being utilised in the marketplace. Our analysis did not find strong evidence of trade mark cluttering in any particular class of trade marks in Australia, so this did not seem to be an issue.

In summary, we find that at present the overall state of trade mark cluttering in Australia is not unduly hindering the system. The number of ‘cluttering marks’ has been increasing, but their ratio with the total stock of active trade marks is still small. It appears the current mechanisms for removing non-use marks that block other traders are working effectively. The research paper is available as an economics working paper on the IP Australia website at www.ipaustralia.gov.au/economics

TM-LINK

TM-Link is a single, internationally linked trade mark database, allowing researchers, businesses and IP offices to track the use of similar trade marks across different countries. IP Australia, in collaboration with The University of Melbourne and Swinburne University of Technology, built the database and released its beta version in 2017.

Despite TM-Link still being in its infancy, it is already amassing a substantial amount of data: the database currently includes data on 15.3 million trade mark applications filed in Australia, Canada, the European Union, New Zealand, the UK and the US. These applications were filed by over five million applicants from 238 unique geographic regions. Over the coming years, the data is expected to grow, as more IP offices add their trade marks to the database.

IP Data Platform

The IP Data Platform is an exciting new initiative that has just been released by IP Australia.

The IP Data Platform will provide registered users with access to a cloud-based analytics lab. The lab contains data science tools that support users to interrogate the TM-Link database, upload their own data and collaborate with other users. For governments, universities and businesses worldwide, the benefits from using TM-Link via the IP Data Platform will be far-reaching.

Analytical insights from TM-Link

TM-Link data can be used to understand patterns of international trade mark filing activity. As a preliminary example, the Office of the Chief Economist (OCE) looked at the foreign-origin trade marks of four countries—the US, Canada, the UK and Australia—where full data was available, and compared applications in each class across these countries.

Of the four countries, Australians file relatively more trade marks overseas in the Wines and spirits class than do applicants in other countries. Toys and sporting goods, as well as Hotels and restaurants, also feature prominently in Australian trade mark applications filed overseas.

Results were starkly different for the other three countries. Textiles, Leather goods and Telecommunications top the list in UK-origin applications filed overseas; Building materials, Construction and Treatment of materials were the top classes in applications by Canadians; and Firearms, Lubricants and Fuels and paints were the top classes in applications by US applicants.

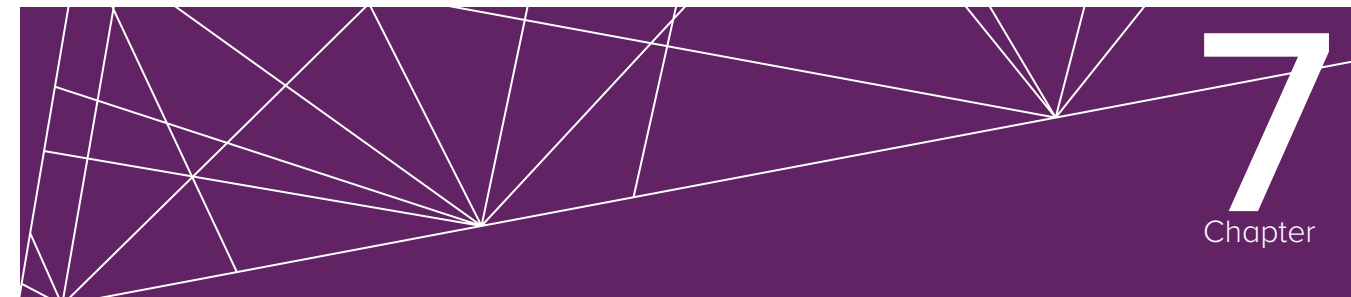
As more countries' data are included in TM-Link, it will be possible to profile their international trade mark filing activity for the purpose of generating policy insights.

Supporting the development of TM-Link and the IP Data Platform

IP Australia is pleased to offer free trial access to the IP Data Platform to researchers, data scientists, developers and other interested parties in the broader IP community. Participants will be invited to share their work in order to encourage greater collaboration.

