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PRODUCTIVITY COMMISSION
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WiseTech Global Limited

ACN 112 936 991 | Unit 3a, 72 O'Riordan Street, Alexandria NSW 2015 Australia | PO Box 6390, Alexandria NSW 2015 Australia
t +61 2 8001 2200 | info@wisetechglobal.com | www.wisetechglobal.com

1. Background

WiseTech Global Ltd (WTG), an Australian company, has been in business for twenty years and just recently listed on the ASX (WTC). We are a truly global Australian-owned innovator but our brand is not well known to the Australia public as we are in a B2B sector. Our business model is software as a service (SaaS) and we supply to many of the worlds' logistics companies, especially in the freight forwarding space. The software code for our flagship product, CargoWise One, took two and a half million (2.5M) hours of development over fourteen (14) years to evolve and build. Today this fresh and modern architecture is evolving, with over half of our more than five hundred (500+) employees and 40% of our annual revenues of one hundred million dollars (\$100M) invested in innovation and development.

Our flagship logistics application suite, CargoWise One, which is delivered to our customers in 115 countries, provides the ability to manage and track all aspects of the global supply chain. Our products allow a WTG customer, from the moment a booking is received, to co-ordinate movement of goods from any location on the planet across borders to another location. WiseTech's integrated global software application supports logistics service providers across freight forwarding, customs clearance, warehouse management, liner and agency (shipping), land transport (road and rail) systems, container freight stations, track and trace, and geo compliance. Our software solutions also utilise WiseTech developed hardware devices that include warehouse management tools including devices, truck systems monitoring equipment including devices, and pickup and delivery management tools including devices.

Our servers in our data centres in Australia, the United States and the United Kingdom host code so that we can deliver end-user functionality to our customers' computers, mobile and hand held devices via the "Cloud". The processing for any number of functionalities takes place in any number of locations across the globe on any number of devices/computers/servers. Communication between the devices, computers and servers occurs via wired and wireless local and global networks outside and over the Internet.

We are recognised as a major software innovator. We released 600 major product updates during 2015 and have a significant portfolio of innovation always under development. We are the archetypal 'R&D investor/innovation/product creator'.

We filed our first patent application with IP Australia in July 2015. We now have many on file. Our strategy involves appropriate and targeted patent protections for software (and hardware) technology innovations.

2. Our Submission

We would like to respond to certain parts of the *Productivity Commission (PC) Draft Report, Intellectual Property Arrangements (Report)*. In particular, we have an interest in the conclusion drawn by the PC that:

The Australian Government should amend s. 18 of the Patents Act 1990 (Cth) to explicitly exclude business methods and software from being patentable subject matter.¹

We would like to respond to the above conclusion by discussing assumptions made in coming to such a conclusion. Furthermore, we would like to respond to the question asked in Section 8.1:

What approaches or tests could be used to differentiate between inventions where the contribution of embedded software is trivial and inventions where the contribution of embedded software is genuinely deserving of patent protection? Should such tests be implemented in law or patent examination practices?²

We will first respond to the question of Section 8.1, making the conclusion that the distinction between software and embedded software is very fuzzy or non-existent. We will then show that many

¹ <http://www.pc.gov.au/inquiries/current/intellectual-property/draft/intellectual-property-draft.pdf>, page 252.

² Report, page 252.

assumptions made in the PC's case that software should be excluded from being patentable subject matter do not support its finding. We will further argue for the merits of strong patent protection for software.

3. Software and Embedded Software

The PC asks how to differentiate trivial embedded software inventions from those deserving patent protections. But first, the PC must decide: what is "embedded software"? In one definition, embedded software is considered software written to control machines or devices not typically thought of as computers.³ This distinction of whether embedded software is actually different from software relies on an assumption that machines and devices are different from computers.

In the age of levers and gears, yes, a distinction could be made that machines and devices are different from computers. However, today, virtually all electronic devices include microprocessors, and therefore, arguably, they are all technically computers. We note that the Report does not offer a definition of embedded software. This may be because, as the PC admits in its Report that:

There is no simple definition which exactly captures the idea of 'embedded software' or 'embedded systems'. Any attempt to provide a simple definition may make it relatively easy for patent attorneys and applicants to use 'creative drafting' to avoid the definition. Devising a simple definition is likely to be difficult, if not impossible. Technical advances may mean that any definition fixed in legislation becomes obsolete fairly quickly.⁴

It is understood then that the law cannot keep up with technology. That point is also made by a report of *The UK Strategic Advisory Board for Intellectual Property Policy (SABIP)* which hosted a forum on the economic value of IP in June 2009 and of which a Report is posted [on IP Australia's website](#):

³ https://en.wikipedia.org/wiki/Embedded_software

⁴ Report, page 250.

But most analysts have recognised that tailoring the system to technologies now available would inevitably leave it unable to adapt to new technologies as they arrived, and would lead to substantial strategic behaviour on the part of patent applicants to place their technology in such a way as to secure the best possible protection for their particular invention. The difficulty is that technological change moves much faster than legislative change, which means that fine-tuning of the patent system is inevitable out-of-date by the time it is in place.⁵

Though not mentioned by the Report, we propose consideration of two distinctions between software and embedded software:

- defining where the data processing takes place, or
- whether the software is hardcoded or downloaded.

In determining whether the above distinctions are workable, we note that predictions of technology's future abound on the Internet. On one post, when asked about computers in 20 years' time, Winfried Hensing, Professor of Quantum Technologies, University of Sussex said:

With the speed of wireless internet increasing, the location of the actual data processing will not be on your personal device, but on a distant, more powerful machine connected via the cloud. Such computers may belong to the general extremely powerful quantum class that will be developed in ten to 20 years. These technologies will, in just a few milliseconds, crack problems which would take the fastest conventional computer millions of years. Everything from breaking codes to searching data sets to the creation of new materials.⁶

In drawing the line between embedded software and software by a determination of where the data processing occurs means that a device claim involving communication would not be patentable. However, software of a device that gathers data and processes that data, but does not communicate it

⁵ <https://www.ipaustralia.gov.au/about-us/public-consultations/archive-of-ip-reviews/ip-reviews/options-paper-patentable-subject-matter>

⁶ <http://www.wired.co.uk/magazine/archive/2015/10/start/future-of-personal-computers>

for further processing would be patentable. Therefore, would an invention that utilises telecommunications not be patentable? Would that include wireless and wired communications?

As noted above, the logistics industry is worldwide. Remote processing is already occurring in our hardware products and customer's devices which run our software. For example, data which is gathered, generated and processed by devices, computers and databanks is communicated at rates of millions of messages daily to our servers. In turn, we process data which may then be delivered to remote devices, computers and databanks worldwide. In determining what is embedded software by where the processing takes place, advancements in remote processing would be barred from patentability. Such a distinction does seem arbitrary.

The same question was asked of Charles M Lieber, Professor of Chemistry, Harvard University. He said:

Personal computing will become very, very personal. Currently, our interface is through the peripheral nervous system - input by touch and voice; output to eyes and ears. In a very personal future, we would work directly from our brains, integrating 3D nanoelectronics with our neural networks. We have already created the blueprint for 'innervated' or cyborg tissue and recently shown how electronics can be injected into and intermingled with the brain. To modify Descartes's 'cogito ergo sum', my future of computing is, 'I think, therefore it happens'.⁷

Would the PC then consider that a device in direct communication with a person's brain includes embedded software only if it is hardcoded? If the software of the 3D nanoelectronics imbedded in a human's body needed updating, would that software update become embedded in the device so it is patentable subject matter? Or would only the hardcoded software of the device only be patentable? If yes, then it would follow that any updates delivered to improve the functioning of the device resident in a human's body, would not be patentable. The absurdity of this example is to show that a distinction of hardcoded software over downloaded software is not workable either.

