

## ***How Australia can Invent a Thriving Technology Export Sector***

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### **Introduction**

The role of a patent system is to encourage innovation by providing an option to acquire a limited monopoly to the owner of a patent in return for the disclosure of the invention underpinning the patent. The principle is that innovation is encouraged because a patent owner can use the implied monopoly to secure a higher market share and/or higher margins for their products, or alternatively by licensing or selling the patent rights.

There have been many studies that have attempted to elucidate the value of patent systems to whole economies and also the value of patent portfolios to companies. Because this is such a multi-variable problem, the conclusions from these studies are quite mixed. However, it can be safely assumed that some countries benefit greatly from their patent systems. Australia is *not* one of these; the Australian patent system has certain features that are far from optimal in the context of returning value to the economy. And these features are relatively easy to fix!

Currently, in Australia, the perceived risk of investment in technology is quite high, and I believe that a large part of this perception can be attributed to the fact that financial damages for patent infringement are difficult to achieve and are also quite low relative to, say, the USA. Also, certain tax relief systems, the ability to expense patent application costs and the patent box system, which are available to patent owners in some countries, are not yet available in Australia. In short, I believe that Australia's patent system is a 'lazy asset' which can be 'recapitalised' with some very simple measures.

Further, Australia cannot have an ecosystem of innovative *technology solution* exporters unless the charge is led by its larger companies. Therefore, in any efforts to encourage a local technology export sector I argue that Australia would be well-placed to focus on schemes that encourage its large companies to focus on patents and technology development. That is, with some judicious changes to the patent and tax systems Australia can encourage its larger companies to invest into key technology export sectors.

But first I need to set the scene with a discussion of the Australian economy. Specifically I will discuss the over-reliance on the export of resources and the apparent lack of a credible high-tech plan for the economy.

### **The Australian Economy**

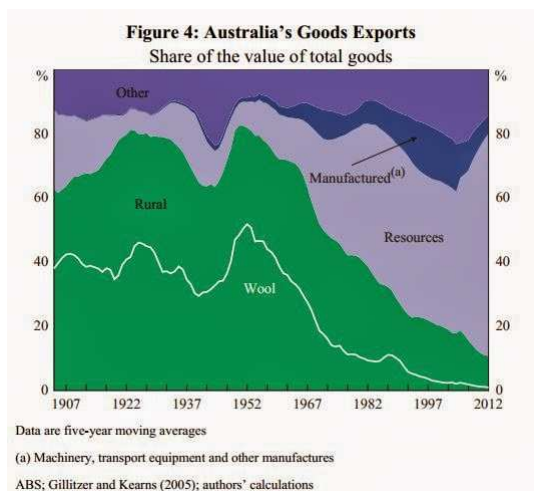
The economy of Australia is one of the larger capitalist economies in the world with a gross domestic product (GDP) of US\$1.5 trillion as of 2013. Australia's total wealth is estimated to be US\$6.4 trillion. In 2012, it was the 12th largest national economy by nominal GDP and the 17th-largest measured by 'purchasing power parity'-adjusted GDP. Australia has about 1.7% of the world's economy and only 0.33% of the world's population. Australia is also the 19th-largest importer and 19th-largest exporter in the world.<sup>1</sup>

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<sup>1</sup> [http://en.wikipedia.org/wiki/Economy\\_of\\_Australia](http://en.wikipedia.org/wiki/Economy_of_Australia), July 2014

The Australian economy has these over-arching features:

- The primary external wealth input into the economy is from the export of resources. Despite the fact that the mining sector dominates exports it represents only 10% of GDP and the 'mining-related economy' represents a further 9% of GDP; that is, the total mining sector is just 19% of the GDP.<sup>1</sup> Also, due to foreign investment only about one-fifth of profits from Australia's mining exports remain in Australia. The graph and table below demonstrate the current reliance on the export of resources.



source<sup>2</sup>

#### Australia's leading exports (goods and services) 2010<sup>(a)</sup>

	(\$ billion)
Iron ore & concentrates	49.4
Coal	43.0
Education-related travel services	17.7
Gold <sup>(b)</sup>	15.0
Personal travel (excluding education) services	12.2
Crude petroleum	10.5
Natural gas	9.4
Aluminium ores & concentrates (including alumina)	5.3
Copper ores & concentrates	5.0
Aluminium	4.4
Beef	4.4
Wheat	4.2
Medicaments (including veterinary)	3.6
Technical & other business services	3.5
Copper	3.2
Professional services	3.1
Business travel services	3.0
Passenger transport services <sup>(c)</sup>	2.7
Refined petroleum	2.4
Meat (excluding beef)	2.3
<b>Total exports<sup>(d)</sup></b>	<b>284.6</b>

source<sup>3</sup>

- Australia imports a large fraction of its technology products and services; this statement can be verified from the tables below that show the relative value of the imports of various goods and services. These imported goods and service are used in consumer, government and business applications.

#### Australia's services imports 2010<sup>(a)</sup>

Services <sup>(b)</sup>	\$ million	% share
Manufactured services on physical inputs owned by others	6	0.0
Maintenance & repair	283	0.5
Transport		
Passenger <sup>(b)</sup>	5,708	10.2
Freight	8,542	15.3
Other <sup>(c)</sup>	291	0.5
Postal & courier services	129	0.2
<b>Total transport</b>	<b>14,670</b>	<b>26.2</b>
Travel		
Business	3,150	5.6
Personal	21,248	38.0
Education-related	906	1.6
Other personal <sup>(d)</sup>	20,342	36.4
<b>Total travel</b>	<b>24,398</b>	<b>43.6</b>
Other		
Construction	0	0.0
Insurance & pension	615	1.1
Financial	664	1.2
Intellectual property charges	3,706	6.6
Telecommunications, computer & information	2,038	3.6
Other business services	7,277	13.0
Personal, cultural and recreational	1,377	2.5
Government services, not included elsewhere	888	1.6
<b>Total other services</b>	<b>16,565</b>	<b>29.6</b>
<b>Total services imports</b>	<b>55,922</b>	<b>100.0</b>

source<sup>3</sup>

#### Australia's major goods imports 2010

Goods <sup>(b)</sup>	\$ million	% share
Crude petroleum	16,218	7.7
Passenger motor vehicles	15,917	7.5
Refined petroleum	9,970	4.7
Medicaments (incl. veterinary)	7,896	3.7
Telecom equipment & parts	7,534	3.6
Computers	6,526	3.1
Gold <sup>(b)</sup>	6,520	3.1
Goods vehicles	6,019	2.8
Civil engineering equipment & parts	3,049	1.4
Monitors, projectors & TVs	2,822	1.3
Furniture, mattresses & cushions	2,629	1.2
Measuring & analysing instruments	2,616	1.2
Vehicle parts & accessories	2,572	1.2
Prams, toys, games & sporting goods	2,565	1.2
Electrical machinery & parts, not elsewhere specified	2,447	1.2
Heating & cooling equipment & parts	2,247	1.1
Pumps (excl. liquid pumps) & parts	2,220	1.0
Rubber tyres, treads & tubes	2,173	1.0
Household-type equipment, not elsewhere specified	2,054	1.0
Office machines	2,025	1.0
<b>Total goods imports<sup>(c)</sup></b>	<b>211,850</b>	<b>100.0</b>

- The Australian economy is dominated by its services sector which comprises an amazing 68% of GDP.<sup>1</sup> These high levels of domestic services are those that cannot be exported, nor yet replaced with technology, or are mandated by government regulation. These services help to keep (almost) everyone employed and they also act to 'distribute' the wealth within the country.

<sup>2</sup> [http://1.bp.blogspot.com/-ikSngo3VEul/UuCiUT4vQmI/AAAAAAAAAFe4/uoLxjyvwz\\_nY/s1600/Australia's+Goods+Exports+Historical.JPG](http://1.bp.blogspot.com/-ikSngo3VEul/UuCiUT4vQmI/AAAAAAAAAFe4/uoLxjyvwz_nY/s1600/Australia's+Goods+Exports+Historical.JPG)

<sup>3</sup> DFAT - Trade at a Glance 2011. <http://www.dfat.gov.au/publications/trade/trade-at-a-glance-2011.pdf>

## The Australian Economy; there is no credible high-tech plan

At a bird's-eye view, Australia's economic position looks pretty comfortable. But there are some major changes afoot that have the potential to have a strong negative impact on Australia's economy:

- Firstly, global warming may impact the mid-term value of the value of Australia's resource exports as carbon taxes and similar schemes negatively impact global consumption.
- In addition, we are continuing to see a flattening in global demand for resources as the economic conditions in many countries remain stagnant. There are also fears that China may be the subject of serious economic recession which would have a negative flow-on effect to all economies.
- Global warming may force Australia towards even further increases in technology imports, e.g. energy efficient technologies and renewable energy generation, as it makes the required domestic responses to this global problem.
- We may see further substantial declines in demand for Australia's resource exports exacerbated by the increased exploitation of foreign resources by countries with lower costs of business. Conversely, if Australia over-exploits its own resources we can expect to see prices drop and the net benefit to the economy also reduce.