As TM-Link and the IP Data Platform continue to be developed and enhanced, IP Australia is inviting interested parties to participate in a free trial and contribute to its design.

- For further information about TM-Link or the IP Data Platform, and to receive updates on these initiatives, please visit: www.tmlink.net.au
- To register your interest in accessing the IP Data Platform, please email the OCE: chiefeconomist@ipaaustralia.gov.au



DESIGNS: AN OPPORTUNITY FOR GROWTH

Design innovation is central to competition in an increasingly diverse range of industries and a source of comparative advantage among nations.²² Within Australia, a range of initiatives have been undertaken over recent decades to encourage greater use of designs across industries. Australia is not alone in this regard.²³ A new *Designs Law and Practice* study by IP Australia's Office of the Chief Economist (OCE), in collaboration with researchers from the Intellectual Property Research Institute of Australia (IPRIA) at The University of Melbourne, has explored how Australia's design economy compares to those of other countries. To better understand Australia's position, the OCE-IPRIA study also compared the design intensity of industries within Australia and the international context.

The study reveals that Australia's design labour force is small, after accounting for Australia's size as an industrial economy. Australia's design economy is productive in design IP generation (Figure 17). However, Australia lags its international peers, both in the rate at which its design labour force is growing and in its rate of increase in design registrations.

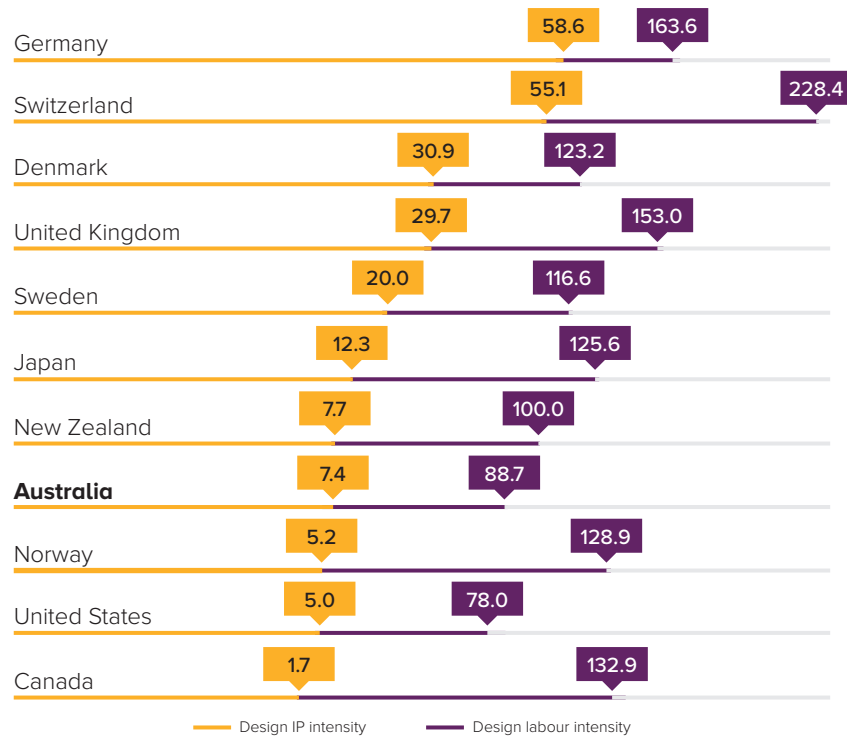
Design IP intensity

A measure of the design count in total registered applications by a country's residents plus, for EU countries, by its nationals at the EUIPO, divided by the Value Added (USD billions) of a country's industrial sector.

Design labour intensity

A measure of the total number of persons employed within a country in design-related occupations, divided by the total employees (thousands) in a country's industrial sector.

Figure 19: Design intensity of Australia and its international peers, 2016



Source: IP data: WIPO IP Statistics Database (2018).

Labour data: National population censuses and labour force surveys. Regional statistics: World Bank Open Data (2018).

Notes: Data for Japan is from the 2015 Japanese Population Census. Data for New Zealand is from the 2013 New Zealand Census of Population and Dwellings.

