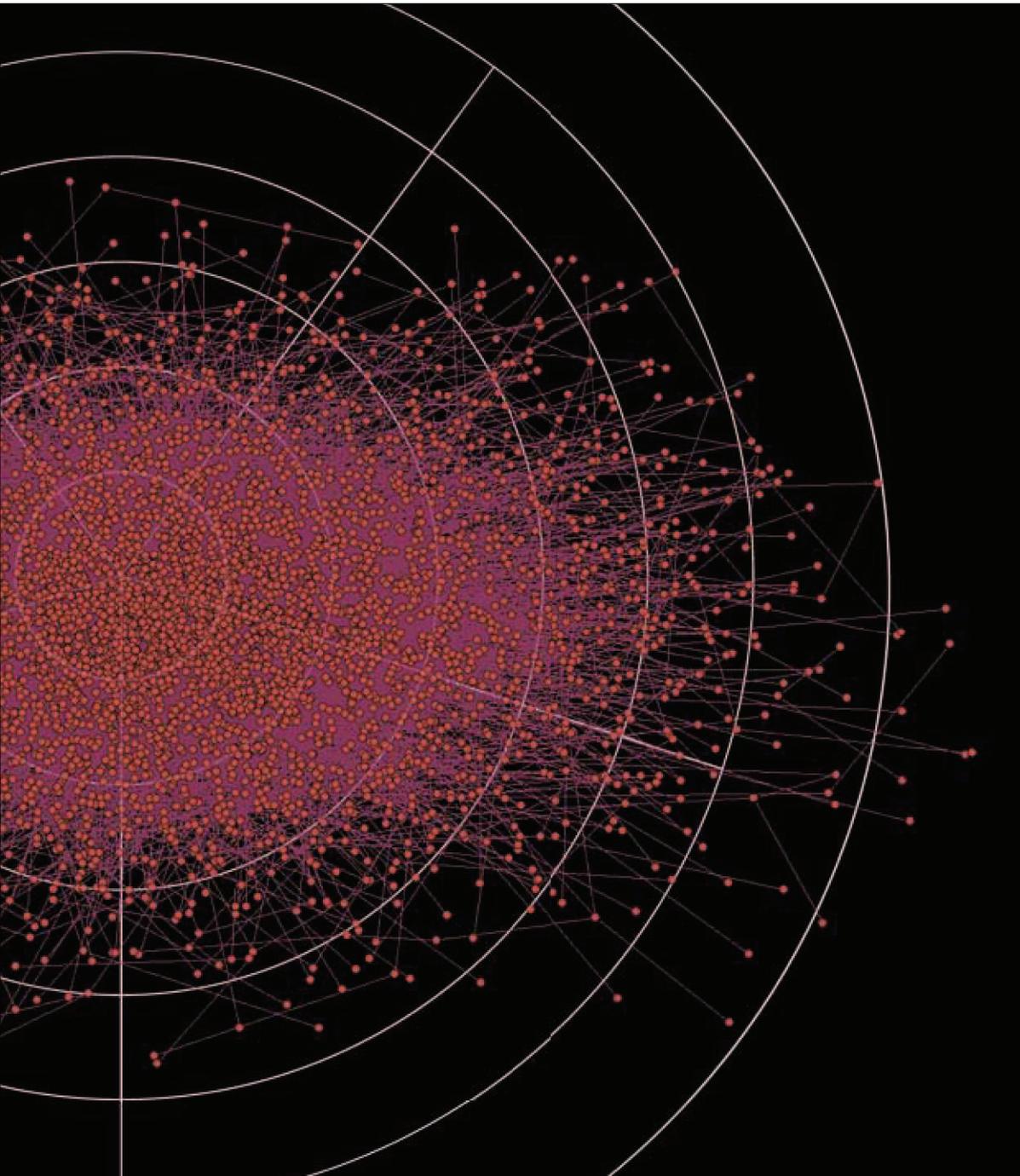


Network Patent Analytics

*Showing you which
patents really matter*



GH

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PATENTS
TRADE MARKS
IP LAW

Network Patent Analytics

Network Patent Analytics is a unique and powerful method for showing technology and IP ownership landscapes in an industry using patent data. Griffith Hack is the exclusive Australian licensee of Network Patent Analytics method developed by Optimice. We believe this is the world's most advanced method for Patent Analytics. This brochure will explain how Network Patent Analytics works, and how it can be applied to your business, research organisation or investment decision.

Why Patent Analytics?