A fundamental problem with Australia's economy is that the current dependence on the export of resources is subject to fluctuations in requirements for global supply and demand, and there isn't really a good alternative plan if demand for all of Australia's resources exports drops simultaneously, and for an extended period. In the instance that Australia's export income drops, it may not be able to adequately substitute imports with locally made goods and services because (a) Australia's manufacturing capability has slowly succumbed to lower cost and more sophisticated foreign competition<sup>4</sup>, and (b) Australia has not really developed a world-class IT industry. That is, Australia is potentially vulnerable to a self-fulfilling downwards spiral in both wealth generation and economic re-investment into business.

These risks are being debated by groups such as the Melbourne Economic Forum<sup>5</sup>; their suggested response to this impending problem is to improve multi-factor productivity – this is 'code' for an increase in what Keynes called 'technological unemployment'. The result will be higher unemployment for some and maintenance of living standards for those that have jobs. It doesn't sound like much to aspire to does it? I think we can do better than this.

## Technology Solutions; a Business that Australia is not in

Australia is a major exporter of raw materials that incorporate substantial levels of 'hidden technology', e.g. technologies used for mining exploration, extraction, processing and transport. These are fantastic technologies and their continued development should be encouraged. However, I believe that the root-cause of Australia's 'problem' is the historical and successful dependence of the export of agricultural goods and resources which has over time meant that Australia has failed to properly invest in new technology products designed for export, simply because this hasn't been necessary.

In the post-war era we have seen Asia successfully enter the manufacturing industry sectors. Together with the advent of lower cost international transport and computer & internet technologies (that don't require transport at all) this has resulted in Australian business being increasingly dependent on technology imports from Asia, Europe and the USA.

In this paper I make the differentiation between products that implicitly incorporate technology (that is used to produce and deliver them), such as Australia's resources exports, and *technology solutions* that are used by the customers of these *technology solutions* to enable their own business. Note these *technology solutions* can be both products and services.

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<sup>4</sup> <http://www.scribd.com/doc/162429121/Australian-Manufacturing-a-Framework-for-a-New-Future>

<sup>5</sup> <http://blog.melbourneeconomicforum.com.au/#blog>, July 2014

Some key examples of *technology solutions* include:

- Leaders of Internet service providers such as Google, Facebook and Apple. The services provided by these companies are the ‘cornerstones’ of doing business on the internet.
- Enterprise software solution companies such as IBM, Oracle, Microsoft and SAP.
- Smartphone leaders include Google, Apple and Samsung. This industry can be viewed as a consumer industry but these companies also provide multi-billion dollar platforms for thousands of smaller companies.
- High-tech and proprietary manufacturing equipment. The best example is Germany with almost 6,300 companies and nearly 1 million workers along the value chain in this sector.
- In the semiconductor industry Intel, AMD and ARM are leaders in core processors, and companies such as Applied Materials and ASML lead the manufacturing equipment sector.

If there is one common factor of these so-called *technology solutions* it is that they are the key enablers for the businesses of their purchasers. Indeed *technology solutions* are also the key drivers for all high-technology business sectors. The vendors of *technology solutions* capture the high-margin and proprietary value in the supply chain of whatever industry they are in. These *technology solutions* also are very likely to be subject of substantial global patent protection.

A majority of Australian corporations are users of *technology solutions* and not developers of *technology solutions*. That is, to a large extent, Australian corporations sell products and services that are made using third party *technology solutions*, usually acquired from overseas. There are very few Australian corporations that develop and sell *technology solutions* to either a local or a global customer base. The development of *technology solutions* for global export is a business that Australia is *not* in. This rarely discussed fact is validated with vivid clarity by the remarkably small patent portfolios of Australia’s large companies (this data is presented below).

### **Australia’s Historical Response to the Absence of an Export Industry of Technology Solutions**

There are plenty of commentators that bemoan Australia’s lack of exports of *technology solutions*, although they may not have articulated the differences between products that incorporate technology and *technology solutions*.

Calls to address this issue usually have the following incomplete features:

- First and foremost, direct government intervention is usually requested because it is claimed that there is some sort of undefined ‘market failure’ which prevents Australia’s private sector investing in the technology sectors.
- Secondly, there are calls for investment into research and development (R&D) schemes (university research grants, cooperative research centres, direct assistance to industry and the like) in order to promote the availability of new technology. This assumes that the problem is simply an absence of good ideas for new technology products. However, despite substantial investment into R&D schemes Australia has continued to slip backwards in terms of technology exports, so it would seem that further investment into R&D schemes is not, by itself, the answer.
- Thirdly, there has also been investment by government into schemes, venture capital and investment funds, and tax breaks for the commercialisation of new technology. This has followed another line of reasoning, namely that Australia has plenty of great innovation but an absence of the capability to commercialise these. Again, this has not worked and continued efforts here without other changes do not make much sense.

At the time of writing this article the federal government of Australia was undergoing yet another review of the 'innovation system'.<sup>6</sup> The terms of reference for this review implicitly presupposed certain 'causes' of the lack of results for prior government intervention (as described above) that I believe are merely symptoms. The true problem is that Australia's large companies are not *inventing* nor are they exporting *technology solutions*; the rest just flows on from this fact. Without first addressing this problem no amount of government expenditure will have any lasting impact.

### The Role of Large Companies in the Export of Technology Solutions

A quick review of any country that does successfully export *technology solutions* will reveal a whole ecosystem of large companies, small companies, venture capital and government sponsored research organizations, all contributing to the effort. Without large companies investing and promoting *technology solutions* there cannot be a thriving technology sector because large companies, like the big trees in a rain forest, provide all sorts of high level cover and ground level support for the technology sector.

In fact, it is quite ludicrous to think that Australia could have a thriving technology export sector without a number of large and successful corporations leading the charge. If this is a new idea for you, then it is important to understand, say, the history of Silicon Valley. The technology and venture capital industry in Silicon Valley emerged in the 1960's and by the 1990's it had developed into a proven model to the extent that a number of high-tech industry sectors effectively decided to outsource some of their R&D to start-ups; their motivation was increased efficiency of the early stage development and promotion of new technology platforms.

If you ask yourself why a start-up is successful in the Silicon Valley then here are some little-known factors that correlate:<sup>7</sup>

- Experienced CEOs and Chairs with high level industry experience are brought in to supplement the founders. These CEOs and Chairs usually have C-level corporate experience in leading technology corporations. i.e. they know what they are doing.
- The venture capital money may come from a Tier 1 firm that may also have the leading technology corporations amongst its investors, i.e. the ultimate acquirer of a successful start-up may be indirectly investing in the start-up.
- These Tier 1 venture capitalists are continually dialoguing with their leading technology corporation investors about potential start-up investments, i.e. investments are made in consultation with the potential acquirers and industry experts.

Australia has not a single large global supplier of *technology solutions*. Noting that venture capital money does not travel well – it is managed on a person-to-person basis - how are we supposed to ever have a thriving start-up and venture capital sector? It is quite improbable, to say the least, unless there are some leading global exporters of *technology solutions* domiciled in Australia. Start-ups and venture capital are just one part of the ecosystem, but a critical part since they are the primary source of commercial innovation. Australia needs its large companies to get on board in the first instance before venture capital can flourish. Indeed, until large companies get serious about technology Australia always be stuck at the starting gates right throughout the innovation and technology supply chain.

In summary, Australia will be unlikely to achieve a thriving export sector of *technology solutions* until there are a number of *large* listed and private companies leading the charge. Australia's large companies are where we should focus any efforts and their performance should also be seen as the indicator of success or failure of any plans to create a substantial export market for *technology solutions*.

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<sup>6</sup>[http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Economics/Innovation\\_System/Terms\\_of\\_Reference](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Innovation_System/Terms_of_Reference)

<sup>7</sup> <http://www.scribd.com/doc/185264858/Australian-Venture-Capital-Can-We-Escape-From-Past-Failures>

## How do Australia's Large Companies earn their Profits?

Despite substantial investment into R&D and commercialisation schemes by governments, we continue to observe relative decreases in Australia's (very low) exports of *technology solutions*. Between 2001 and 2011 the Australian GDP grew by a factor of 270% whereas high-technology exports grew only 40%.<sup>8</sup> In 2011 high-tech exports represented just 1.5% of all exports.

At one level this is very simple to understand; this market failure has simply resulted from the fact that Australia's corporate capital has historically flowed to lower-risk and higher-return activities (e.g. the export of agricultural products and resources) which has resulted in a relatively low capability for the development of *technology solutions*.

That is, Australia's large companies simply don't have to develop and export *technology solutions*. Australia is a market of oligarchies; 4 banks, 2 supermarkets rapidly gobbling up many other retail sectors, 2 political parties, 2 newspaper groups, 4 building materials companies, and the list goes on in almost every sector of business. So long as the wealth continues to flow into Australia through the exports of resources these oligarchies that have captured the domestic market have no real incentive to make 'hard' profits by developing and exporting *technology solutions*, not when there is easy money on the table by exploiting their own protected share of the domestic market.

Quite ironically, the impact of imported computer and internet technology, combined with Australia's concentrated media ownership and an entrenched two party political system, has seemingly allowed the power of the oligarchies to get ever-stronger through the use of sophisticated lobbying of political parties and also control of the media message. The results can be measured by an ever-increasing wealth disparity<sup>9</sup> and also by a virtually non-existent investment into the development of *technology solutions* by Australia's large companies.