⁷ <http://www.wired.co.uk/magazine/archive/2015/10/start/future-of-personal-computers>

We have proposed two possible distinctions. We proposed a distinction between software and embedded software would include defining where the data processing takes place. We also proposed a distinction be whether the software is hardcoded or downloaded. We have shown that neither can produce a workable distinction.

As discussed above, our servers in our data centres in Australia, the United States and the United Kingdom host code so that we can deliver end-user functionality to our customers' computers, mobile and hand held devices via the "Cloud". This means our software is embedded in any number of devices/computers/servers, in any number of locations. We cannot see how a distinction that our data processing may occur at remote locations and/or that our software updates are downloaded would render our software less embedded. It is WTG's position that the line the PC has proposed to draw between software and embedded software is an artificial distinction.

We know technology will continue to progress, and our current product delivery model will evolve, just as it did before, *when we originally sold a disk that stored software housed in a box which was delivered by 'snail mail'*, and just as will all technology. We, nor the PC can predict the future. Therefore, we cannot offer any workable suggestions to answer the above-referenced question posed by the PC. Accordingly, it is WTG's position that such a question cannot be answered because the artificial line that the PC seeks to draw is already non-existent.

4. Outlawing Software Patents in Australia

We would like to respond to the part of the Report that finds:

The Australian Government should amend s. 18 of the Patents Act 1990 (Cth) to explicitly exclude business methods and software from being patentable subject matter.⁸

⁸ <http://www.pc.gov.au/inquiries/current/intellectual-property/draft/intellectual-property-draft.pdf>, page 252.

5. Discussion:

6. Australia's Software Industry Compared to that of the US

It has been found that software-implemented innovations are critical driver of economic growth, exports and job creation in the United States.⁹ The same appears to be true in Australia. Telling then is that the Sydney Morning Herald reported¹⁰ that as of July 2014:

Computer sector jobs [in Australia] making up 1.6 per cent of overall employment compared with 1.2 per cent in the US.

...

The number of Australian jobs in computer systems design, which includes programming and software development, has grown by 38 per cent since 2008, when the dawn of the smartphone era revved up the industry. By contrast, jobs grew by 22.2 per cent in the US and 10.1 per cent in the UK over the same period.

The above statistics show that in Australia and the US, software-implemented innovations and the job markets are both growing. Australia's top 50 tech companies are mostly software businesses.¹¹ AusTrade promotes Australia's ICT industry.¹² According to AusTrade, Australia is known for software development across many sectors including mining and specialised technologies, gaming and digital health. That is, software is developed by many different industry sectors, including our sector, logistics.

⁹ The Software and Information Technology Services Industry in the United States, SelectUSA, <http://selectusa.commerce.gov/industry-snapshots/software-and-information-technology-services-industry-united-states>; see also IP Creates Jobs for America, GIPC (May 25, 2012), <http://www.theglobalipcenter.com/ip-creates-jobs-america/>.

¹⁰ <http://www.smh.com.au/it-pro/business-it/australias-technology-sector-outpacing-us-uk-report-20140731-zyzs1.html>

¹¹ <http://www.smartcompany.com.au/technology/67799-the-top-50-tech-companies-in-australia-revealed/>

¹² <https://www.austrade.gov.au/International/Buy/Australian-industry-capabilities/ICT>

While not Australian statistics, according to a 2012 study by the U.S. government, IP-intensive industries, many of which depend heavily on software-implemented innovation, supported 40 million jobs, contributed more than \$5 trillion to the US economy, and accounted for 34.8 percent of the U.S. gross domestic product.¹³ Further telling is that the US Government Accountability Office (GAO) in 2013 found that half of all patents granted in the United States in recent years were software-related.¹⁴ For example, while a patent in chemical art may be directed to an apparatus for measurements of a physical property, software is the driver of the apparatus. That is, software is patented at such a high rate because many businesses in many different industry sectors build software.

7. The *Alice* Holding Mitigated Risk of Pre-emption of an Abstract Idea

The *Alice* holding was that “[a] claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].”¹⁵ Thus, the *Alice* holding mitigated risk of pre-emption of an abstract idea. We note that the numbers of software patents provided by the GAO study are likely reduced due to *Alice*. Indeed, a dip in granted US patents has already occurred.¹⁶ However, we disagree with the PC that the purpose of the *Alice* holding was to “wind back” software patents.¹⁷

The *Alice* did not outlaw software or business method patents in the US.¹⁸ Avoiding pre-emption of abstract ideas was the reason for the *Alice* opinion – not “winding back” software patents. After *Alice*, software and business method patents are still legal in the US.

¹³ Intellectual Property and the U.S. Economy: Industries in Focus, Economics and Statistics Administration and United States Patent and Trademark Office (March 2012),

http://www.uspto.gov/sites/default/files/news/publications/IP_Report_March_2012.pdf.

¹⁴ U.S. Gov. Accountability Office, GAO-13-465, Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality 11-12 (2013). Software-related deals also account for over a third of all technology deals. PriceWaterhouseCoopers, Analysis and trends in US technology M&A activity 2013 12 (2013).

¹⁵ *Alice Corp. v. CLS Int’l Bank*, 134 S. Ct. 2347, 2357 (2014)

¹⁶ http://www.law360.com/ip/articles/797381?nl_pk=31cc5336-1eae-4da3-bc2f-0fc0acffcfba&utm_source=newsletter&utm_medium=email&utm_campaign=ip

¹⁷ Report, pages 233, 249

¹⁸ See *Alice Corp. v. CLS Int’l Bank*, 134 S. Ct. 2347, 2357 (2014) (“A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’”).

According to the *Alice* Court’s rationale, granting a limited monopoly on an abstract idea is dangerous because an abstract idea represents a building block of human ingenuity. Tying up building blocks with patents might impede progress rather than foster it, thus contravening the policy behind the patent system, which is to promote development of the technical arts. That is, claiming an otherwise abstract idea in a limiting way (“something more”), does not pre-empt the abstract idea.

Alice held the claims were directed to the entire field of intermediate settlement, and therefore pre-empted the entire field from future improvement. Similarly, before that, *Mayo v. Prometheus* held the entire field of interpreting metabolite levels to treat patients was pre-empted from future improvement by the claims. *Association for Molecular Pathology v. Myriad Genetics* held that the entire field of isolating BRCA1 and BRCA2 DNA sequences was pre-empted from future improvement, by the claims. *Bilski v. Kappos* held that the entire field of hedging financial risk associated with price fluctuations in commodity transactions was pre-empted by the claims. However, *Diamond v. Diehr* held that using a computer in the claimed process to cure rubber did not pre-empt the entire field of curing rubber from future improvement.

Recently, the *DDR Holdings* provides an example of an inventive concept that did not incorporate additional hardware to provide the “something more”. In *DDR Holdings*, the Federal Circuit found eligible an e-commerce system that helped to retain visitor traffic by displaying third-party product information from within a generated web page that gave the viewer of the page the impression that she is viewing pages served by the host website. The claims in *DDR Holdings* were said to “stand apart because they do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet. Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.”¹⁹ Accordingly, the Federal Circuit held that the claims were not directed to an abstract concept.

¹⁹ *DDR Holdings*, 773 F.3d at 1257.

Many patent practitioners would agree that claim drafting up to *Alice* had become overly ambitious²⁰ and that the guidelines of the USPTO previously did not address the breadth of claims filed and granted.

Since *Alice*, the USPTO has provided detailed guidelines. In summary, they include:

Step 1: Determine whether the claim is directed to an abstract idea.

Step 2: Examine the elements of the claim to determine whether it contains an “inventive concept” sufficient to “transform” the claimed abstract idea into a patent-eligible application.