To study design rights use across Australian industries, designs data from IPGOD 2018 was matched with firm entries in the *Australian Business Register* to identify the industries in which Australian design activity is focused. Analysis was also undertaken of the Locarno product classes to which registered designs are attributed. Locarno is the scheme of product classes and subclasses used in Australia and by WIPO to classify registered designs. The analysis revealed significant variations in focus between Australian and non-Australian applicants for registered designs.

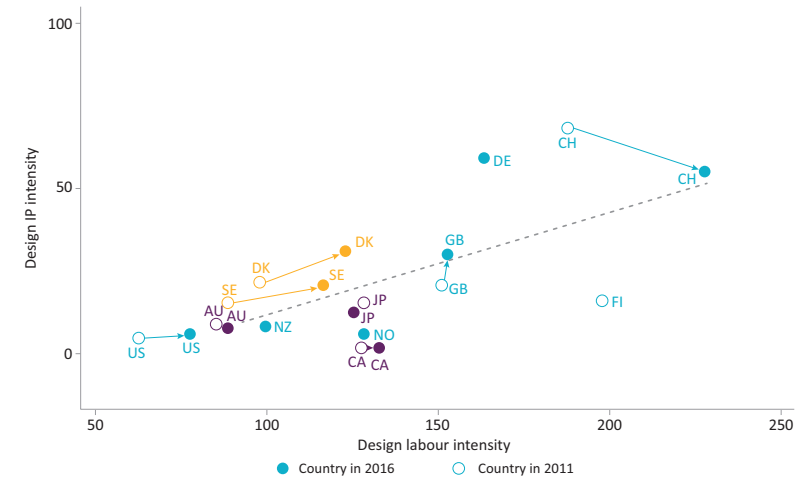
Central among our findings was that the relative extent to which a country makes use of the designs system is positively associated with the design labour intensity of its workforce. The study also found evidence that a country's use of the designs system is positively associated with the concentration of design labour across industries. The question this raises is whether the Australian designs system is relevant to the design community at large, or only to a small segment of that community.

Australia not growing in design intensity as fast as its international peers

The OCE-IPRIA study is the first study to bring together two well-established methods for measuring design activity. *Design labour intensity* is assessed by measuring the number of persons employed within a country or industry in design-related occupations. The *design IP intensity* of a country or industry is assessed by measuring its annual number of registered designs.²⁴ The study's method brings the design data into context relative to those parts of an economy that make use of designers' services in generating industrial designs.

Based on data from 2011 to 2016, Australia lagged its peers for growth in both design IP intensity and design labour intensity. Figure 20 illustrates this lag: from 2011 to 2016, Australia travelled less far than other countries along the horizontal axis (design labour intensity) and travelled backward along the vertical axis (design IP intensity). Sweden (SE) and Denmark (DK), in yellow, were among those countries identified as strengthening their design economies, based on their movement up both axes, unlike Australia, Canada and Japan (in purple) which remained largely unchanged.

Figure 20: The design intensity of countries, 2011-16



Source: Labour data: Population censuses and labour force surveys from 12 countries; Eurostat Labour Force Survey, 2011–2016. Designs data: WIPO IP Statistics Data Center 2018. Retrieved 2018 from: <https://www3.wipo.int/ipstats/>.

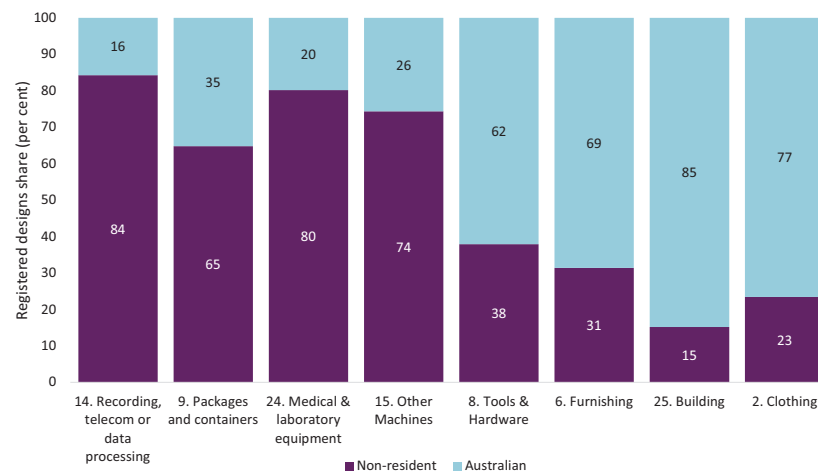
Australian and overseas designers have a very different focus for their design rights