Over time this oligarchical behaviour has led to cultures within Australia's large companies that are simply incompatible with the development and export of *technology solutions*. Today Australia's large companies hardly invest in *technology solutions* at all. Many are happily operating within their Australian oligarchical 'bubble' with guaranteed profits. They buy and use off-the-shelf *technology solutions* often from overseas vendors, and they hardly care (normally through ignorance) whether the vendors of these *technology solutions* own the patent rights, or if the vendors have copied the original technology without reference to a third party's patents. That is, there is rarely due diligence on the products and services that they buy in the context of the infringement of third party patent rights. History shows that Australia's large corporations feel relatively little pain from patent enforcement and that when patents are enforced against them that the damages they pay are of little consequence to their business. As a result, patent issues rarely make it to the board level of Australia's corporations.

Some may argue that rather than 'fixing' Australia's large companies that we could focus on small companies. That is, we could encourage some of them to grow into new large companies, hopefully with a different culture to the incumbents. We have been waiting for a long time for this to happen and I think it's fair to say that progress has all but stalled. Of the thousands of start-ups that have been financed in Australia over the last thirty years, we have seen only half a dozen or so large companies emerge, half of which have fled the country and the other half each effectively have a sole technology product (i.e. they are not vendors of *technology solutions*) and also with substantial overseas competitors. This is hardly success or even a defensible position.

In summary, Australia needs some of its large corporations to be leading global suppliers of *technology solutions* since they will provide the following benefits to the small and medium sized enterprise (SME) community, where the real innovation occurs:

- A channel to global markets for smaller companies through company partnerships or via acquisition of the smaller companies.
- Highly-trained and market-aware individuals that can flip in and out of corporate employment to small and medium enterprise (SME) employment, or even university employment.

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<sup>8</sup> <http://www.indexmundi.com/facts/australia/high-technology-exports> and <http://www.tradingeconomics.com/australia/gdp>

<sup>9</sup> See for example the change in the Gini coefficient as reported at <http://clubtroppo.com.au/2011/09/30/inequality-in-australia-%E2%80%93-are-the-rich-getting-richer-and-the-poor-poorer/>

- Direct investment into local technology companies.
- Indirect investment into local technology companies through venture capital funds.
- A path for exits for start-ups without going overseas.
- An ability to influence government research organizations and their funding schemes so that their research efforts are focused more usefully on high-growth technology export sectors.

I suspect that the current behaviours of Australia's large companies (their bias against innovation) are so deeply rooted that we are going to need 'shock therapy' to get them to change their ways, namely:

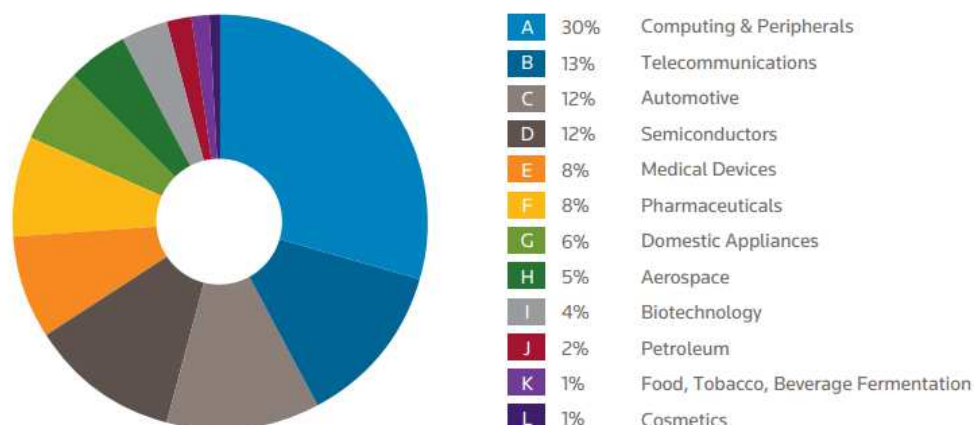
- The genuine opening up of Australia's domestic markets to competition (which may in part be enabled by the internet and also by treaties forced upon Australia by its larger trading partners), and/or;
- The aggressive support of the value of patent rights – which is the real subject of this paper; more on this below.

### Australia's Patents – the Numbers

Australia's primary wealth-generating exports, e.g. resources, are in areas which are 'light' in patenting and patent enforcement. Whereas Australia's imports are the opposite; these are in business sectors that dominate the global patent system (in terms of the number of patents filed) and patent enforcement activity. To verify this statement one just needs to cross-correlate the figure below, which is a summary of the key technology areas where patents are filed globally, with the lists of Australia's exports and imports as given in the tables above.

#### 2011 PATENT ACTIVITY

#### OVERVIEW OF 12 KEY TECHNOLOGY AREAS



source<sup>10</sup>

<sup>10</sup> <http://img.en25.com/Web/ThomsonReutersScience/StateofInnovation2011.pdf>



This contrast partially explains why Australia is ‘under-cooked’ in the patenting stakes. There are simply not any companies that are global leaders in the key high-growth, high-tech and high-margin sectors where patent applications are mostly filed.

The incremental commercial benefit of a patent is very different in different industries. In an ‘old’ industry sector, say agriculture, when a new technology emerges it usually provides only an incremental benefit to customers for the technology. In most cases the customers have a choice to do nothing rather than adopt a new technology, and hence technology deployment to the market can be slow; therefore to get adoption it must also be relatively low cost. As a result the return on investment for technology development in old sectors is much lower than new and high growth industry sectors where a single technology development may be absolutely vital for industry growth and market share. This is why patenting trends (as measured by numbers of patents) generally track the growth of new high-tech industry sectors.

Back to Australia’s patents - here are the facts:

- Overall, the patent environment in Australia shows notable differences from that of the USA, most particularly in being dominated less by the information and communications technology (ICT) sector, and including instead a mix of top (foreign) patentees in the ICT, energy, chemical, pharmaceutical, healthcare, gaming and engineering fields. There is a comparative lack of interest in patenting in the Australian market by some of the major USA and Asian ICT players.<sup>11</sup>
- Over 90% of Australian patent applications are from non-residents (that is by companies importing products into Australia) and less than 10% are from Australian resident companies, research organizations and individuals.<sup>12</sup>
- Australia is way down the list of patents filed by residents (inventors, organizations or companies) per head of population. The last data I could find had Australia at only 20th in the world in terms of Patent Cooperation Treaty filings;<sup>13</sup> this would have slipped substantially by now with the growth in patenting in Asia.
- In 2008, there were 3.7 patent applications by Australian residents per \$billion GDP. By comparison China had 26.8 applications per \$billion GDP.<sup>14</sup>
- In 2008, Australians held 0.46% of the approximately 6.7 million patents in force throughout the world, much less than Australia’s 1.7% share of the world’s GDP.<sup>10</sup>
- In 2008, Australian universities and research organizations managed to publish 3.18% of the world’s research publications<sup>15</sup> but only an estimated 0.15% of the world’s patent filings.<sup>16</sup> This highlights the lack of focus on useful invention in Australia’s research institutions and also in the accompanying government R&D grant schemes. This is not a failure to commercialise but a ‘cultural’ failure to invent which is reinforced by government research grant schemes that drive university researchers into crowded areas that also mostly happen to be unsuitable for commercial exploitation in the Australian context.<sup>17</sup>
- Only 20% of all Australian patents granted in 2010 were awarded to the top 50 recipient companies compared to 28% in the USA.<sup>7</sup> In a recent private analysis<sup>12</sup> on Australian owned USA patents it was observed that only 36% of patents were owned by organizations that own more than 10 patent families. That is an eye-popping 64% of Australian owned USA patents are held by organizations that have less than 10 patent families. The problem is that these smaller organizations are far less likely to generate economic benefits from their patents.

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<sup>11</sup> Comparison of Australian and USA Patent Grants. The Watermark Journal Volume 28 Number 1 at [http://www.watermark.com.au/\\_literature\\_85848/Journal\\_2011\\_January\\_to\\_March\\_for\\_Australian\\_readers](http://www.watermark.com.au/_literature_85848/Journal_2011_January_to_March_for_Australian_readers)

<sup>12</sup> [http://www.ipaustralia.gov.au/pdfs/Australian\\_IP\\_Report\\_2013-web\\_version.pdf](http://www.ipaustralia.gov.au/pdfs/Australian_IP_Report_2013-web_version.pdf)

<sup>13</sup> <http://www.keionline.org/node/781>

<sup>14</sup> [http://www.wipo.int/export/sites/www/freepublications/en/intproperty/941/wipo\\_pub\\_941\\_2010.pdf](http://www.wipo.int/export/sites/www/freepublications/en/intproperty/941/wipo_pub_941_2010.pdf)

<sup>15</sup> <http://theconversation.com/australias-approach-to-intellectual-property-is-undermining-innovation-policy-274>

<sup>16</sup> Estimated using IP Australia’s searchable patent database at <http://www.ipaustralia.com.au/>

<sup>17</sup> <http://www.scribd.com/doc/185264858/Australian-Venture-Capital-Can-We-Escape-From-Past-Failures> & <http://www.scribd.com/doc/142565939/What-is-happening-at-CSIRO>



- Of the top 10 recipient companies of Australian patents in 2010, 8 were foreign companies and one of the Australian companies in the top 10 is now defunct.<sup>7</sup>
- In 2010, about 220,000 patents were granted in the USA whereas only ca. 16,000 were granted in Australia.<sup>8</sup> That is, as a rule of thumb, the owners of about 204,000 USA patents couldn't be bothered filing an Australian-equivalent patent. Some argue that this reflects the relatively smaller size of the Australian market but at 10% of the USA market this argument does not stack up; Australia still represents the world's 12<sup>th</sup> largest economy. More likely this fact is a reflection of the low value of patent rights in Australia (more on this below).
- Of the 16,000 patents filed in Australia in 2010 about only ca. 1,600 were from Australian residents, organizations or companies.<sup>8</sup>

From that summary one could argue that Australian business is, by the numbers, doing very poorly in the patenting stakes.