Patent Analytics is the art and process of using the world's patent literature to inform and guide business and innovation decisions at strategic level. The world's patent literature contains over 72 million published patents, and 1.7 million new patents are published every year. Patent data is one of the most valuable and reliable sources of information on innovation and technology. Patents are filed by a wide range of parties ranging from large companies to research organizations, small companies and individuals. Public domain and commercial databases are available to aggregate and search this data, and many databases provide English language summaries of non-English patent applications.

Over six million patents are in force and can affect freedom to operate for many innovators, especially for products or services sold in major overseas markets.

Patent literature can provide legally robust information on the ownership of key technology areas, and associated data can be used to determine how important individual patents are within these areas. This information is of value to the owners of these patents, their competitors, and for parties wishing to operate in a given technology area.

What data is available in patent publications and patent databases?

A patent publication is a description of a claimed invention. In addition, patent applications contain other useful information such as the patent owner, the inventors, the type of technology, and the date of invention.

Many granted patents and some patent applications also contain information on 'patent citations', which are previously published patents that are thought by either the patent applicant or patent examiners to disclose relevant aspects of the claimed invention. A subject patent will reference previously published patents, known as 'reverse' or 'backward citations'. In addition, subject patents will be referenced by subsequently published patents, known as 'forward citations', Figure 1. Many patent databases contain information on patent families, which are groups of related patent applications for the same or a similar invention.

Figure 1. Forward and reverse citations



Patents considered important or relevant by subject patent

Patents which consider the subject patent to be important or relevant

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The value of forward patent citation data

Subjective valuation through human analysis is considered to be an effective means of assessing the value of a patent. However subjective evaluation is impractical for more than a handful of patents. Instead it can be efficient to rely on other people's views of patents to avoid having to make your own assessment of large numbers of patents.

Forward citation data is an excellent source of information about other people's views of a given patent. If a patent applicant or patent examiner has cited an earlier patent, this reflects that they thought that the earlier patent disclosed something of relevance. For this reason, the number of forward citations is often used as an indicator of patent quality, either by itself or combined with other data such as the number of patent family members, the number of reverse citations, the number of authors, and other patent data.

However there are a couple of limitations of using forward citation data by itself:

- Some forward citations are worth more than others. For example, a forward citation might come from a patent that has been commercialized and created billions of dollars in wealth. However relying on a simple count of forward citations will not show this.
- The end result from a forward citation count is merely a simple number. This number does not provide information on how the different patents relate to each other.

Introducing Network Patent Analytics

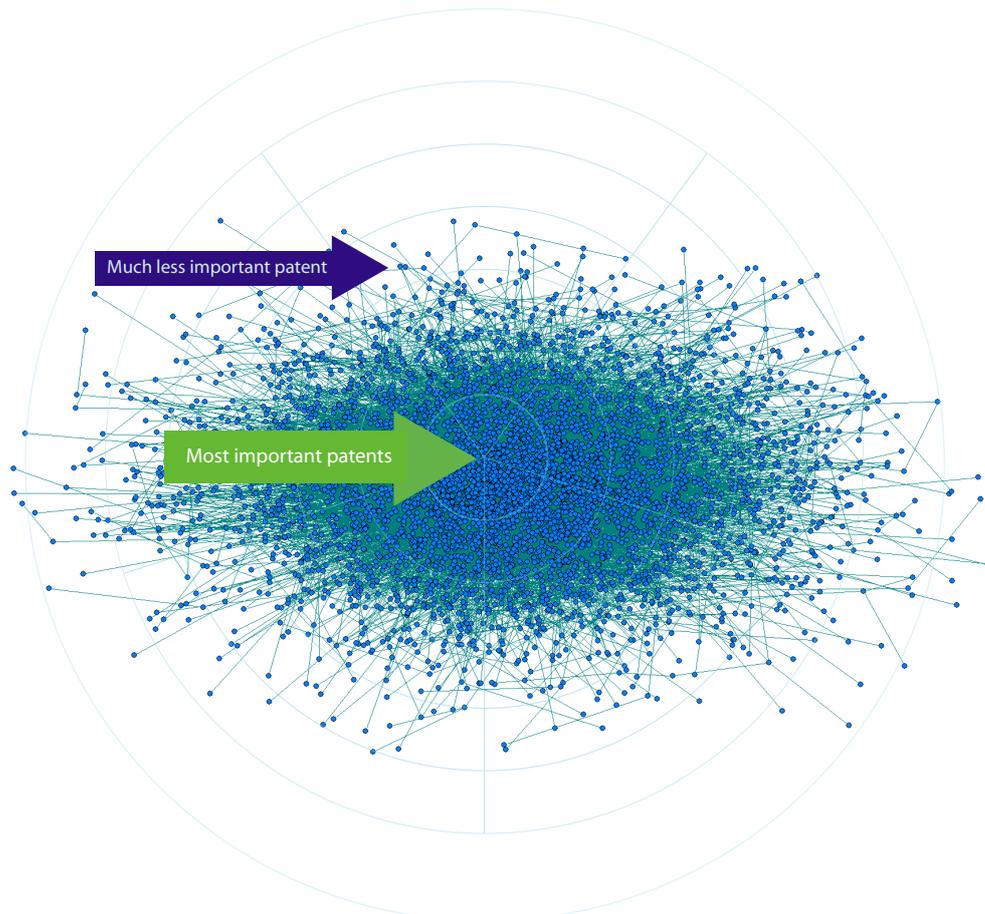
Network Patent Analytics is the process of using patent citation data to build an interconnected network. Patents in the centre of this network are thought to have more influence and hence be more important than patents at the edge of this network. Patent Network