A case referring to these steps was recently decided. The Federal Circuit in *Enfish Corporation v. Microsoft LLC*²¹ stated:

We do not read *Alice* to broadly hold that all improvements in computer-related technology are inherently abstract.... Nor do we think that claims directed to software, as opposed to hardware, are inherently abstract and therefore only properly analyzed at the second step of the *Alice* analysis.

There, the claims involved a specific structure of a logical table in a database, and were “not simply directed to *any* form of storing tabular data, but instead are directed to a *self-referential* table for a computer database.” The court found that the claims were directed to an improvement in the functioning of a computer that was not an abstract idea. That is, simply because claims are directed to a software solution, it is not foregone that the subject matter is an abstract idea.

In both *RA* and *RPL*, which were business method patents, the Court did not find sufficient improvement to the computer or computing. We believe that those holdings are in agreement with the holdings of *DDR Holdings* and *Enfish Corporation*. The Courts in *RA* and *RPL* found the claims to little more than a

²⁰ Potentially greedy and/or sloppy.

²¹ *Enfish Corporation*, No. 2015-1244 (Fed. Cir. May 12, 2016).

“scheme” or abstract idea. Had the claims included a technical improvement where there had been a technical problem, those cases may have turned out differently. Arguably, *RA*, *RPL*, *DDR Holdings and Enfish Corporation*, in so many words, are articulating the standard in Europe where the subject matter test requires a technical solution to a technical problem.²² If the claims provide a technical solution to a technical problem, the claims are not directed to an abstract idea even if they are directed to a computer-implemented invention in both the United States and in Europe.²³

A coherent set of guidelines for IP Australia examiners to follow in examining software and business method patents would actually be appreciated by WiseTech Global. IP Australia’s Manual of Practice and Procedure (MPP) currently includes scant guidelines. As it is, at IP Australia, it has been our experience that patent examiners pick and choose language from the *RA* and *RP* cases to support their positions. Oftentimes, their cited language is dicta. Examiners furthermore ignore that *IBM 2* and *CCOM* are still good law as noted in *RPL*.²⁴

We submit that a goal of “winding back” software patents is not sufficient reason to make software ineligible subject matter. However, if the government has a goal to “wind back” software and business method patents²⁵, it should be done in a meticulous manner with coherent and logical guidelines based on reasoned motivations, without foreclosing patent protection from Australia’s emerging industries. While, yes, a result of *Alice* has been a “winding back” of software patents, nowhere did the US Supreme Court state “winding back” as the goal.

²² Article 52 EPC: (1) European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application; (2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1 (a) discoveries, scientific theories and mathematical methods; aesthetic creations; schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers, presentation of information; (3) paragraph 2 shall exclude the patentability of the subject matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such. Emphasis added.

²³ Examples of EPO granted software patents:

http://en.swpat.org/wiki/European_Patent_Office_grants_software_patents

²⁴ *RPL Central Pty Ltd v Commissioner of Patents* (2013) FCA 871; *Commissioner of Patents v RPL Central Pty Ltd* (2015) FCAFC 177, 105 “Care must be taken to consider the circumstances of the claimed invention, beyond the form of words used. In both *IBM 2* and *CCOM*, the invention as claimed was patentable. However, the method in *IBM 2* could have been characterised simply to involve “drawing a curve on a computer”; in *CCOM*, the claimed invention could have been characterised as “to convert a word into Chinese characters”.”

²⁵ Report, pages 233, 249

8. The Smartphone Thickets May Have Actually Benefitted the Australian Economy

We note that the Report heavily relies upon an argument that the Smartphone patent thickets have in some way hurt Australia.²⁶ The discussion following below will point out that the Smartphone patent thickets may have actually benefitted Australia. Much is in the media about the vibrant Australian app industry which resulted from Smartphone availability.²⁷ We submit and discuss below that the Australian app industry would not have been possible without the Smartphone thickets.

Just as a matter of note, on page 4 of the Report, next to Figure 1, it is stated that “[t]oday’s smartphone are protected by over 1000 patents.” While this is technically correct, the number is actually closer to 250,000.²⁸ The writer of this Submission wrote patent applications for Motorola Mobility for seven years between 2003 and 2011, having written over 200 applications herself. When Google bought Motorola Mobility for over US\$10.5B, it bought their 17,000 patents where each individual patent was valued at over US\$600,000. Other large portfolio purchases by other companies have similarly staggering values.²⁹ The number is much larger than 1,000.

²⁶ Report, pages 223, claim drafting practices of Britax Childcare vs Infa-Secure is mentioned. Additionally, the Report, page 545 mentions Whitegoods/domestic appliances, organic fine chemistry and oil and gas services patent thickets without naming IP owners or any actual evidence of harm to Australian wellbeing. The Report, page 175 (and in other places) does name IP owners Ericsson, LG, ZTE, Qualcomm, Nokia, Thomson Licensing, Sony, Samsung, Huawei, Google, Apple and Sharp but again, does not name an Australian company squeezed out of the Smartphone market due to the Smartphone patent thicket.

²⁷<http://www.afr.com/technology/apps/app-industry-growth-picks-up-mining-slack-20140731-j6yla>;
<http://www.cci.edu.au/node/1560>; <http://www.teksmobile.com.au/blog/what-are-the-mobile-app-developers-doing-in-australia/>, <http://www.startupsmart.com.au/news-analysis/local/australian-mobile-app-market-booming-as-tech-job-growth-outpaces-the-us-and-uk-report/>

²⁸ http://www.wipo.int/export/sites/www/ip-competition/en/studies/clip_smartphone_patent.pdf;
<https://www.techdirt.com/blog/innovation/articles/20121017/10480520734/there-are-250000-active-patents-that-impact-smartphones-representing-one-six-active-patents-today.shtml>;
<http://www.patentprogress.org/systemic-problems/too-many-patents/>

²⁹ For example, in 2010 Palm to HP, 1500 for \$1.2B; Friendster to FB 18 granted/applications for \$40M; 2010 Novell to Syndicate, 882 for \$450M; 2011 ADC Tele to SC to HTC, 317 for \$375M; 2011 Google bought 17,000 from Motorola for \$10.5B; 2011-12 IBM to Google 3,241 and 29 applications for an undisclosed amount; 2012 IBM to Facebook 750 for an undisclosed amount; 2013 Nortel to Syndicate, 6,000 for \$4.5B; 2014 Kodak to Syndicate 1,100 for \$525M; 2014 Nokia to Microsoft, 8,500 design patents, licensed 30,000 utility patents.

9. Trade Secrets are Not Synonymous with Patents

Trade secrets were mentioned many times by the Report as an alternative to patent protection³⁰. However, trade secrets are not easily alienable and therefore cannot be readily traded in the worldwide knowledge-based economy. Capturing innovation in patents provides readily transferrable IP assets, enabling their trade in the global knowledge-based economy. Patents are traded (bought, sold and licensed) on the world market in great numbers where trade secrets are not.

10. Incentivising Innovation is Only One of the Patent System's Purpose

On Page 4, the Reports says:

In contrast, in the software industry, some studies conclude that patents provide little, if any, boost to innovation. More generally, in industries where the speed of technological change is fast moving, innovators tend to rely more on market-based arrangements, such as first-mover advantage, than IP protection.

Emphasis added.

The Report states it is some studies that conclude that patents provide little, if any, boost to innovation. This statement begs the question as to whether the Commission found other studies to the contrary. We offer up writings of the prominent IP expert and former USPTO Commissioner, David J. Kappos as providing ample evidence to the contrary in many of his writings which are well worth the read. While he writes considering the US economy and laws, the same could easily apply to Australia as we leave behind the commodities economy for the tech economy. For example, in *AT THE CORE OF AMERICA'S COMPETITIVE EDGE: WHY SOFTWARE IMPLEMENTED INVENTIONS ARE—AND MUST REMAIN—PATENT ELIGIBLE*³¹ Mr. Kappos points out that:

³⁰ Report page 16, 46, 47, 62, 88, 239, 244 and other places.