### Australia's Patents – the Value

However it's not just the number of patents that count; it's the quality. The first thing to note is that over 90% of patents have little or no value.<sup>18, 19</sup> A recent study of Fortune 500 companies<sup>20</sup> indicates that only a very small number of patents, around 5%, obtained by the top patent filers created strategic value for their owners. Indeed there is a very 'long-tail' in the value of patents, where a small number of patents have very high value and a large number have zero or even negative value (there is a cost of ownership) to their owners.<sup>21</sup>

The reason why many patents have no value is:

- The inventions that are the subject of a patent are never brought to market.
- The claims in a patent are so narrow that they cannot be used to create a valuable monopoly. This problem is getting worse as the amount of prior art grows and also as the internet makes more of this prior art readily available to patent examiners and competitors.
- Patent rights are not enforced by their owners due to a lack of awareness of infringement.
- Patent rights are not enforced by their owners because of a lack of resources.
- In certain jurisdictions, especially Australia, patent enforcement is viewed to have a low return on investment.

Another study<sup>22</sup> in the USA recently concluded that 'there are large differences in patent value across different groups of patentees. Small entities - individuals, corporations with fewer than 500 employees and non-profit organizations - have patent values that are on average less than half as large as the values obtained by large corporations.'

In Australia, the proportion of patent applications filed by small companies, non-operating research organizations or individual inventors is very high compared to say the USA. Inventors from small organizations or non-operating organizations are far more likely to file 'valueless' patents than large corporations because of a number of factors:

- An unawareness of the patent system leading to the patenting of incremental inventions.

<sup>18</sup> [http://www.inventionstatistics.com/Innovation\\_Risk\\_Taking\\_Inventors.html](http://www.inventionstatistics.com/Innovation_Risk_Taking_Inventors.html)

<sup>19</sup> <http://www.scribd.com/doc/109135473/Corporate-IP-Strategy>

<sup>20</sup> Suzanne Harrison's 'Edison in the Boardroom Revisited'

<sup>21</sup> <http://www.econstor.eu/bitstream/10419/51190/1/258228563.pdf>

<sup>22</sup> <http://www.researchoninnovation.org/patval.pdf>

- A lack of resources leading to the filing of a single patent family in a limited number of countries rather than more defensible patent thickets in multiple jurisdictions.
- A lack of awareness of the market and technology in the sector that they are inventing in leading to non-strategic patents.
- An inability to commercialise their inventions (through either productisation or licensing) due to limited skills and resources.

The reason why individuals, research organizations and small companies are over-represented in Australian resident patent filings is that Australia's large companies are *under-filing* for all the reasons described in this paper. Primarily this is because they are users of technology and not developers of *technology solutions*.

Just so as to underline these facts here is the patent data on Australia's top 20 ASX listed companies over the past 10 years.<sup>23</sup>

- Combined, Australia's top 20 listed companies hold just over 3400 Australian patent families, of which only a fraction have US patent family members
- Two of the top 20 listed companies in Australia have no Australian patents
- A further 13 companies in the top 20 listed companies in Australia have less than 20 Australian patents

By contrast in the USA:

- The top 20 USA companies (as measured by number of patents) filed over 45,000 patent families in 2013 *alone*.<sup>24</sup>
- The top 20 listed companies in the USA filed over 21,000 patents in 2013 *alone*.<sup>19</sup>
- All of the company top 20 listed companies in the USA are patent owners, possibly with the exception of Berkshire Hathaway.<sup>25</sup>
- Google says<sup>26</sup> it now controls (mainly through acquisition) more than 51,000 patents and patents pending – ca. 42x that of the top 20 listed Australian corporations.
- IBM has, over the last 18 years, been granted more patents per year than any other company, receiving over 38,000 patents<sup>27</sup> during this period for internally developed inventions – ca. 32x that of the top 20 listed Australian corporations. It has also acquired many more patents.

In fact, it is not just the contrast to the USA which should be of a concern; even though some of Australia's top 20 ASX listed companies actually do hold small patent portfolios, these are in some cases often quite disconnected from the businesses of the corporations that hold these patents. How this occurs is quite a separate discussion to the main dissertation of this article but I have included an Appendix A that explains this oddity.

In summary, we can make these statements about Australian inventors and the owners of their patents:

- There are far fewer patents filed by Australian resident companies than would be expected given the size of the economy, primarily because Australia does not have large companies active in the relevant high-tech sectors

<sup>23</sup> Estimated using IP Australia's searchable patent database at <http://www.ipaustralia.com.au/>

<sup>24</sup> [http://www.ipo.org/wp-content/uploads/2014/06/2013-Top-300-Patent-Owners\\_5.9.141.pdf](http://www.ipo.org/wp-content/uploads/2014/06/2013-Top-300-Patent-Owners_5.9.141.pdf)

<sup>25</sup> Estimated using the USPTO searchable patent database at <http://patft.uspto.gov/>

<sup>26</sup> <http://www.technologyreview.com/news/521946/googles-growing-patent-stockpile/>

<sup>27</sup> [http://en.wikipedia.org/wiki/List\\_of\\_top\\_United\\_States\\_patent\\_recipients](http://en.wikipedia.org/wiki/List_of_top_United_States_patent_recipients), July 2014

where high-value patents can be achieved.

- Patents filed by Australians or in Australia are of relatively low value partially because more are filed in low-growth and low-margin older industry segments compared to say the USA.
- Australian patents filings by resident individuals or organisations are over-represented with ownership by individuals, research organizations and small companies that are far more likely to hold valueless patents.

### The Role of Australian Courts in Reducing the Value of Patents

But there is another reason why Australian patents have relatively low value.

Australia is a signatory to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Also, in 2005, the Australia-United States Free Trade Agreement came into force. Amongst other things, it sought to harmonise Australia's IP laws and practices more closely with those of the United States. Together these events, combined with other trends, have meant that Australian Courts are now viewed as 'pro-patent', i.e. favouring patent rights in a dispute.

However (and this is one of the most critical point of this paper) whilst Australia's Courts are seen by some as pro-patent from a qualitative point of view *they certainly are not pro-patent from a quantitative point of view*. The result is that 80% of known cases of patent infringement in Australia are not pursued by the patent owners because of the perceived costs and risks in enforcing patent rights (see Appendix B). Further, owners of just under one-third of all Australian patents are aware of patent infringement and yet less than half a percent (per year) of Australian patents are the subject to Court enforcement. These are not the signs of a well-functioning patent system! It is no wonder that 90% of the owners of USA patents cannot be bothered filing Australia-equivalent patents.

It appears that the Court process has evolved such that it undermines the value of patents in Australia by making it difficult and expensive to enforce patent rights with poor outcomes with respect to damages. The manner in which this has been achieved is given in detail in Appendix B but here is a quick summary:

- Costs of enforcing patent rights are high.
- Costs can be awarded against a losing party hence discouraging a patent owner from enforcing their rights.
- Patent rights are meticulously "re-examined" by the Courts and are not assumed valid simply because the patent office has previously granted a patent.
- Injunctions are hard to achieve.
- Damages are low.
- Licensing is encouraged even if this is not wanted by the patent owner.
- The process of enforcing patents through the Courts is slow.
- Anecdotally, some argue that non-practicing entities are not treated as equals during patent infringement as compared to practicing entities.
- There are no active contingency lawyers willing to act on behalf of patent owners in Australia, underlining the lack of cost benefits of enforcing patent rights.

So, although Australia's Courts are seen as pro-patent, the commercial penalties for infringing are low and difficult to achieve.<sup>28</sup> This difficulty in the cost-effective enforcement of patent rights is often lauded by some as a good thing in Australia since it keeps 'patent trolls' away, i.e. non-practicing entities that specialise in enforcing patent rights. Unfortunately, it also has the effect of taking away many of the incentives to invest in technology and to patent.

The rise of patent trolls in the USA has (by way of example) helped start-ups since corporations can no longer assume that start-ups will not have the resources to defend their patent rights simply because start-ups can now team up with patent

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<sup>28</sup> Ironically, Australia's patent system is quite robust at the input-end – we have high quality patent attorneys and 'Raising the Bar' has improved the examination process so that we (in theory) get better patents that are more likely to be valid. Australia's IP system also recently ranked third globally in the latest Global IP Index which is based on effectiveness and administrative performance.

trolls.<sup>29</sup> This has meant that large corporations are far less likely to wilfully or ignorantly infringe a small company's patent rights. This reinforces the principle that all patent owners should be equal before the law, which has a flow-on effect; to lower the risk of investment in technology - the very point of a patent system.

