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Big Data & Intellectual Property – Strategic Alignment for Commercial Success

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We are currently experiencing a 'Big Data revolution'.[1] Technology and smart devices are enabling us to create, store, share, and use data in ways previously never imagined. At the same time new tools and methodologies allow sophisticated analysis of the data being collected, to produce socially, economically and commercially beneficial insights. The exponential swell in the amount of data being generated, and the new ways of analysing and using it, has the potential to significantly impact the historical role of intellectual property ('IP'). Traditional IP protection strategies, such as patents and copyright, tend to focus on exclusive ownership and restricted rights access. In contrast, the value of Big Data typically lies in its shared availability to multiple users and combination across varied sources. Traditional IP protection strategies may therefore not always be well suited to take advantage of the opportunities presented by Big Data. To maximise revenue and competitive advantage, businesses may need to re-assess and re-align their IP strategies to their Big Data strategies, to enable shared access and use, rather than exclusive ownership. In addition, open access approaches, such as open source, open innovation and creative commons, potentially have an increasingly important role to play in a Big Data world.

WHAT IS BIG DATA?

'Data now stream [sic] from daily life: from phones and credit cards and televisions and computers; from the infrastructure of cities; from sensor equipped buildings, trains, buses, planes, bridges and factories. The data flow [sic] so fast that the total accumulation of the past two years – a zettabyte – dwarfs the prior record of human civilisation'.[2]

'Big Data' is a broad term used to refer to this modern 'stream' of data which flows from our seemingly endless interactions with technology and smart devices. Gartner describes Big Data as 'high *volume*, high *velocity* and/or high *variety* information assets that demand cost-effective, innovative forms of information processing for enhanced insight, decision making, and process optimization'. [3]

Others have added to this definition by referring to Big Data's *value* (the economic or political worth of data) and *veracity* (uncertainty introduced through data quality issues).[4]

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[1] Shaw, Jonathan, '*Why "Big Data" Is a Big Deal'*: Harvard Magazine March-April 2014 http://harvardmagazine.com/2014/03/why-big-data-is-a-big-deal.
[2] Ibid.
[3] Gartner, *The Importance of 'Big Data': A Definition* http://www.gartner.com/doc/2057415 (emphasis in original).
[4] See Australian Government Department of Finance and Deregulation, '*Big Data Strategy – Issues Paper'* March 2013, page 4 http://www.finance.gov.au/files/2013/03/Big-Data-Strategy-Issues-Paper1.pdf.

Essentially, Big Data is data obtained from multiple and varied sources, in a wide variety of formats, always in motion and in large volumes. But the conceptual reach of Big Data goes further. The term 'Big Data' also encapsulates what *happens* to the information once it has been collected.

Big Data is about big analytics, big statistics and most importantly, big mathematical manipulation.[5] As a result of advanced data processing capabilities, business intelligence tools, applications and analytics, we now have the ability to order and analyse the huge volumes of data being collecting. Tailored algorithms can recombine and compare data from multiple sources to identify new correlations and generate insights. With these capabilities, we're increasingly able to predict preferences, behaviours, attitudes and trends.

Understanding and analysing data in these new ways is tremendously useful for governments, institutions and of course businesses. It also potentially raises serious issues relating to privacy, competition, data security and IP. In this paper, we focus on the impacts of Big Data on a business' IP strategy.

HOW DOES IP INTERACT WITH BIG DATA?

To maximise commercial revenue and competitive advantage derived from intangible assets, businesses will ideally have a considered IP strategy. This involves a clear understanding of what intangible assets the business owns and has a right to use, and how those assets best enable the business to achieve its commercial objectives, including its Big Data objectives.[6]

Big Data is a business disruptor, requiring active consideration of:

- *what* information is being collected
- *where* it is being collected from
- *how* it is being stored and used
- *why* these things are being done.

Intellectual Property may impact each of these steps. Different types of IP warrant different protection, exploitation and cost strategies to ensure that a business positively engages with Big Data.

It is therefore important that businesses understand the nature and type of intangible assets which might be relevant in the context of Big Data, and the different roles that IP can play in both protecting data and data analytics, but also in fostering open collaborations.