³¹ <http://partnershipforamericaninnovation.org/wp-content/uploads/2015/09/Software-White-Paper-Sept-4-2015-FINAL.pdf>

Patents are not issued for lines of code, computer programs, or apps. Patents are issued for new and inventive processes expressed as algorithms implemented on hardware, such as a computer, that performs a function. They are not issued for abstract ideas. Even before computers and software existed, such processes were patentable—patents were issued for algorithms to control the operation of devices such as programmable looms and engines. As surely as computers and software carry and execute today’s algorithms, punched paper rolls and cams carried and executed the programs of the day and all were patentable.

The beauty of the patent system is that it sees through and beyond the medium of implementation, to the new invention. The patent system views software as a medium of expression, just like a language. It sees no more sense in discriminating against inventions implemented in software than our society sees in discriminating against ideas described in Spanish versus French versus German versus English. Moreover, one cannot obtain a patent on software (i.e., source code) because that is solely a linguistic expression. But one can obtain—and should be able to obtain—a patent on a process that is implemented on an actual machine via software. Software in its binary form and implemented on a computer literally changes the physical configuration of the processor—the software is effectively the gear that makes the widget work.

Patent protection is needed for software to encourage innovation and collaboration, promote economic growth, and preserve our ability to compete in international markets. There are three technological areas where the U.S. has a significant edge over other countries—software, pharmaceuticals and biotechnology. These technologies currently are eligible to receive patent protection in the U.S., but do not receive equal patent protection in other nations. The U.S. is the global leader in these three fields because we allow patent protection for the results of R&D in all areas of technology. The U.S. patent system does not have the government pick winners and losers among forms of technology—instead, the market decides. Other countries are giving less protection in these three areas precisely because they are behind—they view weaker protection as a way to obtain and use U.S. technology without having to compensate U.S. inventors.

The U.S. is the most advanced country for software development, with 80% of the world's software produced here. Much like the semiconductor area, which consolidated previously distinct analog, RF, memory and processor IC's into one system on a single chip, today, just about all things related to consumer electronics are being designed into a single mobile device. Most of the advancements in the consolidation of technologies within mobile devices—for example, camera, GPS, video, alarm clock, and soon-to-be medical device—are driven by software. Software is also used to control numerous features of mobile telephones and tablets, such as temperature, graphics, image capture and compression just to name a few. As the Internet of Things develops, requiring more sensors to communicate with one another to complete an action (e.g., closing a garage door, turning on lights, automatically ordering more fabric softener), software is creating new services for existing industries and creating new markets.

Software development is also a critical component of each step of the manufacturing process—product design, production planning, engineering, execution, and service. The vast majority of software-related patents today go not to traditional software companies, but to manufacturing companies that integrate software into their products and services. For example, software enables advanced manufacturing, which can be used to create components of complex products more efficiently and at lower cost. Manufacturers no longer need to design customized devices for different uses. Instead, software applications tailored to different specialties—like virtual personal assistants on smartphones and virtual reality headsets—transform the way we interact with our technology.

Patents on software-related inventions provide small businesses and startups with a tangible asset to attract funds while working on product development. They also provide big companies with protection for their large investments and R&D budgets, which allows them to bring new breakthrough products to market and accelerate the pace of innovation. For example, IBM spent more than \$5.5 billion in 2014 on its R&D budget and has been the leading recipient of U.S. patents for twenty-two consecutive years. It announced recently that it received a record

7,534 U.S. patents in 2014. Indeed, the GAO [the US Government Accountability Office] recently found that half of all patents granted in recent years were software-related.

So the issue is not “software patents,” but bright new algorithms that save and change lives and happen to be implemented using computer software. Because many breathtaking software-implemented innovations enable and power our modern world, at levels of efficiency and performance unthinkable even just a few years ago, patent protection is every bit as important as an incentive “for software-implemented innovation as for the innovations that enabled man to fly, and before that for the innovations that enabled man to light the dark with electricity, and before that for the innovations that enabled the industrial revolution.” Software-related inventions are transformative, but we will remain the global leader only as long as we continue to provide the incentives of technology-neutral patent laws.

Emphasis added.

We submit that the PC’s focus on the software industry alone, separate from other industry sectors, citing first mover strategies and the like, limits its view of the patent system. The Report states:

In some cases — perhaps many cases — the exclusivity period provided by the first mover advantage is enough to motivate R&D in BM&S, rendering patent protection moot.³²

While it may be true that the “first mover advantage” may motivate R&D, we find that the PC has not shown patents are therefore rendered moot. There is also the view that the first mover advantage is a disadvantage:

³² The Report, page 244, “The short innovation cycles means that innovators have significant first–mover advantages. Innovators can recoup some of their R&D investments simply from being the first mover (Lieberman and Montgomery 1988). Trade secrets can slow down the competition, thereby extending first mover advantages. In some cases — perhaps many cases — the exclusivity period provided by the first mover advantage is enough to motivate R&D in BM&S, rendering patent protection moot. Indeed, the fast moving nature of BM&S development means that the commercial lifespan of a software program or feature is usually less than the time it takes to finalise a patent application — which in Australia can take up to five years.”

Although being a first-mover can create an overwhelming advantage, in some cases products that are first to market do not succeed. These products are victims of first-mover disadvantages. These disadvantages include free-rider effects, resolution of technological or market uncertainty, shifts in technology or customer needs, and incumbent inertia.

...

Studies of free-rider effects say the biggest benefit is riding the coattails of a company's research and development.³³

Incentivising innovation is the most cited aspect of patent system of the Report. The PC seeks to balance encouraging innovation with costs to the public. For example, the Report states:

While the function of IP is to encourage innovation and creative works, and to protect distinctive identities, establishing and enforcing IP rights comes with costs to consumers, other competitors and follow-on innovators.³⁴

This above statement is based on the assumption that there is actually a stated purpose for the patent system. However, in Australia and in the US, the purpose of the patent system is not in the legislation. According IP Australia on its website:

The Patents Act does not contain a statement of objectives.³⁵

In fact, in the US too, the purpose of the patent system was not enunciated by the Founding Fathers when including Article I, Section 8, Clause 8 of the US Constitution.³⁶

³³ https://en.wikipedia.org/wiki/First-mover_advantage

³⁴ The Report, page 5

³⁵ <https://www.ipaustralia.gov.au/about-us/public-consultations/archive-of-ip-reviews/ip-reviews/options-paper-patentable-subject-matter>

³⁶ <http://www.heritage.org/constitution/#!/articles/1/essays/46/patent-and-copyright-clause>

As pointed out throughout this Submission, we submit that the PC's focus on incentivising innovation as the main purpose of the patent system limits its view of the patent system.³⁷ Therefore, we submit that the purpose of the patent system is up for discussion. We submit that advancing the state of the art play a substantial role patent laws. However, there are many other important aspects of the patent system are attracting investment and promoting Australia's ability to compete in international markets which translates into job growth. We discuss many others in this Submission.

As pointed out by Mr. Kappos above, software drives technological advancement in many sectors. The same thing is true in Australia. Again referring to Austrade, according to AusTrade, Australia is known for software development across many sectors including mining and specialised technologies (such as logistics of WiseTech Global), gaming and digital health.³⁸ So, not only does the PC's recommendation to outlaw software patents affect the software industry, it would affect industries across Australia's technology spectrum, including those making improvements to their existing technologies. Hopefully, this is not an intended result of the PC's recommendation.

Again referring to commercialisation, that should be considered a highly important aspect of the patent system in Australia particularly since Australia's economy is changing rapidly due to the instability and downsizing of the mining industry. Australia is becoming a service-based economy, driven by software products.³⁹ However, Australia partakes very little in the worldwide knowledge-based economy. In each year's IP Australia Report, and mentioned in this report, that Australia has an annual IP deficit of \$3.25B.⁴⁰ Therefore, commercialisation should be high on the list of important aspects of the patent system in Australia.