Indeed, patent trolls have evolved from contingency attorneys and often share the benefits of their patent enforcement activity with the parties that own, or owned, the patents. Patent trolls, quite simply, represent the most efficient and risk-free means to get patent rights enforced. Viewed through the right lens, patent trolls are a very positive development because they help to ensure that all patent rights are taken seriously by operating companies. This in turn increases the inherent value of patents and the patent systems, which then decreases the risk of investing in technology.

The return on investment (ROI) for patent enforcement in Australia is low; by corollary so too is the commercial return on patent ownership by licensing and the sale of patents. In any license negotiation the value of a license is under-pinned by the 'what if' scenario where the parties cannot come to agreement (just like interest rates are underpinned by the reserve bank 'cash' rate). In the case of patent licensing the 'floor' value is determined by the likely financial proceeds of a successful patent enforcement in the courts. If these are perceived to be low then so are the negotiated license fees and the asset value of patents (relative to say the USA).

The situation in Australia where we have a 'low ROI' for patents has probably developed so subtly that I suspect that no one really knows that it has occurred, not even those in the patent industry. In fact, I suspect that the situation has just 'evolved' without being directed by any individual or group with an agenda. And no one has 'called' it.

### **The Impact of a 'Low ROI' Patent System on Australia's Economy**

A patent system can be viewed as a form of 'negative' corporate taxation. That is, companies that *don't* invest in technology and patents should, in a jurisdiction with a properly functioning patent system, be at a 'disadvantage' in terms of market share and profit margins. However this does not seem to be the case in Australia, relative to other countries.

Some may argue that the Australian economy is better off with this situation where patent rights, although achievable, offer a commercial monopoly of relatively low value and/or a patent asset of low value. This is because this system:

- Helps makes Australia's technology imports more open to competition which encourages reduced margins for imported goods (in many cases this doesn't seem to work though as foreign technology companies often have a habit of 'price gouging' Australian businesses and consumers).
- But more importantly Australia's local service industries are not being forced to pay excessive license fees for the use of foreign technologies, primarily because these are either never protected by patents in Australia (due to the low rate of foreign filings in Australia), or if they are, the commercial return on enforcement is low.
- Also since Australia's exports are primarily in sectors where patents play a smaller role, the absence of a strong patent system does not hurt that sector in a proportionate sense.

Therefore it could be argued that the net benefit of a 'low ROI' patent system in Australia is for increased wealth by reducing the costs of technology imports and also by having little impact on the value of the exports of agricultural goods and resources.

However, there is a price to pay for having a patent system where patents have implicitly low value relative to other countries. It simply reduces the incentives to invest in technology.

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<sup>29</sup> <http://www.scribd.com/doc/144552708/In-Defense-of-Patent-Trolls>

## How We Can Use the Patent System to Entice Australia's Large Companies into the Technology Sectors

My primary thesis is that if Australia wants a thriving export sector of *technology solutions* then it needs to entice some of its larger corporations into the technology world using the patents system as the weapon of choice. Specifically by:

- Making patents more valuable as assets; and
- Making patents cheaper to create and own.

I believe that no amount of government investment into R&D or technology commercialisation will have any impact unless Australia's large companies are enticed into the patenting and technology world via a carrot and stick approach.

Below I list details of the changes that I promote.

### **No. 1 - Increase the Value of Patents**

Firstly, the value of Australian patents can be increased by lowering the costs of patent enforcement and increasing the awards for successful patent enforcement. This can be achieved by:

- In a patent dispute, make all costs only accrue to each party independently of the outcome of Court proceeding.
- Ensure that non-practicing patent-owning entities are treated the same as operating companies.
- Make product injunctions easier to achieve.
- Award large punitive damages.
- Do not prejudice successful plaintiffs with respect to the manner in which they wish to enforce their patent rights.
- Promote a contingency market for patent enforcement.
- Accelerate Court hearings for patent disputes.
- Promote juries for court proceedings as they do in the US. There is nothing in the Australian constitution that prevents this and it helps increase damages.

If these changes are made, it won't take very long for Australia's corporations to be the subject of patent enforcement. This will then focus the boards of these companies onto their own patent positions. They will then act to protect themselves by investing in the internal development of patents, licensing patents from other parties, buying patents, joining defensive patent funds and the like.

In the process of doing all these things, they will become focused on technology and the commercialisation opportunities therein. That is, this process will drag Australia's corporations into the technology space; this is the greatest chance that we have of getting some of Australia's corporations to become exporters of *technology solutions* which is what we need if we want a thriving technology sector of SME's and start-ups.

These measures may hurt the corporations in the short term but the long term gain will be worth it.

### **No. 2 - Introduce the Patent Box**

About nine nations (eight in Europe and China) have enacted a 'patent box' scheme<sup>30, 31</sup> where a tax break is given to companies for the sale of products or services that are protected by patents. The patent box is one of two major tax incentives for new technology development; the other is the R&D tax concession.

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<sup>30</sup> The 'patent box' terminology is claimed to refer to the application of a lower tax rate to a separate schedule or 'box' of income; which sounds unlikely. The first patent box scheme was in Ireland in the 1970's and the true genesis of the term 'patent box' seems to have been lost there.

Because, in the modern era, corporate operations are so mobile, as soon as one country has a substantial tax benefit there is a risk that companies will be encouraged to move their operations (including R&D) to the lower cost domicile with the tax concession. That is, the absence of a tax benefit in one country becomes a 'market failure' if that tax benefit exists in another country.

In 1981, the USA introduced the first R&D tax concession for companies; the concept was to encourage companies to invest in R&D in the USA. Today over 38 countries have a similar tax concession, including Australia. In the main, these countries adopted an R&D tax concession because other countries had already done so. The potential for lost tax revenues from lower effective corporate tax rates, it was argued, was lower than the potential from lost economic benefits from companies locating or relocating R&D to countries with an R&D tax incentive.

The same arguments will apply to the patent box and for this reason alone I am sure that Australia will eventually have a patent box system, just as it has adopted an R&D tax concession scheme.

However, there is a less facile rationale for adopting the patent box scheme and that is that it 'book-ends' the R&D tax concession. Whereas the R&D tax concession is designed to encourage investment by companies into domestic R&D, possibly many years prior to receiving any income from that R&D, the patent box is designed to encourage investment into commercialisation at the back-end, once R&D is complete.

Put together the R&D tax concession and patent box systems are designed to encourage the investment into the development and commercialisation of high-quality new technology platforms.

Because of the requirements for companies to hold patents to receive the patent box scheme this additional tax benefit (over the R&D tax concession) acts to encourage *higher quality* R&D. It must be remembered that not all R&D is equal and much that is labelled R&D for R&D tax purposes does not result in patents simply because it is not inventive in any way or form. This lower quality R&D is also much less likely to generate substantial income streams; therefore the patent box acts to encourage high-value R&D expenditure as promoted by the R&D tax scheme.

Some may argue that the patent system already provides such a benefit by granting a holder of a patent a period of monopoly. But in the modern era where we have (for example) over 2 million USA patents in force and over 8 million in history, the probability of an individual patent providing a substantial monopoly is rapidly shrinking. This is due to the ever-narrowing of patentable claims which is simply a result of the mountain of prior art that now exists. Therefore I would argue that the patent box scheme also, to some degree, can be viewed as a means of off-setting the perception by companies of the shrinking value of the patent monopolies.

It must be remembered that Australia has far fewer granted patents than the USA. In fact over 90% of patent owners in the USA generally do not file equivalent family patent members in Australia. For the introduction of the patent box this can be considered a benefit since it means the initial costs of introducing the scheme (i.e. the quantity of reduced tax revenues before these start to increase) may be much lower than expected.

Indeed, recalling that Australia can frame a patent box system in any manner it likes (since these are not subject to international treaty) I would argue that a patent box system can be constructed that is guaranteed to have a positive impact on both the economy and government tax receipts. Here are my recommendations:

- Firstly I would *not* make the scheme retrospective. Companies claiming the patent box tax break, once implemented, would have to use patents filed after the scheme started. It would be messy otherwise and also difficult to measure the benefits of the scheme.
- I would insist that companies that claim the patent box benefit are assignees (beneficial owners) of the patents in question. The point of the patent box system is to encourage high quality innovation and this does not necessarily occur if we allow companies, for example, to simply license patents. Indeed, if a patent box system allows licensing we might end up in the situation where a number of companies claim a patent box tax benefit for the same patents which would work to upset the 'Laffer Curve'<sup>32</sup> style benefit to the national coffers. In the worst case scenario one could imagine portfolios of patents being licensed to all the players in a market segment

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<sup>31</sup> <http://www.itif.org/publications/patent-boxes-innovation-tax-policy-and-tax-policy-innovation>

<sup>32</sup> [http://en.wikipedia.org/wiki/Laffer\\_curve](http://en.wikipedia.org/wiki/Laffer_curve)

and the idea that any of these licensees getting a benefit in market share or margin (the very purpose of a patent box scheme) in such a scenario is nonsense.

