

# SLA/AGC Annual Conference

## The impact of Big Data on an Intellectual Property Literacy training program

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<b>Abstract:</b>	<p>Big Data is increasingly being used to in the realm of Intellectual Property (IP) to allocate research funding, determine which inventions to patent, protect or litigate. It is becoming an important tool in valuing IP portfolios and acquisitions. The use of Big Data to drive innovation, protect IP and avoid litigation, however, is premised on the understanding of the IP system and the quality of the patents submitted by inventors and researchers. In recent formal and informal surveys done in the UK and US, the results show that there is a demonstrated lack of even a basic understanding of the IP system. In particular, university researchers and independent inventors run the risk of failing to protect their intellectual property or spend time and funding in the pursuit of already patented inventions. The growing use of big data in patent analysis is an opportunity for librarians to step up our efforts to provide training in the entire information lifecycle from invention to patent to big data analysis.</p>

# The impact of Big Data on an Intellectual Property Literacy training program

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Big Data is increasingly being used to in the realm of Intellectual Property (IP) to allocate research funding, determine which inventions to patent, protect or litigate. It is becoming an important tool in valuing IP portfolios and acquisitions. The use of Big Data to drive innovation, protect IP and avoid litigation, however, is premised on the understanding of the IP system and the quality of the patents submitted by inventors and researchers. In recent formal and informal surveys done in the UK and US, the results show that there is a demonstrated lack of even a basic understanding of the IP system. In particular, university researchers and independent inventors run the risk of failing to protect their intellectual property or spend time and funding in the pursuit of already patented inventions. The growing use of big data in patent analysis is an opportunity for librarians to step up our efforts to provide training in the entire information lifecycle from invention to patent to big data analysis.

## What is Big Data and how is it used?

According to Gartner, a leading research and advisory company, Big Data is (<https://www.gartner.com/it-glossary/big-data>):

- *High-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation.*

High Volume, High Velocity and High Variety are defined as:

- *High Volume* means data coming from multiple sources, for example, grocery store transactions, sensor data, social media, weather data, stocks and bonds pricing, etc., that can be used singly or combined to develop insights into trends or patterns.
- *High Velocity* means that the data comes in quickly and needs timely/real time processing to be useful for decision making.
- *High Variety* means that the data comes in a variety of formats or types, for example, text documents, videos, stock ticker data, patent filings.

Industries that are investing heavily in BD to gain a competitive edge include the Financial and Insurance sectors, Healthcare and Life Sciences sectors, media and Entertainment sectors and Manufacturing sectors. The Big Data Executive Survey 2017 reported the following results of BD initiatives launched by the above listed sectors.

<b>Big Data business initiatives underway; with successful results.</b>	<b>Started</b>	<b>Success</b>
Decrease expenses through operational cost efficiencies	72.6%	49.2%
Establish a data-driven culture	69.4%	27.9%
Create new avenues for innovation and disruption	64.5%	44.3%
Accelerate the speed with which new capabilities and services are deployed	64.5%	31.1%
Launch new product and service offerings	62.9%	36.1%
Monetize Big Data through increased revenues and new revenue sources	54.8%	32.8%
Transform and reposition your business for the future	51.6%	27.9%

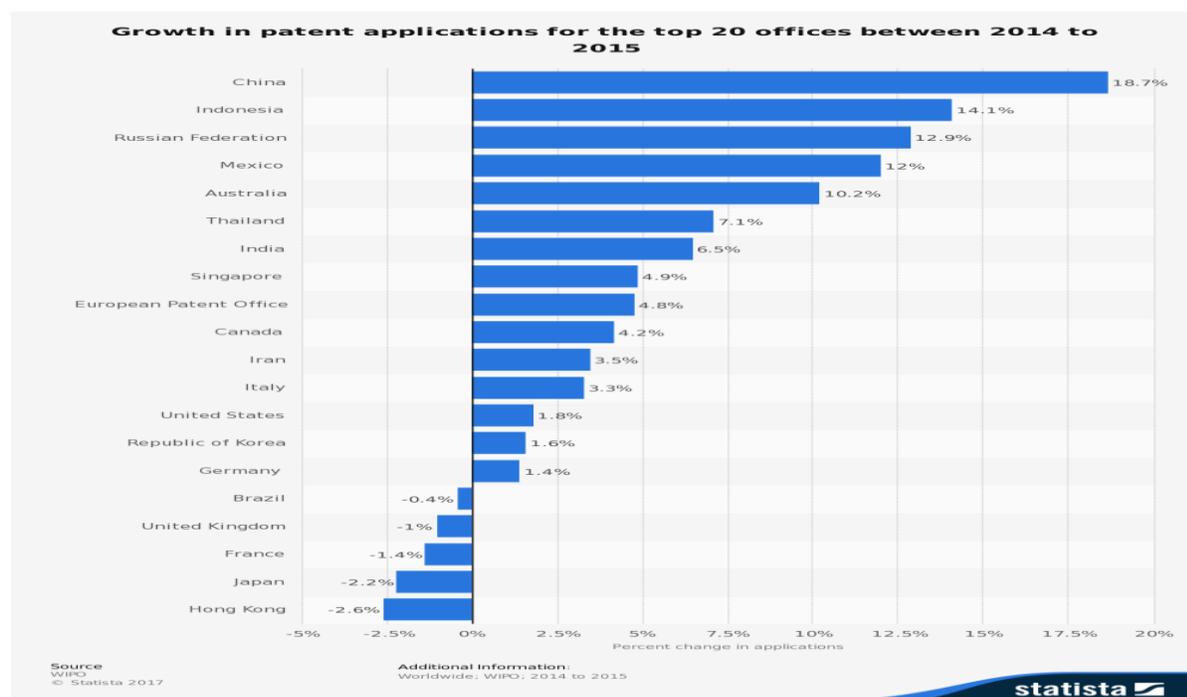
**Big Data Executive Survey 2017: Big Data Business Impact: Achieving Business Results through Innovation and Disruption, New Vantage partners, p. 8, retrieved from Statista on November 30, 2017.**