³⁷ Granted, the Report includes other features such as disclosure and commercialisation, but does not focus on those.

³⁸ <https://www.austrade.gov.au/International/Buy/Australian-industry-capabilities/ICT>

³⁹ <http://www.smartcompany.com.au/technology/67799-the-top-50-tech-companies-in-australia-revealed/>

⁴⁰ <https://www.ipaustralia.gov.au/sites/g/files/net856/f/intellectual-property-report-2014-low-res.pdf>

11. The PC Should Promote the Worldwide Knowledge-Based Economy to Australians

It is furthermore staggering to consider that Australia holds the lowest position with respect to similarly sized economies in patent filings (of all types) in the USPTO, arguably the US being most important market. From the records of US patentees kept by the USPTO⁴¹, the writer correlated Australia with other developed countries of the same or smaller populations and found for 2013 Australia filed fewer patent applications in the US, per capita, than another other similarly situated country:

- Australia Population 23M, filed 3,603 US patent applications
- Taiwan Population 23M, filed 21,262 (6x)
- Netherlands Population 16.8M, filed 4,467 (1.7x)
- Belgium Population 11M, filed 2,401 (1.4x)
- Sweden Population 9.7M, filed 4,509 (3x)
- Israel Population 8.2M, filed 7,237 (5.6x)
- Switzerland Population 8.2M, filed 4,747 (3.7x)
- Finland Population 5.5M, filed 2,868 (3.3x)
- Denmark Population 5.5M, filed 1,722 (2.4x)
- Singapore Population 5.5M, filed 1,722 (2x)

Alan Kohler⁴² of the *Business Insider*, recently quoted Ian Maxwell, an adjunct professor at RMIT University when he wrote that:

Australia's 20 largest corporations have just 3,400 patents between them. Thirteen of them have less than 20 in total. By comparison the 20 largest US listed companies hold many hundreds of thousands of patents and they collectively file over 20,000 patents year. Google alone owns 51,000 patents and IBM has a similar number.

⁴¹ http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_15.pdf

⁴² <http://www.theaustralian.com.au/business/business-spectator/australia-is-patently-falling-behind/news-story/2c22f3bba359ea79e5ee01b7b387d2ae?login=1>

This discrepancy between Australian and US corporations is primarily due to the focus of large Australian companies on exploiting their “protected” share of the local market rather than exporting technology solutions.” A report by the US Patent Board, published in the Wall Street Journal this week, makes it clear that stock market value tends to follow the number of patent filings. There’s also a large trade in patents themselves. Google bought Motorola, with its 17,000 patents, for \$12.5 billion, to protect its Android operating system. Last year Microsoft bought 800 patents from AOL for more than \$1bn, and then sold 70 per cent of them to Facebook for \$550 million.

According to the most recent data available from IP Australia (which is not very recent – 2012) there were 2,627 applications filed by Australians, or 114 per million people, down from 120 per million a decade ago.

More than 90 per cent of the patents filed in Australia are by foreign entities. In most countries it’s about 50 per cent, with the other half coming from locals. The number of patents globally is about 2 million, which is growing at 6 per cent a year. China is now filing about 400 patents per million – four times the rate of Australia.

That Australians patented less than we did ten years ago while the worldwide rate increases 6% annually is a unique problem to Australia.⁴³ Whatever the cause, it results in an annual IP deficit of \$3.25B. These numbers should alert the Commission to the need to promote, in particular, software patenting, considering that most new Australian exporters are software based, instead of arguing the opposite.

Australia’s top 50 tech companies are mostly software businesses.⁴⁴ Some of these Australian software companies including Atlassian, Xero, Vend and Aconex join with WiseTech Global in capturing their innovations as IP assets. As our portfolios grow, so does our market value, in the same way that any company on the “Ocean Tomo 300 Patent Index”⁴⁵ which lists 300 corporations whose market value is

⁴³ http://www.wipo.int/pressroom/en/articles/2015/article_0016.html

⁴⁴ <http://www.smartcompany.com.au/technology/67799-the-top-50-tech-companies-in-australia-revealed/>

⁴⁵ <http://www.oceantomo.com/ocean-tomo-300/>

governed in large part by their patent portfolio value. (Companies such as IBM, Microsoft, eBay and Amazon are on that list.) Please refer to again Alan Kohler where he said:

A report by the US Patent Board, published in the Wall Street Journal this week, makes it clear that stock market value tends to follow the number of patent filings.

WiseTech Global respectfully submits that Australian companies which are growing in value promote hiring and exports, improve the overall wellbeing of Australian society. WiseTech Global is doing so by employing 500+ people and exporting products to 115 countries. We further submit that the value our patent portfolio may provide an increase to our overall value which in turn may benefit Australian wellbeing.

Australia's own Francis Gurry, the Secretary General of the World Intellectual Property Organisation, made a speaking tour of Australia in 2013 in which he discussed the worldwide knowledge-based economy:

Over the past few decades, the centre of wealth creation has been shifting from tangible assets or physical capital to intangible assets or intellectual capital or, as the OECD calls it, knowledge based capital. There are many measures of this shift. It is apparent in the asset distribution of the corporations in the S&P 500, which was 95% tangible assets and 5% intangible assets in 1978, but had become 20% tangible assets and 80 % intangible assets by 2010. It is apparent in business investment trends. In a number of advanced economies, more is invested in knowledge based capital than in physical capital and the rate of increase in investment in knowledge based capital is consistently out-pacing the rate of increase in investment in physical capital.

This shift brings with it, naturally, a change in the focus of competition. Competition is increasingly targeted at the competitive advantage that is derived from knowledge based capital. That is why, after all, we are seeing increasing rates of investment in knowledge based capital. The competitive advantage conferred by knowledge based capital is expressed as innovation, innovation being increasingly understood in a comprehensive way as covering all the

technological, design, organizational and marketing information that go into the commercialization of new products, services or processes. Innovation is the key to economic (and, by the way, military) success in the contemporary world for enterprises, industries and countries and is perceived as such by all those actors. This is why we see such emphasis placed on innovation.

The Wall Street Journal last year did a survey of quarterly and annual reports filed with the Securities Exchange Commission and found that the word “innovation” had been used 33,528 times in those reports in the preceding year. IP captures and secures the competitive advantage conferred by innovation. This translates into enormous value for which IP is the custodian. In a study published last year by the United States Government, it was estimated that, in 2010, \$5.06 trillion in value added, or 34.8% of US GDP, and 27.1 million jobs, or 18.8% of all employment, were directly attributable to IP-intensive industries. Awareness of this value captured by IP also accounts for the rising demand for IP rights throughout the world. Between 1995 and 2011, worldwide the number of patent applications rose from 1.05 million to 2.14 million, the number of trademark applications from 2 million to 4.2 million and the number of design applications from around 245,000 to 775,000.⁴⁶

Emphasis added.

Again, it should be alarming to the PC, as Alan Kohler pointed that:

Australia’s 20 largest corporations have just 3,400 patents between them. Thirteen of them have less than 20 in total.

⁴⁶ Francis Gurry, http://www.wipo.int/export/sites/www/about-wipo/en/dgo/speeches/pdf/dg_speech_melbourne_2013.pdf

In fact, the list of the Top 1000 US patentees includes only five Australian entities: Cochlear, Resmed, Aristocrat, CSIRO and Kia Silverbrook.⁴⁷ Based upon its population, Australia represents a very small contingent in that list. These facts too should be alarming to the PC.