- However, I would allow companies outsource the development of their patents or to acquire their patents. Remembering that there is a whole ecosystem in the innovation supply chain from start-ups to large corporations, it makes no sense to require companies to be old-school twentieth century integrated monoliths – those days are long gone.
- Most importantly, I would only allow the patent box scheme to be applied for with patents where the original R&D<sup>33</sup> behind the patent was performed in Australia or where the inventors are all residents of Australia. Of course the patents could be filed globally. This is a key point because the point of the scheme is to encourage companies with Australian operations to develop high-value new technology and not to provide a cost-free tax benefit to importers. This approach will also encourage global vendors of technology to perform R&D in Australia. I note that large corporations often have multidisciplinary teams doing joint R&D in different countries and that the situation might arise where a single patent has inventors from Australia and overseas – in these cases the company would have to ascribe a fraction of the ‘inventorship’ that was Australian and carry this ratio through as a pro-rata to all patent box tax benefits.
- To claim the patent box tax benefits the company must have a patent (filed or granted) in the country where the revenue is derived.
- Companies should be able to claim the tax break once a patent is filed but if the patent is subsequently not granted then the benefits derived must be repaid at that time.
- The actual tax rate for the patent box should be generous enough to move the dial – at least 10% below the current corporate tax rate, preferably more. Ranges for other countries vary considerably, down to 0% corporate tax rate for qualifying profits.<sup>26</sup>

The single biggest issue that I have with a patent box, and that is hardly discussed in the literature, is the relationship between the patents and the products, from which the revenue is derived. This needs explanation for those not in the patent world. In Australia there is no requirement<sup>34</sup> for patent owners to put patent numbers on products or to list at their website the relationship between their patents and products; the odd patent owner does so but most do not. Therefore a competitor cannot simply examine a product that they would like to compete with and then follow the links to the patents to see what the patent-enabled constraints are for doing so.

Indeed, the responsibility for the would-be competitor is to, firstly, think about patents (many do not), and then, secondly, explore the patent literature to see if there are any patent rights they need to know about. This can be quite difficult since patent owners are often different to the company that sells a product (via, for example, a license arrangement). Sometimes a patent is based around a specific product and invention but because the patent claims are granted quite broadly a company in a completely different sector may be infringing the claims of this patent and be entirely unaware of this ‘accidental’ infringement (a problem that can also be addressed by Australia’s patent office getting tougher on granting patent claims).

With the patent box system, there is an opportunity to partially address this situation. In any implementation of the patent box scheme, companies must nominate a link between products & services, and patents in order to claim the tax break. If these links are then published by IP Australia in one central, publicly available and searchable website then all other companies can then access this information to help ensure they do not accidentally infringe patent rights. This approach also usefully extends patent marking to all types of patents (both products and methods).

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<sup>33</sup> I couldn’t let this point go by without a side comment. Many modern patents, particularly software patents, do not require much ‘R&D’ (as the lay person might understand it). Patenting can involve a brainstorming session and a judicious use of the Microsoft Office Suite and little else. The solution to this issue is tougher patent office examination requiring higher levels of inventiveness and more robust demonstration of actual reduction to practice of the invention.

<sup>34</sup> I do note that the USA has the requirement for patent ‘marking’. Failure to mark products may prohibit the patentee from obtaining substantive damages. But until recent changes under the America Invents Act such marking was often impractical – now however virtual marking may occur online.



In the jurisdictions where I have checked, the requirements to receive the patent box tax benefit requires that a company self-validates any claim of a connection between the patents and the products. The alternative concept of setting up an administrative process to do this is obviously not a feasible idea (it would be a 'shadow' patent office!), but at the very least an audit process should be in place to keep companies honest.

The issue here is that a patent may describe small additional feature of technology that is not responsible for the market success of a product. An example would be a company selling a generic pharmaceutical drug claiming the patent box tax break on the basis of some patented but relatively trivial packaging technology for the drugs that does not in any way impact the market share or profitability of the product. Another example is a car maker claiming the patent box tax break for profits derived from the sale of cars when the car maker only has an innovative and patented tail light.

Therefore, I believe that a working patent box scheme needs an audit scheme to systematically (and randomly) review a small fraction of the patent box tax claims to review the relationships of the patents and products in the context of ensuring that the nominated patents do afford the products a substantial implied monopoly in the market place. These reviews should be published and the consultants advising companies on the patent box scheme will become educated as to what are the reasonable guidelines, as set by precedent, for such claims.

In summary, I believe there is scope for a patent box system in Australia based on locally developed technology. In other countries it has been suggested that the patent box system has increased tax receipts by helping to substantially increase corporate profits, outstripping the impact of the lower corporate tax rate. That is, the patent box tax system generates an optimum on a 'Laffer Curve'.<sup>35</sup> There is also a school of thought that corporate tax rates, via means of international competition between tax jurisdictions, are heading inevitably towards zero; if this eventuates then the opportunity to get benefits from a patent box system are greatest now and will diminish over time.

Most importantly the patent box scheme completes the financial incentives for companies to perform R&D on patentable technologies that are directly related to their core revenues. I predict that Australia's large corporations will immediately start looking at means to innovate in areas of their mainstream revenues so that they will be able to claim the patent box tax incentive. The end result of these R&D efforts will be world-leading products and services that will then be able to be exported.

It sounds simple and I think it actually will be.

### ***No. 3 - Expensing Costs for Patent Applications***

Patents are generally considered as intangible assets<sup>36</sup> for tax purposes. The general tax treatment of the costs of patenting makes no distinction between the process of developing and applying for patents and the maintenance costs related to granted patents; they are all capital expenditure. I believe that this view can be challenged for the costs related to patent applications.

I often talk to business types that have a passing awareness of patents and R&D and I find that there is much misconception as to how patents come into existence. The common view (derived from a twentieth century reality) is that, firstly there is R&D, and if R&D is successful then patent applications will follow, and later there will be products and revenues, and even later on, granted patents. That is, patent applications are often seen as a means to 'protect' the products derived from successful R&D.

In the modern era this 'linear' version of the innovation process is rarely, if ever, followed. What does in fact commonly occur is one of these three approaches:

- Within a company, innovation and R&D groups may be looking for potential solutions to a market need or problem. When a potential solution is conceived a patent application is generally filed first before any R&D takes place. If R&D does subsequently take place the patent application may be refined, modified and improved prior to it being granted.

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<sup>35</sup> [http://en.wikipedia.org/wiki/Laffer\\_curve](http://en.wikipedia.org/wiki/Laffer_curve)

<sup>36</sup> [http://www.aasb.gov.au/admin/file/content102/c3/AASB138\\_07-04\\_ERDRjun10\\_07-09.pdf](http://www.aasb.gov.au/admin/file/content102/c3/AASB138_07-04_ERDRjun10_07-09.pdf)

- Within a company, innovation and R&D groups may be looking for potential solutions to a market need or problem. When a potential solution is conceived a patent application is filed and a patent is often granted regardless of the fact that the invention is never reduced to practice.
- There are many service providers that ‘invent on demand’ on behalf of corporate clients. For example a large corporation may define areas of market need or specific market problems, and the third party ‘invention on demand’ service provider will then arrive at a number of inventive solutions some for which may become patent applications for the corporate client. In this process there is rarely any R&D that reduces an invention to practice. This is especially the case for software patents.

If one were to examine Google’s 51,000 patents there would only be a fraction that are related to products and services by which Google derive income. Much of this patent portfolio will be aimed at, for example, (a) preventing competitors from using alternative inventions to compete with Google, or (b) as a means to counter-sue competitors in the mobile space by owning patents that the competitors might infringe, or (c) simply as forward-looking product ideas of which only a small fraction might ever become real products. The vast majority of Google’s granted patents probably have never been demonstrated in practice as real goods or working software – they have gone from concept, through Microsoft Word and Powerpoint and then straight to patent application.

For organisations where R&D does actually lead to real products and services my view is that the most effective product development groups consider the patent application process as an indivisible part of the R&D process. For those of us that have been involved in corporate R&D in a professional environment we know that the various stages of identifying patent opportunities and pursuing these are intimately intertwined with the R&D process. The process of defining an invention and checking the prior art (part of the patent application process) is a key part of the R&D process that adds discipline and rigour. Often the R&D processes and proposed product outcomes will be modified by the patent application process, and vice-versa.

‘Non-professional’ R&D groups often file patent applications in a very ‘disconnected’ manner; at some stage of the product development cycle they toss their ideas over to their patent attorneys in a one-step process, and that is it. And this is why they may have worthless patents! Not only are the patents poorly constructed because the attorneys have little commercial and technical information from the client, but also there is no influence of the patent application process back onto the R&D process; it’s as if the prior art and area of likely monopoly (as defined by the claims of a patent) simply do not matter.

The point of this discourse is to set the scene whereby, in the modern era;

- Patent applications (on average) *precede* the R&D process (if there is one), or
- The development of patent applications, in many cases, effectively *is* the R&D process.
- Where R&D does lead to real product and services, the patent application process is an *indivisible* part of the R&D process.

Yet we have the odd situation in Australia where R&D costs can be expensed and can also receive a favourable tax concession but where the costs of applying for a patent are generally considered as a capital expense. This situation is based on confusion as to the role of patents; it assumes that R&D is responsible for the creation of any invention or discovery and that a patent merely represents an opportunity to commercially exploit any invention or discovery. In practice, as stated above, this is rarely the case in the twenty-first century.

Switching tack; any patent broker would agree that patent applications are worthless as assets until the patents are granted; this is because patent applications simply cannot be sold in the open market. Potential buyers have no means for sensibly assessing the risks that patent applications will result in valuable granted patents. Even in a corporate take-over of a start-up which owns a number of patent applications and granted patents, normal corporate due diligence fully discounts the value of any patent applications owned by the start-up (i.e. assumes they have zero value).

