

# **Using Intellectual Property Data for Competitive Intelligence**

## ***Contributed by:***

Ron Simmer, Patent Service Librarian, University of British Columbia, Vancouver

***Copyright R. V. Simmer, 2001***

## **Contents**

### **Using Intellectual Property Data for Competitive Intelligence**

Summary, Resources .....	3
Building an Intellectual Property Portfolio .....	4
IP Information as a Research Tool for Competitive Intelligence .....	5
Defining Competitive Intelligence .....	6
Using IP Data for CI .....	6
Intellectual Property Data Sources .....	7
Patent Searching Tools and Strategies .....	7
What Information can be Extracted from Patents? .....	7
Analyzing Patent Quality .....	8
Patent Portfolio Analysis .....	9
Analyzing a Technology Using Patent Data .....	9
Patent Strategies and Tactics in Portfolio Management .....	10
Conclusion .....	11
Discussion: Competitive Intelligence Applied .....	12

## **Summary**

The exploitation of IP can form the basis for a business strategy. However, it is equally important for businesses to stay abreast of industry and competitor developments, including continuous monitoring of newly published patent documents. Every firm should have in place a Competitive Intelligence program to provide management with the best information and analysis for executive decisions.

The following subject areas will be addressed in this chapter:

- ? The IP portfolio;
- ? IP management;
- ? IP as a research tool for competitive advantage.

## **Resources** ✎

Search Resources

[www.cipo.gc.ca](http://www.cipo.gc.ca)

[www.uspto.gov](http://www.uspto.gov)

[www.patscan.ca](http://www.patscan.ca)

## **Objectives**

This chapter will introduce the use of competitive intelligence in the organization and in particular focus on the use of intellectual capital data with an emphasis on patent examples. Competitive intelligence is the role of everyone in the firm and only through tightly knit strategy and organizational cooperation is the benefit of such effort likely to be maximized. For example new product design and core technology development benefits from customer feedback, often best communicated through the sales and marketing staff of a corporation. This chapter will introduce only a few of the many different competitive intelligence approaches that might be pursued.

## **Building an Intellectual Property Portfolio**

### The IP Portfolio

Identifying knowledge assets within an organization can lead to new revenue sources through the development of alignments, licensing opportunities and research. A knowledge asset may also be used for further development, or be strategically significant because of its impact on competitor product development. The significance of managing a portfolio well is illustrated by Dow Chemical also discussed earlier in Chapter 4 (Assets and Intellectual Property).

"By working with business units to create and weed patent portfolios, Dow saved more than \$1 million in maintenance costs in 18 months. Over 10 years Dow expects to save \$50 million in tax, filing and maintenance costs. It will also increase annual revenue from \$25 million in 1994 to about \$125 million in the year 2000. These increased savings and revenues only apply to patents and it is expected there is even more value to be exploited in other areas of intellectual capital such as trade secrets and technical expertise.<sup>1</sup> "

### IP Management

Organizations need to determine the opportunities available to increase revenue from the patents within the company's portfolio. IP is one factor in a complex of elements that contribute to the success of a company. Corporate management must be aware of the most critical factors to the survival of the company and industry. A good corporate technology management program results in an IP portfolio that maximizes the technology's leverage in protecting and expanding market share.

---

<sup>1</sup> Thomas A. Stewart, *Intellectual Capital* (Toronto: Doubleday Dell Publishing Group, 1997), pp.62–63.

## ***IP Information as a Research Tool for Competitive Intelligence***

Contributed by: Ron Simmer, Patent Service Librarian, University of British Columbia.

Copyright R .V. Simmer 2001

### Defining Competitive Intelligence

Critical business decisions involving bids, proposals, mergers, acquisitions and other corporate strategies must be based on timely and accurate business information for the survival of a corporation. Systematic data gathering, study and analysis of the operating environment for a company is now called "competitive intelligence" or "business intelligence". Briefly, the practice of CI involves developed systematic processes to transform information into knowledge for effective corporate decisions. Most major fortune 500 firms now have CI units, and the Society of Competitive Intelligence (SCIP) has 7,000 members in 55 countries.

Decades ago, Japanese multinationals were among the first companies to systemically practice CI. Since the end of the "Cold War", CI has benefited from the injection of military expertise from ex CIA and FBI operatives. However, CI does not involve espionage or other unethical activities. Security agencies acknowledge that 95% of the data they harvest for analysis is from open and public sources, on which ethical CI is based.

The general objectives of a CI program in a company is to simply out-perform the competition by enabling agile proactive tactics through more informed decision making. Good corporate CI is the "radar" of a company, utilized to anticipate and identify:

1. Product/market/demographic changes
2. Actions of competitors, suppliers, regulatory agencies, customers
3. International industry trends
4. Acquisition targets, hostile takeovers, "White Knights"
5. Industry threats, environmental changes
6. Advanced technologies and processes on the horizon
7. Critical factors in bids, proposals and sales tactics
8. Entry strategies and marketing plans of competitors

For CI to have the most value in a corporation, it must be integrated into the highest level of executive responsibility and be part of a continuous cycle of data collection, collation, analysis, action and re-evaluation. The six steps of the Competitive Intelligence Cycle are:

1. Planning/direction of research in priority subject areas.
2. Data collection from a variety of primary and secondary sources
3. Data analysis to extract trends, make projections and confirm strategies of competitors
4. Executive strategies formulated based on definition of the business environment
5. Appropriate corporate tactical action
6. Information feedback, further data gathering and analysis, further execution of refined plan

The objective of good CI practices (and good knowledge management) in a company may be expressed by the six R's : The Right information, at the Right time, in the Right place, delivered the Right way, by the Right contact to the Right person.