ADAPTING YOUR IP STRATEGY TO BIG DATA

Traditionally, businesses have based their IP strategies on protection and enforcement of IP rights. The justification behind this model is to foster innovation and generate a return on R&D investment. Is this traditional IP model possible, appropriate or practical in a Big Data context? Is it efficient to assert IP rights in relation to vast volumes of data? Is it desirable?

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[5] See Denis Pombriant 'The New IP: A Big Data Hierarchy' (July 2012) *CRM Magazine* http://www.destinationcrm.com/Articles/Columns-Departments/Reality-Check/The-New-IP-A-Big-DataHierarchy-82988.aspx.

[6] Joren De Wachter, *Big Data and IP Business Strategy* (18 November 2013) http://jorendewachter.com/2013/11/big-data-ip-business-strategy/.

We will look at particular types of IP in turn and discuss how the IP strategy for each of these rights is likely to be impacted when applied to Big Data.

Patents

It has been predicted by several commentators that in the era of Big Data, patents will become more difficult to both (i) obtain; and (ii) use.[7] We will discuss these issues, and then address the possibility that algorithms generated to analyse Big Data might become a rich new source of patentable subject matter.

Obtaining Patent Rights

Patents are exclusive rights granted with respect to methods and processes which satisfy a number of registration conditions. One of these conditions is that the invention described must be 'novel' or new. Novelty is assessed against a 'prior art base' of publicly available information at the time the invention is created. As the amount of captured data exponentially increases, there is necessarily a corresponding increase in this 'prior art', which has the potential to invalidate a new patent application. As a result, several commentators have argued that the scope for novel innovation may be shrinking.[8] While this doesn't mean that it is no longer possible to create a novel invention, it does potentially make it more difficult to meet the novelty requirement, with corresponding cost implications for patentees.

It has been speculated that the reason we are not yet witnessing a drop in the rate of patents being granted is because patent office searches may not yet be tapping into Big Data sources when assessing prior art.[9]

Enforcing Patent Rights

An increase in the amount and availability of prior art is also likely to have an impact on the enforcement of patents. Alleged infringers will have access to an enlarged pool of prior art from Big Data sources, potentially giving them greater opportunities to defend an infringement claim on the basis of lack of novelty, and to counterclaim for revocation of a granted patent on the same basis.[10]

Alleged infringers clearly have a significant incentive to fully consider these expanded data sources. As a result, it may be argued that we should logically expect to see an increase in the complexity and cost of patent infringement defences and patent challenges.

Algorithms – Worthy of IP Protection?

Big Data has the potential to stimulate an increase in innovation, through the development and further adaptation of algorithms designed to analyse large volumes of data. There is some suggestion that this might increase patent filings, thus balancing out the patenting challenges discussed above.[11]

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[7] Rahul Dev, (6 September 2013) *Big Data and Intellectual Property Strategy* http://www.advocaterahuldev.com/big-data-business-intellectual-property-strategy/; J De Wachter *Big Data and IP Business Strategy* above n 6; Joren De Wachter, *Will Big Data Kill Intellectual Property Rights?* (17 February 2012) http://jorendewachter.com/2012/02/will-big-data-kill-intellectual-property-rights/; Joren De Watcher, *Big Data and Intellectual Property (2)* (12 September 2013) http://jorendewachter.com/2013/09/big-data-intellectual-property-2/.

[8] R Dev above n 7; J De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Big Data and Intellectual Property (2)* above n 7.

[9] J De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Will Big Data Kill Intellectual Property Rights?* above n 7.

[10] De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Big Data and Intellectual Property (2)* above n 7.

[11] See for example R Dev above n 7.

However, query whether algorithms can effectively be protected as patents – consider that:[12]

- many algorithms fall outside the scope of patentable subject matter, being no more than theoretical mathematical structures;
- in order to be patentable, algorithms would need to be narrowly and specifically defined; a consequence of this is that others could 'work around' patent claims, producing a similar result without infringing the patent claims; and
- in practice, Big Data algorithms will need to be quite agile and capable of adapting quickly to fast paced market requirements in order to retain their business value. Under the patent system, a static version of an algorithm would need to be captured in a patent application. Therefore, even if an algorithm was successfully patented, it would likely lose its commercial relevance and value relatively quickly, given the anticipated short technology lifecycle of Big Data analytical tools.