A summary of the benefits of Big Data that are also applicable to patents are:

- Cost Savings—identifying better ways to target useful/profitable research
- Time Reductions—data is analyzed via algorithms resulting in timely, accurate insight for strategic planning and funding decisions
- New Product Development—identifying trends and patterns, identifying needs for new types of products
- Understand current business conditions—real time feedback on various areas such as R&D directions, purchasing/buying patterns, and financing environments

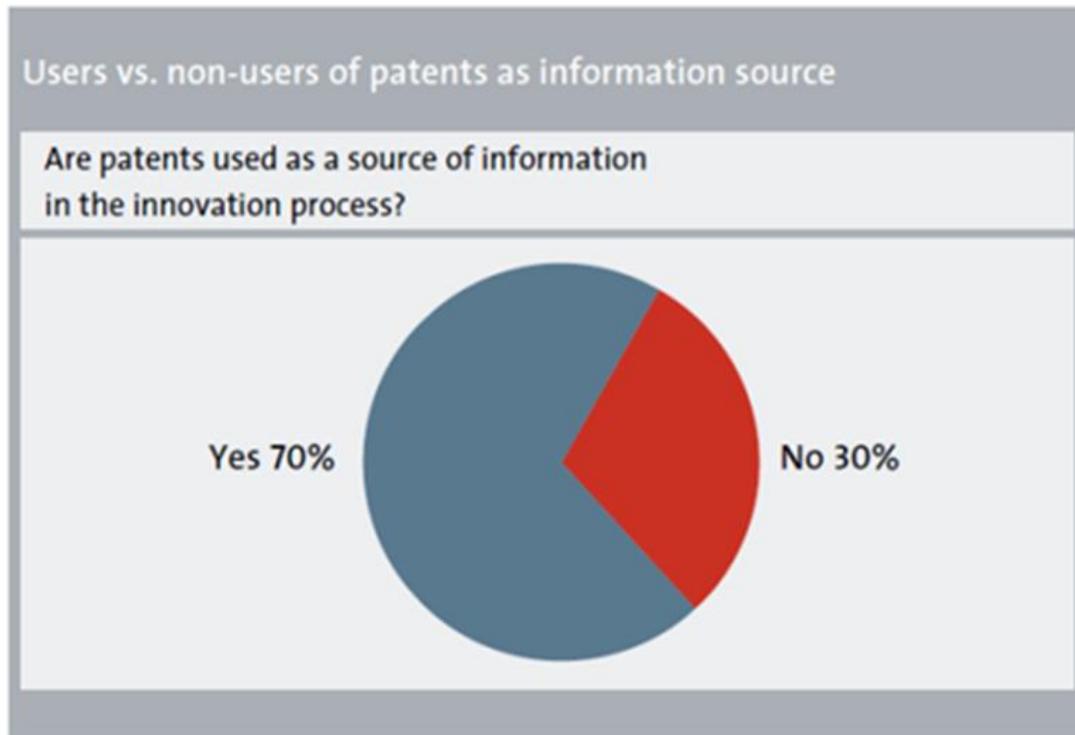
### How does Big Data intersect with Intellectual Property?

Innovation and economic development are more closely intertwined than ever before. Innovation is both encouraged and protected through IP rights. The following graphic shows the growth of patent applications during 2014-2015 at the top 20 Patent Offices.



**Source: WIPO, 2016 World Intellectual Property Indicators, page 35, retrieved from Statista.**

The graphic below from the European Patent Office (EPO) shows the importance of patents in the innovation process.