The OCE-IPRIA study analysed the design intensity of Australian industries. Based on 2005-16 filing data, the most design IP-intensive industry in Australia is Rigid and semi-rigid polymer product manufacturing.²⁵ Polymers have diverse applications in product markets ranging from packaging to solar panels and mobile phones but are not the focus of Australian design filers.

The analysis shows that Australian residents differ markedly from non-residents in their focus when registering designs. Australians generally register designs within a restricted set of product classes, including Clothing (Locarno class 2), Furnishings (class 6) and Building units and construction elements (class 25). Non-resident applicants in Australia maintain focus in a quite different set of product classes, including Recording, telecommunication or data processing equipment (class 14).

The study identified those product classes in which there is a strong imbalance between residents' and non-residents' shares of total design filings (Figure 21). Non-residents dominate a large number of these product classes. This was found to be the case for registrations, certifications and renewals of registered design applications. An implication is that non-residents tend to focus on product classes characterised by longer design lifecycles than those in which Australian residents focus.

Figure 21: Product classes of strongest contrasting focus for Australian resident and non-resident design applicants, 2005-16



Source: IPGOD 2018. Retrieved 2018 from: <www.data.gov.au>.

Non-residents focus on ICT but not clothing in Australia

The study also examined the design intensity of industries across countries. The analysis revealed country level differences in the degree to which resident and non-resident applicants differ in their product class focus.

In Australia, Clothing is a major focus of resident applicants only. In comparison, across Germany, Italy and the UK, Clothing has received strong attention from both resident and non-resident applicants. In Australia, Recording, telecommunication or data processing equipment is largely the province of non-resident design applicants. In Canada and the US, however, this product

class receives strong attention from both residents and non-residents—in the US, the class accounted for 16 per cent of resident design patents and 24 per cent of non-resident design patents in 2016.

The US is the largest country of origin for designs registered in Australia. In part, this reflects the US's status as a major supplier into Australia of computing and telecommunications equipment. In 2016, this product class ranked as the third-highest merchandise import into Australia.²⁶ Our analysis revealed that design IP generation by the US in computing corresponds with substantial design labour inputs. In the US, seven per cent of the US's total design workforce in 2016 worked in the Manufacture of computing, electrical and optical equipment.²⁷ Designers represented 15 per cent of all employees in that industry.

However, there is some indication that the US's design workforce is changing in structure. Specifically, designers appear to be exiting computer manufacturing, as design labour in online services grows apace. Between 2011 and 2016, the design labour intensity of computer manufacturing grew at a low compound annual growth rate (CAGR) of 0.4 per cent. In the same period, a 28.3 per cent CAGR was observed in the design labour intensity of Information service activities (e.g. web applications, media sites, data processing services), a rate of growth outperformed only by the Human health activities industry.²⁸

The design rights story is changing

The *Designs Law and Practice* study reveals that significant changes are occurring in the structure of design workforces overseas. These changes may have implications for the types of designs likely to be registered in Australia over the coming years.

Policy questions around designs law include whether and how to protect virtual designs. These include graphical user interfaces, screen icons and other design types implemented via software on screens. The Australian Government has accepted the Advisory Council on Intellectual Property's recommendation to reconsider the treatment of virtual or non-physical designs.²⁹ Policy work and consultation to address this issue is expected to commence in the near future. Given the US's status as the largest source of non-resident design applications in Australia, and changes in the US's design workforce, virtual designs could become a strong future focus in Australia for registered designs.