It seems that the scope for obtaining patent protection for Big Data algorithms may be limited and even when patenting is possible, it may not be an efficient business strategy.

Impacts on a Business' Patent Strategy

Based on these observations about an expanding prior art base and potential difficulties to the patentability of Big Data algorithms, it may be that patents have a limited role to play in the Big Data context. Businesses will therefore need to be discerning in their decisions as to when to pursue patent protection, and the scope of protection sought. They may also need to factor in additional costs, given the potential increase in prior art and the inconsistent reactions of Patent Offices and Courts in assessing the patentability of software more generally.

Copyright & Data Base Rights

Copyright

Copyright potentially subsists in the information which is contained in Big Data and also in the tools used to store and interrogate that information. Is copyright well suited to protect Big Data, and if so, is it likely to generate business value?

Different jurisdictions have different requirements for the protection of copyright works and subject matter other than works. In the context of Big Data, which may well involve data stored in multiple locations, it will therefore be necessary to consider in which jurisdiction the data has been created and is hosted to determine what copyright law, or laws, apply.

In some countries, copyright has the potential to subsist in a 'computer program'[13], although various Courts have struggled to interpret this principle in the context of specific factual circumstances.[14] Bearing these jurisprudential differences in mind, it may well be possible to protect some Big Data algorithms and analytical tools as copyright works. However, protecting the underlying data is likely to be far more problematic and arguably, not commercially expedient.

[12] See J De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Big Data and Intellectual Property (2)* above n 7.

[13] See, for example, in Australia, s10 *Copyright Act 1968 (Cth)*. Computer program means 'a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result'

[14] See contrasting decisions across Australia, United States and New Zealand.

In recent years, a number of courts (including the Australian Full Federal Court and High Court[15]) have struggled with the protection of 'compilations' of data. For example, when considering whether copyright subsists in a particular compilation, courts have considered a number of factors[16] including that:

- there is no protection for an idea, only the material expression of the idea;
- there is no protection for mere facts (including lists of facts), or mere information contained in a compilation;
- copyright protection doesn't apply unless it can be shown that the content was created by a human author(s); and
- the author(s) must have used sufficient intellectual effort and creativity (not just skill and labour), and that effort and creativity must be expressed in the resulting compilation.

These types of inquiries have tended to result in courts finding *against* the subsistence of copyright in relation to computer generated data. As Big Data is almost entirely the result of computer generation and manipulation of data (absent any human authorship), it seems that copyright is not well suited to protect any of the individual elements of Big Data (i.e.: the data compilation process, the outputs of analytic software, or the resulting compilations themselves).[17]

Database Rights

Databases may be defined as a collection of data or other material, arranged in such a way that the items are individually accessible, whether in electronic or non-electronic form. Examples may include customer, mailing and classified lists. One obvious example could be databases generated as a result of Big Data collection and analysis.

There are divergent international views on the protection of databases. Some jurisdictions, such as the EU, [18] (which is generally regarded as the most progressive in this context) grant specific database rights regulating the copying and dissemination of information in computer databases, separate and independent of copyright. Other countries (like Australia[19]) have no specific laws protecting databases, relying instead on general principles of copyright law. This latter approach leads to uncertainty, where courts find that databases fall outside the scope of '*literary works*' and '*compilations'* as defined in the relevant Copyright Acts, and legislatures slow to respond with amendment or an alternative.

Even in countries which provide specific *sui generis* protection for database rights, that protection is generally targeted not at the underlying data, but rather at the *way* in which it is organised. For example, protection may extend to the *arrangement* of data, but not to the logic of imparting, selecting or analysing the data.[20]

These types of constraints mean that copyright and database protection for the individual elements of Big Data is likely to be challenging and, at least until laws are more settled, highly uncertain.

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[15] See for example, Australian decisions of *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 and *IceTV Pty Limited v Nine Network Australia Pty Limited* [2009] HCA 14.
[16] Ibid.
[17] J De Wachter, *Big Data and IP Business Strategy* above n 6; R Dev above n 7.
[18] Directive No. 96/9/EC of 11 March 1996.
[19] Contrast positions in *Telstra Corporation Limited v Desktop Marketing Systems Pty Ltd* [2001] FCA 612 (25 May 2001) and *IceTV Pty Limited v Nine Network Australia Pty Limited* [2009] HCA 14.
[20] J De Wachter, *Big Data and IP Business Strategy* above n 6.