Analytics is a development of network analysis, which has been used to map relationships between politicians to find the most influential politicians, or to determine influential websites by considering its linkages.

The structure of the resulting patent network can be used to show closely related groups of patents, their common areas of technologies, and who owns these patents. Statistical methods can be applied to rank the centrality, and hence the importance, of individual patents within this network. Other statistical methods can be used to rank the importance of patent owners, inventors, technology classes and so on within this network.

Figure 2 shows a schematic of a network of 5000 patents.

Figure 2. Network of 5000 patents. The most influential patents sit in the centre of this network, and the least influential patents at the edge



Network Patent Analytics - Showing you which patents really matter

Benefits of Network Patent Analytics over alternative patent analysis methods include:

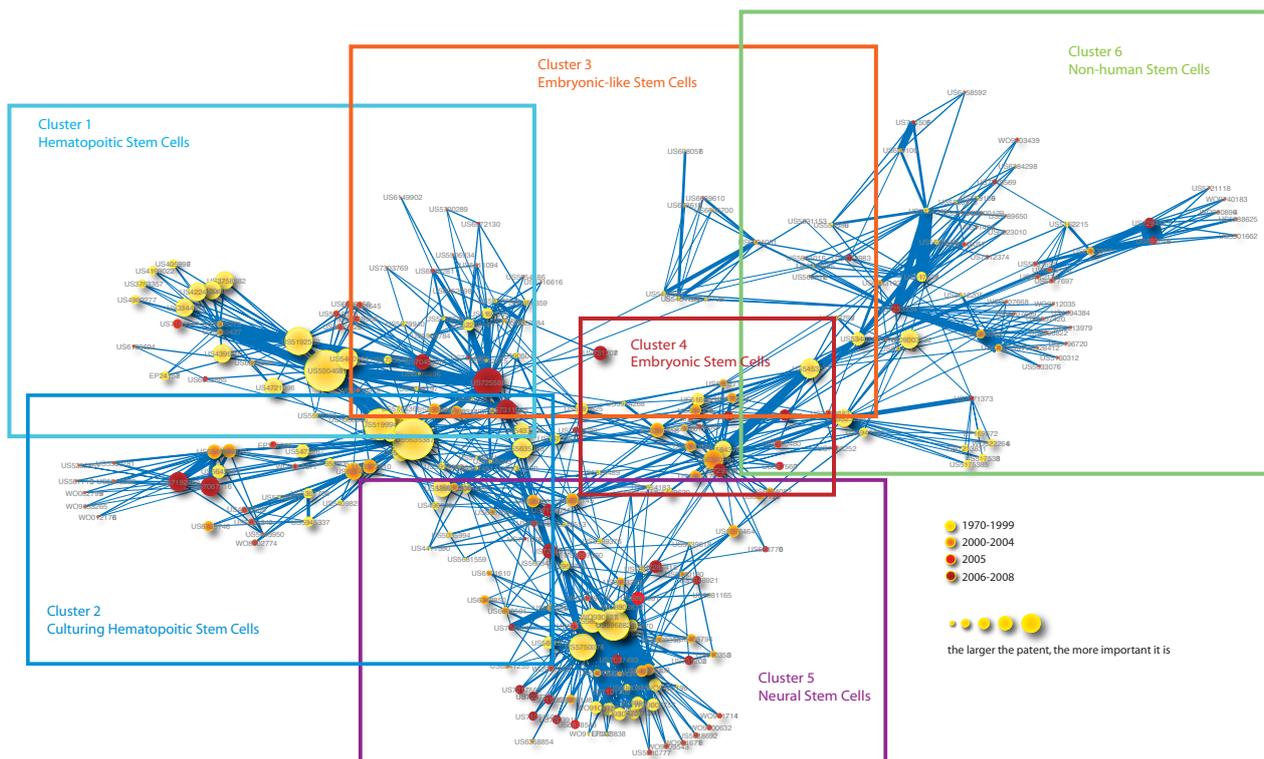
Objectively ranking patents, patent owners, inventors or any other subset	Network Patent Analytics can rank and place a relative value on either individual patents, or groups of patents such as by patent owner, inventor, technology etc.
Ability to identify and include 'missed' patents	Network Patent Analytics can identify important patents that were missed in the original patent search, but have been cited by patents in this search. These cited patents are treated the same as other patents in the subsequent analysis. This is helpful as patent searching can be imperfect due to patent searching being limited by errors in patent classification and keywords used in patent abstracts and titles. Including patents cited by patents in the initial search improves the final analysis.
Patent and technology clustering	Network Patent Analytics can separate the result of patent searches into different technology clusters, where there is a very strong relationship between patents within a cluster, and very little or no relationship between patents across clusters. These clusters can show different approaches used to solve a particular problem.
Ability to handle large numbers of patents	Network Patent Analytics can handle very large patent data sets, of up to 100,000 patents or more. Rather than being confused by large patent data sets, Network Patent Analytics uses the complexity of these large datasets to come up with more robust results.
Flexibility	Network Patent Analytics can be extended using other network information such as: common patent families, inventors, patent owners, keywords, or other linkages.