The *Designs Law and Practice* study aimed to contribute insights into IP Australia's ongoing policy analysis and review of the designs system. The research is available as an economics working paper on the IP Australia website at www.ipaustralia.gov.au/economics.

RESEARCH PROGRAM

IP Australia set up the Office of the Chief Economist (OCE) in November 2012. Since then, it has grown from its focus on economics research to include (1) the open data program and (2) the Patent Analytics Hub, which provides analytical services to government agencies and research organisations.

In 2018, we continued to explore new avenues for our research and data services and extended the outreach activities of the Patent Analytics Hub.

Our focus as an office is to provide empirical evidence to support IP Australia's policy advice and operational decision making. An important part of our mission is to actively engage with the IP community, including internationally, and this involves continuing consultation on the OCE research program and data priorities.

Data

In 2018, we adopted machine-learning algorithms for our Intellectual Property Government Open Data (IPGOD), to better identify the same applicants across all their IP right applications over time. We also made significant data quality improvements in regard to Australian Business Number (ABN), firm size and geographic variables. This year, we are looking to automate the delivery of IPGOD from source systems to data.gov.au. This will effectively make IPGOD the same product as our Intellectual Property Government Open Live Data (IPGOLD) and it will allow analysts to access the best possible up-to-date applicant information. We envision the delivery process to run annually on the full data and weekly on new records.

This year, we will also release an update of our Intellectual Property Longitudinal Research Data (IPLORD) for the research community. IPLORD is the annual snapshot on stocks and flows of IP rights by applicants over time. We will work with the Australian Bureau of Statistics (ABS) to integrate IPLORD, in its updated form, with the Business Longitudinal Analysis Data Environment (BLADE). The BLADE dataset contains, among other things, financial data on all actively trading Australian businesses. The integration of these datasets should support policy relevant research.

Following a successful beta release in 2017, IP Australia is pleased to be launching TM-Link, a world-first international trade mark database linking trade mark applications across jurisdictions. TM-Link, together with our new IP Data Platform (a fully functional cloud-based analytics lab), will help to generate new insights into global trade mark use (see the TM-Link feature in Chapter 6).

Research

Our research remains focused on policy priorities such as the impact of IP rights on competition and innovation. We also produce research to inform and support the corporate priorities of IP Australia.

In 2018, the OCE completed a cost-benefit analysis of Australia's potential accession to The Hague Agreement Concerning the International Registration of Industrial Designs, now published on IP Australia's website. In addition, we completed a research paper on trade mark cluttering (see Chapter 6). The OCE's research collaboration with the Intellectual Property Research Institute of Australia (IPRIA) produced a report on designs law and practice (see Chapter 7 for a summary).

The OCE continued to gain influence through its membership of the Economic Data Analysis Network (EDAN) and the Australian Government Economists' Network. The OCE also sponsored and participated in economic seminars and conferences.

In 2018, the OCE commenced work on a project analysing the impact of IP rights on business performance, using the ABS BLADE dataset. A second EDAN project will examine the links between IP rights and competition. Both projects are expected to yield research papers in the second half of 2019 and the OCE will aim to conduct further IP research using linked data assets over the coming years.

Patent Analytics

In 2018, IP Australia's Patent Analytics Hub (the Hub) published two reports, released its first interactive report, and began trialling preparation of free Patent Landscape Reports with every international type search.³⁰

The Brainwaves Patent Analytics Report,³¹ prepared for The National Foundation for Medical Research and Innovation (NFMRI),³² explores patents relating to electrode positioning for detecting or recording brainwaves. Recording and

analysis of brainwaves is used for medical diagnosis and for therapeutic treatment of neurodegenerative disease. This analysis demonstrates ongoing commercial interest in this area of innovation, with strong growth and potential for further research and commercialisation opportunities. We have also provided the content of this report as an interactive visualisation³³—a first for the Hub—which allows the field of research to be more widely understood.

The Hub also published a Patent Analytics Report on Blockchain Innovation.³⁴ This report, prepared for the Australian Computer Society (ACS), analyses blockchain innovation and the potential for Australia to benefit from this technology. The report found that blockchain is a small but rapidly growing technology, with between a 140 and 230 per cent increase in patent filings every year since 2013. Many of the most active companies are young, recently established start-ups, and provide some great Australian success stories.