Still referring to the list of the Top 1000 US patentees, companies like IBM with approximately 7500 patents granted per year, Samsung with 4800, Cannon with 4000 and Microsoft with 2800 occupy the top spots year after year. Many of these companies are on the "Ocean Tomo 300 Patent Index"⁴⁸ which lists 300 corporations whose market value is governed in large part by their patent portfolio value. It should be alarming that most Australian companies are missing the opportunity to add wealth through their patent portfolios.

12. The Threat of Undue Market Power is Manageable Without Outlawing Software Patents

On page 5, the Commission states that:

Because IP rights give holders the ability to prevent others from using that IP, there is a risk the rights allow parties to unduly exercise market power. As noted by the Harper Review Panel in its recent report on competition policy, this can manifest in owners of IP rights extracting excessive royalties from IP licences or placing anticompetitive restrictions on knowledge dissemination, with adverse knock-on effects for innovation.

Most patent experts would agree with these points, particularly with respect to the US. However, Australia already has strong anti-troll laws, and in fact, little trolling takes place in Australia, or in fact in any jurisdiction other than the US.⁴⁹ Foreseen potential problems can be reduced with strong anti-competition laws. It is curious why in the US, for example, the US government has not adopted the same loser pays litigation rules that Australia has long had. However, if the PC is concerned about the

⁴⁷ http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_15.pdf given that the US is the most relevant patenting jurisdiction.

⁴⁸ <http://www.oceantomo.com/ocean-tomo-300/>

⁴⁹ <https://bricwallblog.wordpress.com/2014/02/16/patent-trolls-a-global-perspective/>

threat of undue market power, eliminating an entire class of patentable subject matter to solve this problem is cutting off the nose to spite the face.⁵⁰

On page 5, the Commission continues that:

For countries that are net importers of IP, such as Australia (figure 2), costs to consumers and follow-on innovators from higher prices and restricted availability are not offset by increases in Australian producer profits.

This statement must be in reference to the problem that 90% of Australian patent applications originate internationally.⁵¹ It should be noted that in other first-world economies like the US and Germany, 50% of patent applications originate within those states.⁵² The reason there is no offset increases in Australian producer profits is because Australians do not patent at the rate of other advanced economies (see list above). Hence, a better discussion point would be how to raise the Australian patenting rate rather than how to reduce it.

WiseTech Global submits if Australia were to join the worldwide knowledge-based economy and trade in intangible assets, costs to consumers would be offset by increases in Australian producer profits. As noted by Alan Kohler above,

This discrepancy between Australian and US corporations is primarily due to the focus of large Australian companies on exploiting their “protected” share of the local market rather than exporting technology solutions.

The PC should recognise this cultural characteristic of Australia, and work to turn it around by promoting to Australian industries to patent more so that Australia may join the worldwide knowledge-based

⁵⁰ Particularly when the most patent thickets are not in software by chemical arts as pointed out below.

⁵¹ <http://www.afr.com/news/economy/wto-chief-economist-challenges-productivity-commission-view-on-ip-20160518-goxyf>

⁵² <https://www.epo.org/about-us/annual-reports-statistics/annual-report/2012/statistics-trends/top-applicants.html#tab2>; http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_15.pdf

economy and therefore grow Australian businesses in value, create jobs and export. Indeed, just 19 May 2016, the Australian Financial Review just reported that the World Trade Organisation's (WTO) chief economist, Robert Koopman, noted that the PC's call for weaker IP protections – because Australia is a net importer of innovation – sells local firms and their ideas short.⁵³ He said:

It's important for Australia not to view itself as an island of IP – a net importer – rather than thinking about it in more a global context and how its position might evolve.

A term used to describe this notion is “rent seeking”.

Still referring to the undue market share so-called problem, it should be further noted that when it came to the CSIRO WIFI patent⁵⁴, which is a software patent, the Australian government was delighted to

⁵³ <http://www.afr.com/news/economy/wto-chief-economist-challenges-productivity-commission-view-on-ip-20160518-goxyf>

⁵⁴ Australia is quite proud of the US\$220M royalties it received for the CSIRO US Patent No. 5487069 A for “Wireless LAN”. WiseTech Global submits that if the recommendations of this Productivity Commission were accepted by the Australian Government, Australia's crown jewel patent would be outlawed. The abstract sums up the software invention:

This is achieved by a combination of techniques which enable adequate performance in the presence of multipath transmission paths where the reciprocal of the information bit rate of the transmission is short relative to the time delay differences between significant ones of the multipath transmission paths.

Look at claim 1 of US Patent No. 5487069 which defines algorithmic elements:

1. A wireless LAN comprising:

a plurality of hub transceivers coupled together to constitute a plurality of **data sources and destinations**; and a plurality of mobile transceivers each coupled to data processing means and between each said data processing means and a corresponding said transceiver data passes to be transmitted or received, said transceivers being for data transceiving operation by radio transmissions to one of said hub receivers in a confined multipath environment, and each transceiver comprising: antenna means coupled to transmission signal processing means and to reception signal processing means, said transmission signal processing means in turn coupled to an input data channel, and said reception signal processing means in turn coupled to an output data channel, each said transceiver being operable to transmit and receive data at radio frequencies in excess of 10 GHz, and said transmission signal processing means comprising modulation means for modulating input data of said input data channel into a plurality of sub-channels comprised of a sequence of data symbols **such that the period of a sub-channel symbol is longer than a predetermined period representative of the time delay of significant ones of non-direct transmission paths**.

receive US\$220M obtained through patent litigation in the US. It is okay to have market power derived from a software patent when it benefits the Australian Government, but not otherwise?

The threat of undue market power is manageable without outlawing software patents. But in particular, we will propose that in the case of Smartphone patent thickets, their undue market share actually benefitted Australian wellbeing. We submit that the Smartphone sector, protected by its patents, allowed other Australian business to flourish, in particular the Australian Smartphone app industry. Furthermore, arguably, the Australian wellbeing is benefited because the price of Smartphones is now at commodity levels, where a Smartphone can now be purchased for as little as \$20, but are currently advertised at \$50.⁵⁵ The PC has not shown that the undue market share squeezed out any particular Australian would-be competitors. We submit that the PC reliance on the undue market share of the Smartphone industry resultant from its patent thickets did not show that those Smartphone patent thickets actually hindered Australian wellbeing.

The “plurality of hub transceivers” which transmit and receive instructions are driven by a set of software instructions. The instructions of the software causing the transceivers drive the transceivers cause the modulating means (of the transmission signal processing means which is a programmed solid state device, not levers or gears) for modulating data to transmit data so that the information bit rate of the transmission is short relative to the time delay differences between significant ones of the multipath transmission paths.

In today’s discussion, the modulation process may be accused of being algorithmic and therefore an abstract idea not entitled to patent protection. In today’s discussion, the software instructions of the transceivers may not be considered an “embedded software” and therefore would not pass muster under the Productivity Commission’s scrutiny. Maybe the Commission would decide that this transmitter meets the definition of an embedded software device. What if a WIFI system put the CPU (the chip that processes instructions) in another housing, next to the transmitter and they were separated? Is that now an embedded device? What if the instructions were remotely provided? Where would the line be drawn to distinguish embedded from not embedded? Would this patent pass *Alice* muster? We submit, yes.

⁵⁵ http://www.optus.com.au/shop/prepaidmobile/alcatel/pixi-3?gclid=Cj0KEQjwvOC5BRcb_8yNmZ_Is9lBEiQACTz8vpmchwA7fl2LvphiR2y1k1p0Lpw2G_D7ktwJS-oEbPOaAgBi8P8HAQ&gclid=aw.ds&dclid=CO-SqNjL28wCFcKBvQodz4EG8Q

13. A Broad Patent May Motivate Innovation to Design Around It

On page 7, the PC goes on to say:

For many innovations, the strength of patent rights is excessive and imposes costs on the community with no offsetting benefits.