The reason that patent applications have no value is because an application for a patent can in many instances result in no patent being granted because (a) the ideas are not inventive and are rejected by a patent office, or (b) a patent being granted which has no commercial value because the granted claims are so narrow as to be useless in any attempt to restrict competition, or (c) a patent being granted which has no commercial value because the invention has no practical efficacy. Indeed, as stated earlier in this paper, it is estimated that over 90% of all granted patents have zero or even negative value.<sup>13, 14, 15</sup> In summary, although a patent application represents an option to receive a patent, in over 90% of cases this commercial option has zero or negative value.

Therefore, for all the reasons articulated above, I would propose that costs associated with patent development and application be treated as R&D expenses for tax purposes. In this context, I would promote a tax treatment for patents that allowed all patenting cost to be expensed for tax purposes up until when a patent is granted (in a jurisdiction) whereupon further costs (of maintenance over the life of a patent) should be treated as capital expenses.

My argument for this is that, similar to research expenditure any patent application expenditure is highly speculative because there is no certainty that future economic benefits will flow to an entity which owns a patent (as noted above). As such, prudence dictates that patent expenditure be expensed through the statement of comprehensive income. After a patent is granted though, continued expenditure on patent maintenance, however, is less speculative and it becomes possible to predict the future economic benefits that will flow to an entity. The matching concept dictates that post-grant patent expenditure be capitalised as the expenditure will generate future economic benefit to the entity.

Indeed, I would go further and allow costs associated with patent application to be eligible for the R&D tax concession. This would be a key enabler for bringing the patenting process properly into the R&D process, where it belongs but where also it often fails to be.

This proposed change in tax treatment would help companies in being more sensible about decisions related to discontinuing the prosecution of valueless patents (refer to Appendix A) since there will be no balance sheet impact when patent applications are written off. Balance sheet write-offs can be an issue, especially for small companies, but even in large companies operating managers can have reporting difficulties when writing off balance sheet assets. Additionally with the ability to expense patent application costs there will be less delays in recouping losses from discontinued activities (again specifically of benefit to smaller companies).

More importantly, treating patent application costs as R&D expenses would reduce the perceived costs and risks of patenting and hence encourage both innovation and patenting. This is the primary motivation behind this proposed change to the tax consideration of patent application costs.

## **Conclusion - Towards a Technology Solution ‘Ecosystem’ for Australia**

We have in Australia a small population on a large continent that provides relatively high wealth. However, we have a substantial economic risk because of the concentration of wealth that is derived from the export of resources. Any sustained reduction in the value of resources exports could be quite devastating given that Australia is also rapidly losing the ability to supplement technology imports with locally made goods and services.

I believe that Australia cannot (nor can any other country) have an ecosystem of innovative *technology solution* exporters unless the charge is led by its large companies. Therefore any efforts to develop a technology-centric plan B for Australia’s economy would be well placed to focus on schemes that encourage large companies to focus on patents and technology development.

My plan for doing this combines the usual ‘carrot and stick’ approach, using the patent system as the weapon of choice. Specifically, changes as to how patent enforcement is treated in Australia’s Courts are required so that we observe the *successful* emergence of contingency lawyers and patent trolls in Australia. In addition a very carefully crafted version of the patent box system can be introduced that avoids some of the pitfalls made by other countries such as the UK. And we need to allow companies to expense patent applications costs as R&D expenses because this is what they are!

The patent box system will encourage companies to innovate and patent in areas related to their core revenues. Increasing the value of patents (by encouraging a ‘higher ROI’ patent enforcement system) and making patents cheaper to develop

(by expensing their application costs) will further encourage our larger companies in this regard. These changes will also lower the barriers to developing patents portfolios for other purposes such as litigation defences against third parties, outward-bound licensing, cross-licensing, and technology options for future products; all these activities are the hall-marks of successful developers of *technology solutions* in high-growth and high-tech global business sectors.

As it is today, Australia's patent system is a lazy asset but with these few simple changes it can provide the tools that we need to modify the behaviour of Australia's larger companies. Success in these endeavours can be measured by the degree to which some of Australia's larger companies start aggressively patenting and investing in technology. The goal is for these companies to focus on *technology solutions* and the export of these. This will then naturally encourage an ecosystem of innovation that will include active high-tech SMEs and a venture capital sector.

And, finally, any major policy changes as described herein can only be successful if there is ongoing bipartisan political support so the policies do not become the victims of the political cycle. Anything less creates a mood of uncertainty for business and if this is the case then businesses cannot with any certainty take advantage of any new major policies.

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## Appendix A – Unstructured Corporate Patenting in Australia

This is a story about a large Australian corporation that shall remain nameless. The events described in this story are often repeated in many of companies, both large and small. The company in question has a medium sized R&D department. This R&D department has many functions including technical support for both Operations and Sales & Marketing, contributions to standards organization, R&D into new products, and maintenance of the patent portfolio. The R&D manager does not report to the CEO, but rather to a direct report of the CEO. The company has a Chief Technology Officer but that person is more a marketing figurehead rather than a real technical leader.

The company's share value is largely unaffected by technology outcomes and patent holdings. The share price is largely based on revenues, profits and hitting analyst's targets for these, as well as the implied benefit of a guaranteed market share and 'cartel-like' pricing that it has in the Australian market. No one, not the management nor the analysts, believes that the company's technology plays any part in the long term value of the company. The company exists with two major competitors in the closed Australian market and they all have the same attitude to technology. In addition not one of these companies has ever sued one of their competitors in Australia for patent infringement. Even if there was a clear patent infringement such issues would be sorted out down at the club, often because senior management individuals move from company to company within a sector, and if the patent infringement issues arose they collectively acknowledge that an expensive public patent stoush would not be in their personal interests.

The R&D team really loves doing sexy new-product R&D, but the company really wants them to perform the more mundane functions such as technical support for the operating business units. Every year, new product R&D projects are proposed and others are silently dropped off the agenda when everyone loses interest in them.

Whilst they are doing the new R&D projects the R&D team applies for patent applications just in case they invent anything that is lucrative. They transcribe everything they know about an R&D project into patent specifications with the view to figuring out what is inventive and novel at a later date when the patent applications eventually get examined. Of course, most of their new product R&D efforts do not end up with new products for sale and hence most of the patents, when granted, are not protecting any implied monopoly of any revenue stream for the company. Indeed at the time of grant most R&D projects embodied in the patents have themselves been wound up.

The patent portfolio is managed by an IP Manager who used to be a member of the R&D team, but at some time in the distant past somehow transferred across and now manages the patent portfolio. This person essentially acts to capture anything that is done by the R&D group that might be inventive or innovative, and then makes sure this is passed onto the patent attorneys for the filing of patent applications. The IP Manager also administrates the patent portfolio, which really means making sure all the bills are paid on time as they arrive from the patent attorneys.

There is also an IP Committee at the company made up of the formerly-mentioned Chief Technology Officer, a General Manager or two, the R&D manager and the IP manager. They meet every couple of months to 'review' the patent portfolio. The main function of this group is to decide which countries will be pursued for each invention as it reaches the so-called national phase of the Patent Cooperation Treaty process. Rarely does this committee decide to drop a patent application because they are never very sure that this is a good idea; there is very little to be risked in deciding to maintain a patent right (the cost is not in their operating budget nor is it one of their KPI's) but there is always the risk that if they drop a patent right that it could later be shown to have been a bad idea. The IP committee, in fact, epitomizes the habit of 'kicking the can down the road'.

In this manner the prosecution and maintenance costs of the patent portfolio slowly accrue and before long the company is spending half a million of dollars a year on the patent portfolio that is largely unrelated to the products and services that they sell. Then there is a change of CEO and, looking for some savings, the new CEO asks whether they can cut the patent portfolio.

This disturbs the happy equilibrium of the IP committee and the next thing that happens is that a lot of consultants make a little bit of money. Firstly their patent attorneys are paid to see if the company would have a freedom to operate issue if it off-loaded its patents or simply let them lapse. The patent attorneys do a study and quickly, and without any remorse, suggest to the company that in fact there will be no freedom to operate issues whence the patents are gone, in any scenario.

The sensible company then approaches a large advisory firm for a 'valuation' of their portfolio; rarely do they find someone that knows what they are doing so they usually get an expensive answer that explains why there are many different ways to value a patent portfolio and that you can have any number you want, just ask. Generally though, the valuation over-values the IP sitting on the balance sheet because there is no good way to account for the 'goodwill' associated with being part of cartel in the closed Australian market. So the company then has false hopes of recovering all its sunk costs by selling its patents.

The company then offers their portfolio for sale to a number of patent brokers and is surprised to find that none of the brokers is willing to sell the portfolio. This is because patent brokers prefer to deal in portfolios in certain high growth business areas where patents are being actively infringed. The broker's favoured clients are non-practicing entities that use various methods to enforce patent rights against operating companies. Very few patent portfolios fit this bill. There is also a smaller market for patents that are sold to operating companies but for patent brokers this is a much harder style of sale to execute since finding the one buyer for a specific portfolio can be like looking for a needle in a haystack. Short of putting a mountain of work in to find the one buyer, some brokers simply publish their patent portfolios for sale or put them to auction. I recently went to a large patent auction in San Francisco where there was not a single bid for 78 patent portfolio lots. By the time patent portfolios get to auction or are posted as 'for sale' on a broker website it is a fair bet that they have little or no value.