In late 2018, the Hub began a trial of preparing free Patent Landscape Reports to be provided with every international type search.³⁵ By providing key insights into technology trends and activities, these reports are designed to support inventors considering international patent protection. The reports, paired with an international type search,³⁶ can help potential applicants strengthen their IP strategy.

The aim of IP Australia's program of economic analysis and research is ultimately to evaluate the economic impact of various components of the IP system, in order to assist evidence-based operational and policy decisions within IP Australia and other Commonwealth agencies. IP Australia's research procurement plan is published annually, with any new projects announced through our reporting structures. Academics and service providers who would like to be updated on research tenders should email us via chiefeconomist@ipaaustralia.gov.au. Data requests may be sent to the same email address. To keep updated, follow us on Twitter (@IPAustralia_OCE) and visit us online at www.ipaustralia.gov.au/economics.

END NOTES

Introduction

¹ Australian Trade and Investment Commission. 2017. *Invest in Australia: Benchmark report*. Canberra: ATIC, <<https://www.austrade.gov.au/International/INvest/Why-Australia/Growth>>, viewed January 2019.

Chapter 2

² Pharmaceutical substances for which there has been a delay in market approval can receive an extension of the protection term. As a result, protection may last for up to 25 years.

³ The PCT is an international treaty which makes it possible to seek patent protection for an invention simultaneously in multiple countries using a single international application. After a patent application advances through the PCT procedure, it enters the 'national phase' in which its granting in Australia will be processed by IP Australia.

⁴ A total of 13 385 applications came from the US, down slightly from 13 399 in 2017.

⁵ The WIPO technology concordance groups various International Patent Classification (IPC) classes and subclasses into 35 technology fields. For details, see <<https://www.wipo.int/ipstats/en/>>.

⁶ The priority date is the date used to identify prior art relevant to establishing the novelty and/or non-obviousness of an invention.

⁷ Unusual growth in Chinese applications resulted in non-resident applications outnumbering resident applications for the first time in 2016. Demand from Chinese applicants decreased in 2017; however, it increased again in 2018.

⁸ Johnson, M., Bialowas, A., Nicholson, P., Mitra-Kahn, B., Man, B., & Bakhtiari, S. 2015. The economic impact of innovation patents. *IP Australia Economic Research Paper Series*. Canberra: IP Australia, <https://www.ipaustralia.gov.au/sites/g/files/net856/f/reports_publications/economic_impact_of_innovation_patents.pdf>, viewed 25 January 2018.

⁹ Productivity Commission. 2016. *Intellectual Property Arrangements*. In Productivity Commission Inquiry Report. Canberra: PC, <<http://www.pc.gov.au/inquiries/completed/intellectual-property/report/intellectual-property.pdf>>, viewed 25 January 2018.

¹⁰ WIPO IP Statistics Data Center 2018, <<https://www3.wipo.int/ipstats/>>, retrieved January 2019.

Chapter 3

¹¹ The Madrid system allows filing of trade mark applications in multiple jurisdictions. <https://www.wipo.int/madrid/en/how_madrid_works.html>.

¹² Australian Bureau of Statistics. 2017. Australian Demographic Statistics, Jun 2017, cat. no. 3101.0, <<http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0>>, retrieved 28 February 2018.

¹³ SMEs made 63 per cent of trade mark registrations in 2017, with private individuals accounting for 25 per cent and large firms 12 per cent. IPGOD 2018.

¹⁴ For details, see: <<https://www.uspto.gov/trademark/trademark-updates-and-announcements/nice-agreement-current-edition-version-general-remarks>>.

Chapter 5

¹⁵ World Intellectual Property Organization. 2018. *World Intellectual Property Indicators 2018*. Geneva: WIPO; 176.

¹⁶ World Intellectual Property Organization. 2018. *World Intellectual Property Indicators 2018*. Geneva: WIPO; 176–183.