Contrary to this assertion by the PC, we respectfully point out that, in fact, a strong patent can benefit a community immensely.⁵⁶ A striking example of how this is true is in case of the Page Rank Patent⁵⁷ which is owned by Stanford University and licensed to Google. Royalties paid to Stanford University up through 2015 from Google are US\$341M.⁵⁸ The Page Rank Patent, a very broad and defensible software patent helped to grow a company that changed life worldwide and brought enormous benefit to the community of Stanford University, the Silicon Valley, California, the United States and the world at large. Australia has also directly benefited from Google's success. Google has offices in Sydney and employs Australians.

As noted by WIPO and cited above:

In a wider sense, the public disclosure of the technical knowledge in the patent, and the exclusive right granted by the patent, provide incentives for competitors to search for alternative solutions and to "invent around" the first invention. These incentives and the dissemination of knowledge about new inventions encourage further innovation, which assures that the quality of human life and the well-being of society is continuously enhanced.

The broad and important Page Rank patent has not stopped others from building search engines. Literally hundreds of other search engines than Google's exist.⁵⁹ The strength of the Page Rank patent

⁵⁶ <http://www.ipfolio.com/10-patents-that-launched-billion-dollar-empires/>

⁵⁷ <http://www.google.com/patents/US6285999>

⁵⁸ https://otl.stanford.edu/documents/OTL_overview.ppt

⁵⁹ https://en.wikipedia.org/wiki/List_of_search_engines

may not be the only reason Google has had such outstanding success.⁶⁰ Most would agree that business strategies can be substantially more important than patents in building a successful business. WiseTech Global is also proof of that.

14. Finding the Right Balance includes Maintaining Software as Patentable Subject Matter

The Australian Government seeks to ensure that the appropriate balance exists between incentives for innovation and investment and the interests of both individuals and businesses, including small businesses, in accessing ideas and products. The Commission was instructed to recommend changes that “improve the overall wellbeing of Australian Society.” However, WiseTech Global believes that in the Productivity Commission’s Draft Report, it has so narrowly construed the purpose of the patent system, its ultimate conclusion in fact would hinder the overall wellbeing of Australian Society. The purpose of the patent system is not limited to providing incentives for innovation. Limiting its purpose this way means all of its other benefits cannot be fully realised. For example, the patent system also rewards inventors who *advance the state of the art* by making enabling disclosures of their inventions.

Referring to IP Australia’s website, it says:

The Patents Act does not contain a statement of objectives. Nevertheless, the patent system is widely acknowledged as having an economic objective. The system aims to benefit society through optimising innovation and public access to new technologies. The World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) captures the modern objectives of the patent system:

The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.

⁶⁰ In fact, Google owns over 50,000 patents.

The way the patent system operates reflects these objectives. Commentators sometimes refer to patents as representing a social contract or *quid pro quo*. The Government awards creators exclusive rights to exploit their invention. The exclusive rights are limited both in time and in nature, but provide an opportunity for the creator to generate profits. This provides an incentive for investment into research and development of new products and processes. In return for this exclusive right, the creator makes the details of their invention available to the public. This allows the public to build on the knowledge of the invention, or to innovate around the invention to avoid infringement during the patent term. At the end of the patent term, the public has unrestricted access to the invention. To put this crudely, as a result of a patent society incurs short-term pain for long-term gain.⁶¹

Emphasis added.

This same point was made by the World Intellectual Property Organisation (WIPO) in its FAQs⁶² points out:

Why are patents useful (to society, business, individuals etc.)?

Patented inventions have, in fact, pervaded every aspect of human life, from electric lighting (patents held by Edison and Swan) and plastic (patents held by Baekeland), to ballpoint pens (patents held by Biro), and microprocessors (patents held by Intel, for example).

Patents provide incentives to and protection for individuals by offering them recognition for their creativity and the possibility of material reward for their inventions. At the same time, the obligatory publication of patents and patent applications facilitates the mutually-beneficial

⁶¹ <https://www.ipaustralia.gov.au/about-us/public-consultations/archive-of-ip-reviews/ip-reviews/options-paper-patentable-subject-matter>

⁶² http://www.wipo.int/patents/en/faq_patents.html

spread of new knowledge and accelerates innovation activities by, for example, avoiding the necessity to “re-invent the wheel”.

Emphasis added.

As mentioned above, the code for our flagship product, CargoWise One took two and a half million (2.5M) hours of coding and fourteen years of innovation to build. Also as mentioned we filed our first patent application with IP Australia in July 2015. We now have many on file. The logical conclusion to be drawn from these two facts is that WTG did not need the patent system to incentivise WTG to innovate.

WTG innovated long before filing its first patent application because it was in our nature to innovate. A government program had no effect on our innovative nature. However, now that we have innovated, it is WTG’s position that we should be entitled to a reward for providing enabling disclosures of our innovations to the public, if our applications meet other legal requirements. If we receive patents based on our applications, our reward for our innovation will include the acknowledgment of our innovativeness as well as potentially, an increase in our book value.⁶³

Patents are valuable for many reasons including providing a perception of innovation to individuals and companies. Patents are personal in nature. Inventors and their attorneys toil for many hours to describe the invention in detail and correctly. Substantial investment is made in the patent application

⁶³ Another an Australian company, Kambrook who should have been rewarded for innovation but missed a big opportunity: "Frank Bannigan, managing director of Kambrook, developed the electrical power board in 1972. The product was hugely successful and was the basis for Kambrook's growth to become a major producer of electrical appliances. However, the power board was not patented and Kambrook ended up sharing the market with many other manufacturers. According to Frank Bannigan, 'I've probably lost millions of dollars in royalties alone. Whenever I go into a department store and see the wide range of power boards on offer, it always comes back to haunt me.' " (Formally on IP Australia website.)
<https://www.facebook.com/ipaustralia.gov.au/posts/442931409094093>

itself. When a patent is granted, the inventor will proudly list it on her resume as evidence of her innovativeness.

Preferably, this inquiry will satisfy the PC that the right balance can be found without taking an extreme position of outlawing software patents. Systems of course are not always perfect. Furthermore, we do understand that there is a very vocal Open Source community. However, we would suggest that the software developed by WiseTech Global would not be of interest to the Open Source community. It is purpose specific. We submit that a better way to learn from WiseTech Global's innovations is to read of them in the patent applications that we file.

15. Numbers of Low Value Patents can be Reduced with Clear Examination Guidelines and Lowering the Quota for Examiners

On page 7, the PC refers to the problem of "low-value patents". WiseTech Global agrees that low-value patents can be a problem, but such a problem is not only in respect to certain class of innovations, software. However, there are many steps that can be taken to increase the quality of patents granted by IP Australia. The writer of this Submission was a patent examiner for one year between 2012 and 2013 at IP Australia and so she has personal knowledge about the overwhelming work load that patent examiners are faced with daily. Giving examiners more time to examine each application is an example of such a step. This might be accomplished by raising filing fees. Furthermore, strict examination guidelines would go a long way to improving the quality.

16. The PC Report does not Support its Reliance on Patent Thickets to Show They Impede Innovation

The PC has used data of patent thickets as its main support for how software patents are impeding innovation as follows:

In some areas of technology in Australia patent thickets have grown dense. For example, in the area of mobile devices and networking, a dense thicket has developed within and around a set

of patents held by firms including Sony, Ericsson and Samsung (figure 6.6). The World Intellectual Property Organization (WIPO) technology fields where the Commission identified the most patent thickets are digital communication and basic materials chemistry. The full results from the Commission’s empirical analysis of patent thickets — including the assumptions made — are outlined in appendix D. ⁶⁴

Furthermore, the PC has argued that:

There is the possibility that divisional patents were used by inventors for strategic reasons ... some 19 inventors indicated divisional patents were used for protection around intellectual property in a patent other than the parent patent. Such protection is consistent with the divisional patent being part of a patent thicket.