Confidential Information

Whilst not strictly IP, an action for breach of confidence may be available where information is disclosed that is:

- sufficiently specific;
- has the necessary quality of confidence – i.e. is secret and not in the public domain;
- is communicated to, or obtained by, the recipient in circumstances that indicate its confidentiality; and
- is used, or threatened to be used, by the recipient in an unauthorised manner.

Keeping information secret can be a valuable commercial strategy. For example, many credit the success of Coca-Cola to its 'secret recipe' – a closely held trade secret known only to a few employees and allegedly guarded in a purpose built vault in Atlanta.

In the context of Big Data, confidential information may potentially be a useful way of protecting analytical tools and methodologies, particularly where patent or copyright protection is denied. [21] For a business to take advantage of this type of protection, it would need to implement strict confidentiality protocols with both its employees and any third parties accessing the data.

It is less clear whether there's any utility in seeking to protect underlying data as confidential information. Such protection may undermine the true value of the data, which lies primarily in its combination with other data across different sources. Therefore, there may in fact be increasing financial incentives to open up data streams, rather than 'locking them' away as confidential information. [22] Similarly, there may be public policy incentives to compel disclosure in the context of some data (e.g. depersonalised medical information, where the information may assist authorities to predict trends in diseases).

Aligning Big Data & IP Strategies: Opportunity for Open Models

Based on the above discussion, we see that there are a number of challenges in seeking to assert IP rights in the various components of Big Data. Regardless of the scope of IP protections available, owners of Big Data sources are likely to face substantial pressure to make their data available for free or for a nominal access fee.[23] Gaining and providing access to data is likely to be considered more valuable than preventing or restricting access. The reason for this is that the value of Big Data lies in the use and combination of data from multiple sources. Successful IP strategies will therefore need to focus not only on ownership of data, but also promoting collaborative ways of combining and using data to generate commercially, economically and socially valuable insights.

Open Access Approaches

There are a variety of open access models which could be used to facilitate the sharing of data from Big Data sources, as alternatives to traditional IP models which are based on restricting access. The application of these open access models must however be contemplated in the context of other considerations, including privacy and regulatory restrictions.

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[21] See Jon Neiditz (16 December 2013) *How best to dive into Big Data: Focus on Trade Secrets* http://www.lexology.com/library/detail.aspx?g=2d36b03e-a50d-45a3-a03d-d9fa03ebb6d8.

[22] J De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Will Big Data Kill Intellectual Property Rights?* above n 7.

[23] Jude Umeh, (29 September 2013) 'Big Data, Privacy and Intellectual Property' *IT Now, Vol 55(3)* pp8-9; J De Wachter, *Big Data and IP Business Strategy* above n 6; J De Wachter, *Will Big Data Kill Intellectual Property Rights?* above n 7.

Open source licensing and open innovation allow for the distribution of content in an open and free manner, without reference to proprietary considerations. Similarly, creative commons arrangements facilitate public access to content on standard licence terms. These models promote collaborative means of sharing data, and may therefore have a positive and important role to play in aligning business' IP and Big Data strategies.

CONCLUSION

The Big Data 'revolution' is fundamentally changing the way we capture, store, analyse and use information. The volume of available data and the potential value that can be derived from it means that businesses must carefully assess and align their IP strategies, to ensure that they are achieving their Big Data business objectives.

Traditionally, businesses have used IP rights (and confidential information) to restrict access to data in order to generate a financial return and generate competitive advantage. However, these IP models may not be well suited to protect data and may not be aligned with a business' Big Data objectives. The long term value of Big Data lies not in owning and restricting access to data sources, but rather in promoting shared access so that data from multiple sources can be used and combined in new and different ways for socially, economically and commercially beneficial insights.

Businesses participating in the Big Data revolution are advised to assess and adapt their IP strategies to maximise commercial revenue and competitive advantage from Big Data components and outputs. The strategic alignment of Big Data and IP Strategies may require consideration of collaborative open access models, in addition to traditional IP protection measures.

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