Network Patent Analytics was developed by Optimice, a commercial partner of Griffith Hack. Griffith Hack is the exclusive Australian licensee of the Optimice Network Patent Analysis, and is applying its knowledge of patent searching and patent analysis to introduce this advanced technique into Australia and other regions.

Network Patent Analytics has been previously applied to stem cell patents, where it was able to show technology structures in key stem cell patents, Figure 3. These results were recently published by Nature Biotechnology. More recently Network Patent Analytics has been used by Griffith Hack in conjunction with

Optimice to show technology structures and key patents and patent owners in the hybrid car area. Among other findings, Network Patent Analytics was able to successfully predict a patent infringement issue.

Figure 3. Technology structures in Stem Cell patents:



Commercial applications of Network Patent Analytics

Commercial applications of Network Patent Analytics include:

- Objectively determining which patents, companies, technology types and inventors are most important in a particular area of technology
- Assessing the technology and ownership structure of a given technology area
- Determining unexpected infringement risks
- Assessing the overall quality of patent portfolios as an aid to acquisition, fund raising and disposal of patents and patent owning businesses
- Determining the highly and lowly rated patents in individual patent portfolios, assisting patent management decisions
- Identifying “orphaned” technologies, these are patents that are considered “non-strategic” by their owners, but which are rated and may be valuable to other parties
- Assessing the quality of your competitor’s patents and patent portfolios
- IP due diligence prior to new investment or research in technology areas

Commercial process for application of Network Patent Analytics

The following process is a sample template for the commercial application of Network Patent Analytics:

1. The client and Griffith Hack will carefully define the problem to be solved by Network Patent Analytics
2. Griffith Hack will:
 - a) develop a patent search query to collect the patent data likely to be important to solve the defined problem;
 - b) run the patent search query to collect patent data from relevant databases, including patent numbers, owners, titles, abstracts and relevant patent citation data;
 - c) group patents into families, including combining patent citation data;
 - d) work with Optimice to apply Network Patent Analytics to look for dominant technology clusters, patents, technologies and applicants in the patent data;
 - e) prepare spreadsheets of patent families in ranked order, including ancillary information such as patent numbers, owners, titles, abstracts and relevant patent citation data;
 - f) prepare draft report that applies the result of Network Patent Analytics to the problem to be solved.
3. Griffith Hack will meet with the client to ensure that the draft report has met the client’s needs.
4. Griffith Hack will prepare the final report, along with spreadsheet of ranked patents, and then meet with client to determine if any follow-up is required, such as detailed infringement analysis for identified infringement risks.

The exact process to be used would depend on the specific requirements of each client engagement, and will be agreed with each client in advance of each engagement.

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