Emphasis Added.

WiseTech Global respectfully submits that if the data analysis of thickets upon which the PC relies is derived from divisional filings, then it is clear that the data has not be truly analysed. Furthermore, testimony of 19 inventors that they may use divisionals for strategic reasons is inadequate evidence that divisional filings create harmful patent thickets. Without word-for-word mappings of each claim of a set of divisionals to determine the correlation between the claims and their prosecution histories, evidence of 19 inventors that they may use divisionals strategically does not prove that harmful patent thickets exist. One cannot conclude from this logic that software patents should be illegal.

WiseTech Global submits that to determine a patent thicket, using only simple number crunching, does not definitively prove the existence of patent thickets. Divisional filings occur for a variety of reasons, including for example, when there is “a lack of unity” objection by an examiner. Without much more

⁶⁴ Report, page 8

detailed analysis for determining the existence of harmful patent thickets than presented in the Report, we submit there is little to support the PC's recommendation to outlaw software patents.⁶⁵

17. To the Contrary, Smartphone Patent Thickets have Created a Vibrant Australian Software Industry

The Report states that:

A related strand of literature examines the effect of patent thickets on market entry (which could have an indirect effect on follow-on innovation). In general these studies find that denser thickets inhibit entry, especially for SMEs (Hall, Helmers and Graevenitz 2015; IPO 2013). Cockburn and MacGarvie (2009, 2011) found evidence of a negative and significant relationship between thickets and entry in the software industry.⁶⁶

However, the only specific example given in the Report of a software thicket is in the Smartphone sector (we would note that there are Smartphone hardware related patents as well) where actual IP owners were named. As mentioned, for other thickets noted, no companies were named.⁶⁷ In giving that example, the Report however, does not provide any specific evidence that the Smartphone patent thickets actually impeded Australian innovation. What particular Australian business actually tried to get into the Smartphone market and could not because of the patent thicket? The PC offers no evidence that a would-be Australian Smartphone maker was squeezed out the market by the patent thickets.

⁶⁵ Report, page 223

⁶⁶ Report, page 176

⁶⁷ Report, pages 223, claim drafting practices of Britax Childcare vs Infa-Secure is mentioned. Additionally, the Report, page 545 mentions Whitegoods/domestic appliances, organic fine chemistry and oil and gas services patent thickets without naming IP owners or any actual evidence of harm to Australian wellbeing. The Report, page 175 (and in other places) does name IP owners Ericsson, LG, ZTE, Qualcomm, Nokia, Thomson Licensing, Sony, Samsung, Huawei, Google, Apple and Sharp.

WiseTech Global submits that the opposite is true. Recall the provided statistics above:

The number of Australian jobs in computer systems design, which includes programming and software development, has grown by 38 per cent since 2008, when the dawn of the smartphone era revved up the industry.⁶⁸

Arguably the Australian businesses building apps for Smartphones directly benefited from the Smartphone patent thickets. The Smartphone industry required massive investment in research and development, building the products and marketing them worldwide. Large companies like Samsung, Motorola and Apple were up to the task. However, they may not have done so without the ability to protect their investments. Arguably though, the Australian app industry is enabled by the **stable platforms** of the major Smartphone makers who would not have brought these products to market without their patent protection.

18. Appendix D shows More Chemical Arts Patent Thickets than Electrical Arts Patent Thickets

Clearly, the PC offers no evidence that software patent thickets have impeded Australian innovation. Curiously though, Appendix D ⁶⁹ states that patent thickets are most prevalent in the Chemical Arts, not in the Electrical Engineering Arts. In fact there are 204 in the Chemical Arts but only 86 in the Electrical Engineering Arts. Why hasn't the PC decided that Chemical Arts patents should be illegal instead of Software Patents?

We insert the Table of Patent Thickets from the Report to show Chemical Arts patents, according to this analysis, have many more patent thickets than Electrical Arts patents.

⁶⁸ <http://www.smh.com.au/it-pro/business-it/australias-technology-sector-outpacing-us-uk-report-20140731-zyzs1.html>

⁶⁹ Report, page 544

Table D.3 **Estimated thickets by sector and technology field^a**

<i>Sector</i>	<i>Technology field</i>	<i>Thickets identified at the sector level</i>	<i>Thickets identified at the technology level</i>
Electrical engineering		86	
	Digital communication		37
	Audio-visual technology		2
	Electrical machinery, apparatus, energy		2
Chemistry		204	
	Basic materials chemistry		29
	Organic fine chemistry		26
	Biotechnology		9
	Pharmaceuticals		1
	Macromolecular chemistry, polymers		1
Instruments		12	
	Medical technology		11
	Optics		1
Other fields		5	
	Civil engineering		3
	Furniture, games		1
Mechanical engineering		2	
	Thermal processes and apparatus		1
Total		309	124

In fact, according to the above chart, the Chemical Arts have nearly three times (3X) as many patent thickets as the Electrical Engineering Arts. Therefore, we are not clear on how can the PC say that:

The nature of software markets, the costs of development and the presence of other incentives to innovate collectively make a strong case that BM&S should not be eligible for patent protection. Broader changes to patents, particularly around the inventive step and abandoning innovation patents, may knock out a large share of BM&S patents. Nonetheless, there is value in making clear that BM&S should not be considered patentable subject matter. ⁷⁰

⁷⁰ Report, page 16

and

On balance, the Commission considers it unlikely that granting patents in the area of BM&S increases the welfare of the community. BM&S patents likely compensate activity that would have occurred in any event (are nonadditional) and reward low- (or even no-) value innovations. BM&S patents can also frustrate would-be competitors and follow-on innovators. While broader changes to patents, particularly around the inventive step and dispensing with innovation patents (chapters 6 and 7), may 'knock out' a large share of BM&S patents, the Commission still considers that there is value in making clear that BM&S should not be considered patentable subject matter.⁷¹

WiseTech Global respectfully submits that the PC has not offered value in making clear that software patents, of any kind, including business methods, should be outlawed. In fact, the evidence provided by the PC in the Report would suggest that Chemical Arts patents should be outlawed, not Software patents. Moreover, while we do not dispute the existence of patent thickets of the Smartphone industry, it is the only actual example of a patent thicket where IP owners were named. Moreover, no actual evidence of harm to an Australian would-be Smartphone maker was presented.

Patent thickets involving whitegoods/domestic appliances, organic fine chemistry and oil and gas services were mentioned without naming IP owners or providing any actual evidence of harm to Australian wellbeing. Loosely mentioning divisional patent practices of 19 inventors was not convincing. Data crunching evidence must be followed up with detailed word-for-word analysis to be considered relevant. To the contrary, we showed that the Smartphone patent thickets most likely substantially benefitted the Australian economy by enabling an entire Australian app sector to flourish. Above, we have shown that the PC's analysis of Smartphone patent thickets leaves many loose ends. Moreover, the purpose of the patent system and how to make it better, while not discriminating against an emerging Australian industry sector, is up for discussion. Therefore, referring to Smartphone patent thickets and many other issues discussed above, the PC did not make the case that software patents, or any type of patents, inhibit Australian wellbeing.

⁷¹ Report, page 248

5. Conclusion

There are many ways to improve the Australian patent system including taking the pressure off examiners to process applications quickly and by establishing coherent guidelines that examiners can follow during examination. The Australian software industry is emerging. Adding book value through patents can in turn creates jobs and promote exports. Hence, it is WiseTech Global's position that the PC should abandon its position to outlaw software and business method patents and should instead promote that Australia join the rest of the world in capturing its innovation as transferrable IP assets so that it may partake in the worldwide knowledge-based economy.

Respectfully Submitted,

WISETECH GLOBAL PTY LTD.
Paula Natasha Chavez
Chief IP Counsel, WiseTech Global Ltd.