Chapter 6

¹⁷ von Graevenitz, G., Greenhalgh, C., Helmers, C., & Schautschick, P. 2012. *Trade Mark Cluttering: An Exploratory Report*. London: UK Intellectual Property Office.

¹⁸ Australian Government. 2017. *Australian Government Response to the Productivity Commission's Inquiry into Intellectual Property (IP) Arrangements*. Canberra: Commonwealth of Australia, <<https://www.industry.gov.au/data-and-publications/australian-government-response-to-the-productivity-commissions-inquiry-into-intellectual-property-ip-arrangements>>, viewed January 2019.

¹⁹ These conditions included the situation where five years had lapsed since the mark's filing date and where the mark had been registered for a continuous period of three years without being used.

²⁰ WIPO IP Statistics Data Center 2018, <<https://www3.wipo.int/ipstats/>>, retrieved January 2019.

²¹ Beebe, B. & Fromer, J.C. 2018. Are we running out of trademarks? An empirical study of trademark depletion and congestion. *Harvard Law Review*, 131(4); 966–67.

Chapter 7

²² Gruber, M., de Leon, N., George, G. & Thompson, P. 2015. Managing by design: From the Editors. *Academy of Management Journal*, 58(1); 1–7.

²³ Andersen, L., & Colley, L. (Eds). *Creative Business in Australia: Learnings from the Creative Industries Innovation Centre, 2009 to 2015*. Sydney, Australia: UTS ePress. See also: Cox, G. 2005. *Cox Review of Creativity in Business: Building on the UK's Strengths*. London: HM Treasury.

²⁴ Both design measures are weighted by data on industry size to account for country or industry level differences. At the industry level, data on design employment and design rights use is divided by the total workforce of an industry (thousands). At the country level, design intensity measures are weighted using data on the size of a country's industrial sector. In assessing design IP intensity, a country's design registrations are divided by the Value Added (constant 2010 USD billions) of its industrial sector. In assessing design labour intensity, a country's number of designers is divided by the total employees (thousands) in the country's industrial sector. The industrial sector corresponds to manufacturing, mining, construction and utilities, as defined in World Bank Open Data. See: <<https://data.worldbank.org/indicator/NV.IND.TOTL.ZS>>.

²⁵ In analysing the design intensity of Australian industries, industries are defined as in the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006. Code 1912 in that scheme corresponds to Rigid and semi-rigid polymer product manufacturing. See: <<http://www.abs.gov.au/ausstats/abs@.nsf/mf/1292.0>>.

²⁶ Department of Foreign Affairs and Trade. 2017. *Composition of Trade, Australia, 2015–16*. Canberra: DFAT.

²⁷ In the international comparison, industries are defined as in the International Standard Industry Classification (ISIC Rev 4) at the divisional (two-digit) level. Code 26 in that scheme corresponds to Manufacture of computer, electronic and optical products. See: <https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf>.

²⁸ In ISIC Rev 4, code 63 corresponds to Information service activities. Code 86 corresponds to Human health activities.

²⁹ Advisory Council on Intellectual Property. 2015. *Review of the Designs System*. ACIP, <<https://www.ipaustralia.gov.au/about-us/public-consultations/archive-ip-reviews/ip-reviews/Review-of-the-Designs-System>>, viewed December 2018.

Chapter 8

³⁰ <<https://ipaustalia.govcms.gov.au/tools-resources/patent-analytics-hub>>.

³¹ <<https://ipaustalia.govcms.gov.au/tools-resources/publications-reports/brainwaves-patent-analytics-report-october-2018>>.

³² <<https://nfmri.org.au/>>.

³³ <<https://public.tableau.com/profile/patent.analytics.hub#!/>>.

³⁴ <<https://ipaustalia.govcms.gov.au/tools-resources/publications-reports/patent-analytics-report-blockchain-innovation>>.

³⁵ <<https://www.ipaustralia.gov.au/about-us/news-and-community/news/trial-provide-key-insights-support-your-international-patent>>.

³⁶ <<https://www.ipaustralia.gov.au/patents/applying-patent/provisional-application-what-include/international-type-search>>.