Source: <http://www.epo.org/service-support/contact-us/surveys/patent-information/innovation-survey.html>

Amanda Ciccattelli, an IP blogger, states “up to 85% of a company’s value lies in its IP portfolio and is often a key driver in the most high profile mergers and acquisitions.” And Big Data is being used to transform the IP landscape.

John Martin, Chairman and CEO of Innography, provides an excellent overview of the how Big Data can be used in each step of the patent lifecycle. Here is a paraphrased version of his overview.

- R&D investments—which R&D to fund, immediate feedback on inventor ideas regarding patentability, who is innovating in a technology
- Filing decisions—understand competition to determine whether to file or not
- Choosing a prosecuting attorney—finding the best attorney based on success rate and costs
- Handling office actions—using predictive analytics to help prioritize patent applications to pursue
- Buying patents—quickly provide information on the 3 key questions to ask when considering a purchase
  - Are the patents stronger than what is already owned in portfolio?
  - Do the patents cover new ground or add protection to existing owned patents?
  - Which are the 20% strongest patents in the selling portfolio to investigate closely?
- Licensing or selling patents—information on how to best monetize patents by keeping or selling
- Renewal decisions—keep or drop based on value/strength in existing portfolio
- Litigation strategies—understand the success rate of the opponent in litigation, both offensive and defensive, as well as the likelihood of each outcome and associated costs and risks.

This type of information is very valuable to business as it increases the chance of a successful/profitable patent filing and reduces costs associated with the patent process.

### The Need for IP training at the University Level

The basic assumption being made, though, is that the data being used in the Big Data Analysis (BDA) is correct and reliable. As the old IT saying goes, “Garbage in, garbage out.” Before you can have good BDA, you need to have data that is correct, reliable and complete. R.H. Pitkethly, a professor at Oxford University, wrote “The intellectual property system has several objectives but the most important, especially in the case of the patent system, is providing an incentive for innovation. To provide that potential innovators must be aware of it. The effectiveness of the system thus depends not just on what it provides but on what innovators perceive that it provides. *An equally important issue though is whether innovators are sufficiently aware of the system to be able to use it effectively*” (my emphasis).

Recent surveys done in the UK show that there is a wide gap in understanding the patent system—how to use it effectively and what offered protections mean. A recent survey of UK student knowledge jointly run by the National Union of Students (NUS), the Intellectual Property Office (IPO) and the International Property Awareness Network (IPAN) states that only 40% of students consider their current awareness of IP to be enough to support them in their future career. Another informal survey of engineering students done by a UCLA Engineering professor, John Villasenor, also shows that there is a knowledge gap of IP. In an informal survey of 60 engineering students asking about the different forms of IP, he found that 21% “did not know enough to answer the question ‘what is a patent?’” For the other types of IP he found that 61% could not define a trade secret, 32% could not define copyright and 51% could not define a trademark. Villasenor’s survey of engineering students at UCLA demonstrated the lack of awareness and points out the consequences of this ignorance. He points out that if students are unable to identify IP, how can they be relied upon to “promptly report and fully disclose their patentable inventions” as required by research institutions funding the research. Extending this thought, how will researchers even begin to handle the patent to research lifecycle with any skill and understanding?

### IP Literacy Training at KAUST

AT KAUST, I am working with the Technology Transfer Office (TTO) staff to develop an IP Awareness Series. Each department focuses on developing training in their particular realm of expertise. I teach participants about basic IP knowledge and using the patent literature in their research process, whether starting out on a new project or exploring for more information on an existing project. The patent literature is a rich resource of technical information and diagrams. The patent application or granted patent must be specific enough that anyone with average skill in the discipline is able to reproduce the patented invention. A recent paper by Ahmadpoor and Jones posits a correlation between highly cited patents and highly cited papers—papers directly cited by patents are also high impact papers within the domain. A patent application, and especially a granted patent is a rich resource of information for researchers. For our researchers, this information can be used to determine viable new areas for research (and research funding), to push innovation, as well as providing new insights based on others’ solutions to solve existing research problems.

The TTO teaches participants about identifying, evaluating their research and giving them an understanding of the legal process of protecting and patenting their research.

Our shared purpose is to raise the awareness and understanding of IPRs and in particular, the research to patent process. Participant feedback has been very positive and underscores that there is a very real need for this type of training.

## Summary

Countries that are growing economically have strong IPR processes in place, and yet 95% of patented inventions are not licensed or used according to Robert E. Litan in a Brookings Institute Op-Ed. Some of the issues are due to fear of litigation, some due to granting patents that ultimately have no useful purpose, some are due to vague claims. Big Data can be used to avoid and/or eliminate these issues. However, one critical component in the intersection of BD and patents is the need to educate researchers, inventors and business people of the how the patent system works in order to promote and pursue inventions that have merit. BDA can help business people and researchers to allocate R&D funding towards patentable inventions, determine which patents to pursue, or discontinue, opportunities for licensing, etc.

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