The company is then left with a stark choice – to continue to maintain its patents or slowly let them lapse and write off their 'sunk' capital, which is what they often do. This cycle of boom and bust of patent portfolios in many operating companies occurs because not a single person in the company has a proper appreciation of what patents are and there is no overt strategy for using patents to make increased profit or market share. Expenditure on matters relating to patents is not measured on return-on-investment, targets are not set and economic-value-add is not understood.<sup>37</sup> Typically the incremental cost of patenting is low enough for it to hover in the 'too-hard' basket until the cumulative cost builds up and some brave person is prepared to toss the whole basket in the bin, whereupon the cycle slowly starts again.

And all this happens in without any input from, or reporting to the board!

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<sup>37</sup> <http://www.scribd.com/doc/109135473/Corporate-IP-Strategy>

## Appendix B – Patent Enforcement in Australia<sup>38</sup>

In the USA a patent is presumed valid, and can only be invalidated by ‘clear and convincing’ evidence. Furthermore, in the USA court system each party to a patent dispute is normally required to bear its own costs. Even if the patent owner loses they are only liable for their own legal costs (which may be very low if its lawyers are in-house or working on a contingency basis). The defendant, on the other hand, is up for the full costs of mounting their defence, against a presumed-valid patent, and in front of an inherently unpredictable jury, whether it wins or loses.

The Australian system is very different:

The competent court for all patent infringement matters is the Federal Court of Australia – a Court in which many of the judges have patent law expertise supposedly comparable to the judges of the USA Court of Appeals for the Federal Circuit, and in which many patent claims have been found invalid over the years.

Under section 6 of the Civil Dispute Resolution Act 2011, an applicant to the Federal Court must file a ‘genuine steps’ statement, setting out ‘the steps that have been taken to try to resolve the issues in dispute between the applicant and the respondent in the proceedings’ – noting that the Court will take non-compliance into account when exercising its case management powers, and also in exercising its discretion as to costs.

The typical cost for commencing proceedings in the Federal Court, including Court costs and solicitor and barrister fees, is in the range of A\$10,000-20,000. Thereafter the costs can be expected to mount quite steadily towards hundreds of thousands of dollars.

The Court will quickly set a date for a first ‘directions hearing’, typically within four to eight weeks of filing of the application, at which both parties will be required to appear, and where the judge will set down a timetable for at least the initial steps in the proceedings.

It is almost invariably the case in Australia that costs (i.e. legal fees) will be awarded against a losing party. For this reason, a company without a genuine and substantial Australian trading presence will usually be required to post security for costs at an early stage in the proceedings (i.e. pay a bond or obtain a bank guarantee to cover costs in the event of a loss), typically being an amount in the hundreds of thousands of dollars or more for a patent infringement action.

Compared to the USA, there is relatively much fewer prospects that a patent owner in Australia will obtain a preliminary injunction – as the law currently stands, even a trading company (such as Apple) cannot obtain an initial injunction against a direct competitor (such as Samsung) except in extraordinary circumstances.

The Federal Court of Australia is very enthusiastic about alternative dispute resolution, and in particular is likely to strongly encourage the parties in a dispute over patents to resolve their differences through formal mediation.

If the matter proceeds to trial, and the alleged infringer challenges the validity of the patent, there is no ‘presumption of validity’ – the Court will review evidence of invalidity afresh, and make a decision on the usual civil standard of ‘balance of probabilities’ without deference to the work done by the patent examiner in the patent office. Arguments for and against this approach abound but it cannot be argued that this approach by Australia’s Courts diminishes the ‘value’ of getting a granted patent.

A patent owner alleging infringement in Australia is obliged to serve an Application under Section 120(1) of the Patents Act 1990 together with a Statement of Claim or Affidavit, which includes the Particulars of the alleged infringements. The patent owner is required to give at least one instance of each type of infringement alleged, so that the Defendant has sufficient information with regard to the case that it has to meet.

There are also the provisions for ‘unjustified threats’ which seem to terrify patent attorneys and their clients. If a party alleges infringement when it is later deemed that there is none, that party can find itself the subject of an unjustified threat action. This is very odd because Australia is a jurisdiction where the financial penalties for patent infringement are relatively low and injunctions hard to achieve. Undoubtedly the ‘unjustified threat’ provisions results in smaller entities

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<sup>38</sup> Some of this section is lifted from Mark Summerfield’s excellent summary at the Patentology website - <http://blog.patentology.com.au/2013/06/a-patent-troll-down-under-why-vringo.html> and also from Clayton Utz’s whitepaper at [http://www.claytonutz.com/docs/IPLitigationinAustralia\\_May%2008.pdf](http://www.claytonutz.com/docs/IPLitigationinAustralia_May%2008.pdf)



and individuals choosing not to enforce their patent rights when indeed these are being infringed by larger companies.<sup>39</sup> These provisions simply add to the perceived risk of patent enforcement.

Indeed Weatherall & Webster<sup>33</sup> estimated from a survey that an extraordinarily high 28 per cent of patents in Australia are known by their owners to be infringed; the true number accounting for unknown infringement is probably much higher. In only about half of the cases of known infringement is a letter alleging infringement sent and these letters succeeded only about 40% of the time. That is, 80% of the cases of known patent infringement in Australia are not pursued by the patent owners because of the perceived costs and risks in enforcing patent rights! Further less than one-half a percent of patents are enforced in Australian Courts every year despite the fact that just under a third are known (by their owners) to be infringed. These are not the signs of well-functioning patent system.

In Australia, a patent owner should obtain as much information as possible about the infringing activities of a third party before attempting to enforce its Patent. Otherwise, the Statement of Claim may be struck down by an Australian Court for lacking sufficient detail of the ‘type of infringement’ alleged.

Finally, even if a patent owner wins in Court it has no realistic prospect of receiving an inflated damages payout – the judge will look at the respondent’s evidence of the real commercial value of the patented technology, and determine a reasonable royalty rate on this basis. Because the determination of this value is such a ‘black art’ they sometimes just look at the prosecution cost or purchase cost and don’t take into account any good will. In the US, where juries are used for patent enforcement cases, the quantification of damages is taken out of the hands of the judges; this simple change to the court system may provide a massive boon to the value of patents in Australia. I have been told by people that claim to be experts that there is nothing in our constitution that prevents juries being used for patent enforcement cases – it’s simply a matter of amending the Patents Act.

In the USA, any patent owner (operational or otherwise) can enforce a patent against another entity and claim damages. Theoretically, the damages can be related to lost sales, but this doesn’t work for a non-practicing entity<sup>40</sup> (NPE) because they don’t actually ‘sell’ anything. Even though they haven’t suffered damage themselves an NPE in the USA can recover an account of profits in the form of lost royalty fees. The lost royalty revenues are calculated based on the projected market and thus what they could have earned had the infringing entity followed the letter of the law. Also an NPE in the USA can get punitive damages, which can be along the lines of triple damages. This means that lost royalties for the NPE are bolstered by additional damages awarded by the Court as punishment for the infringing practice.

Australia does not have punitive damages; this means that an entity is free to infringe and take the chance that any required pay out in damages down the track will at least equal what they should have paid in licence (royalty) fees. The only out of pocket downside becomes any Court costs for defending infringing activity.

My personal belief is that clear patent infringement should be treated by the Courts as seriously as insolvent trading because it effectively white collar theft. That is, a clear and known breach of the patent rights of another party should result in the potential for criminal charges against the directors of a company. This situation would, at the very least, focus the minds of the boards of Australian companies on patents. It would also substantially act to prevent wilful infringement of patent rights. Indeed I believe that the directors of a company should be obliged to ensure that their companies have taken all reasonable steps to ensure their company’s products or services do not infringe the patent rights of any third parties.

The costs awarded to a winning party in Australia are likely to be only 50-70% of the actual costs of running the litigation, leaving it tens, or even hundreds, of thousands of dollars out of pocket. It is unlikely that a small company could or would represent itself in an Australian Federal Court action, and unlikely that any experienced patent litigators in Australia would act for a company on a contingency basis. Litigation funding agencies in Australia will rarely touch intellectual property cases because the risks are too high and the liabilities too difficult to quantify.

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<sup>39</sup> <http://www.ipria.org/publications/wp/2009/IPRIAWP10.2009.pdf>

<sup>40</sup> There are many types of NPE’s from universities, small companies, brokers, through to special purpose legal groups that, in the context of patents, do nothing else other than license, sell or enforce patents. However it should be noted that a large company such as Apple can also be an implicit NPE if it enforces a patent that does not protect any of their products. The whole concept of a NPE has arisen because groups have emerged that specialise in the development of new patents, patent licensing or enforcement; when they successfully do so it is because this is a more efficient use of capital compared to the situation when all these functions are combined into one company that also happens to sell products derived from the R&D.

Thus, whereas a patent owner faces low risks in pursuing enforcement in the USA, it faces a comparatively high risk in Australia. Once projected returns have been discounted to account for the risk, many do not believe that the business model for patent enforcement in Australia stacks up. Even if a business case could be built, it would be so much less lucrative, and more risky, than say in the USA. This is why patents in Australia have inherently low value.