Information gathered is usually classified as being either from primary or secondary sources. Primary sources are products of the targeted company - speeches, live interviews, website data, job adverts, press releases, financial reports, etc. Secondary sources may be analysts' reports, journal articles, government statistics or research publications.

A range of analytical techniques have been developed in the CI industry, such as benchmarking, personality profiling, gap analysis, war games and business simulations such as SWOT analysis (Strengths, Weaknesses, Opportunities and Threats.)

### Using Intellectual Property Data for CI

Companies compete in the areas of products, corporate organization, manufacturing, marketing, strategic alliances, financials, reputation, and technology. The focus of this presentation is technology, for which patents and other forms of Intellectual Property are often good indicators. When analyzing technological development in a field, the first indicators may be rumors, gossip, and "gray literature". The first concrete evidence of a new product, drug or industrial process may be a published patent document, often a patent application.

A case from the British Columbia high technology community offers an example of a catastrophe that may have been prevented through a little investigative patent searching. Xillix, a BC company in the medical device field, formed a strategic alliance with Olympus Optical of Japan in the early 90's and disclosed some of their trade secrets. Unknown to Xillix management, Olympus proceeded to file a number of Japanese patents based on the Xillix proprietary technology. Only in 1998 did Xillix discover this when a US Olympus patent issued. Although Xillix won the subsequent legal battle, the company came near bankruptcy. A little CI effort would have provided some early warning, since the Japanese patent applications were published years earlier.

Intellectual Property usually has three broad functions within a corporation:

- ? As a tool to protect price and market share by excluding others from a specific marketplace (patents) and as a guarantee of channels to market and goodwill (trademarks).
- ? As insurance against legal action by other patent holders, operating to mitigate risk of infringement.
- ? As a financial asset in the high-stakes poker game of strategic alliances, in which technology is licensed, swapped, assigned, mortgaged, or held as a blocking strategy.

Analysis of Intellectual Property holdings may reveal a great deal about a competing corporation's technology strategies. Patent and other IP data is widely available publicly from a variety of free and fee-based sources, and is standardized to a high degree. Several companies offer software packages to collate, map and chart patent holdings to indicate patent filings over time, density/frequency in specific technologies, international equivalents, citation history, and activity of particular individuals, companies or groups. See services by Wisdomain, Aurigin, or Manning & Napier.

## Intellectual Property Data Sources

While the Internet provides a wealth of free IP data, serious problems may arise if wrong assumptions are made regarding the coverage, currency and integrity of databases that are deficient. The databases hosted by Dialog, STN, Questel-Orbit and Lexis-Nexis tend to be deeply indexed, often include full-text searching, offer comprehensive coverage, provide product support and come with very powerful search engines. Derwent, Chemical Abstracts, and IFI are the best-known providers of quality patent data on these hosts.

The free IP databases provided by Delphion, the US Patent Office, and the European Patent Office (Espacenet) tend to suffer from poor quality abstracts, slow updates, frustrating search menus, missing records, and a significant degree of error caused by case sensitivity and misspellings. These databases are useful tools, but results should be verified in other sources before making major decisions.

## Patent Searching Tools and Strategies

Beginner patent searchers often rely on their favorite technical keywords when searching. It should be kept in mind that over half of US patents are filed by non-Americans, usually persons for whom English is not the first language. The chances are good that a translation from another language does not include the usual American jargon and techno-speak. Intelligent use of patent classification when searching is the best way around the language barrier and produces a much higher ratio of relevant patent retrieval.

Patent classification systems are very powerful tools for patent searchers, and the application of these tools varies tremendously from database to database. In theory, every claim of a patent should be reflected in the classification coding for that patent. The major systems are the International Patent Classification (IPC), ECLA (The European Patent Office modification of the IPC), and the US Patent Office Classification. (See the PATSCAN web page for a guide to searching patents on the free Internet databases.)

Citation searching is another useful tool. A highly cited patent represents core technology that other inventors have attempted to improve upon. When an important patent turns up in a search, the patents (and patent applications) citing it should be reviewed, as well as the older art that it cited. Often the first patent in a mechanical or chemical subject area is 100 years old.

The person responsible for management of a patent portfolio should carefully scrutinize recently issued patents citing patents in his portfolio, since these may represent infringers who could be required to obtain a technology license to practice their patent. It is also a good idea to conduct citation searches on competitors' patents, since this may indicate new technologies entering the market.

## What Information can be Extracted from Patents?

### ***Identification of competitors or collaborators:***

The results of any subject search can be ranked by assignee or otherwise graphically charted to compare the gross numbers of patent documents held by competing companies. This kind of analysis needs to be weighted in favor of inventions with counterpart filings in many countries, since such an invention represents more R&D dollars than an invention protected in a single country. Also of interest would be

***Assessment of human capital by analyzing inventor records for competing companies:***

A ranking and time-line review of inventors may reveal a broad based R&D team with low turnover, or a volatile situation in which reputable scientists have fled to other companies. Patent records may reveal jointly held patents with Universities or other research collaborations, indicating strategic use of human resources.

***Assessment of competitors' R&D effort and direction:***

Graphic mapping of the density and frequency of patent filings across all technologies for a competitor reveals the focus and intensity of their research efforts. Gaps in their IP portfolio may be discerned, and offer evidence of need to license or partner. Patent family searches (and also trademark searches) indicate the segments of the international market the competitor is targeting. Temporal profiles for patent filings may show a competitor is abandoning a particular field. Citation searches may reveal competitors "patenting around" a patent portfolio, filing improvements to a rival's product line.

***Discover market trends, birth of new technologies:***

The US Patent Office makes their data searchable by country of filing, so it is very easy to map technologies by patent classification filed from particular countries and analyze developing markets. A temporal map of patent filings will reveal accelerated patenting in hot subject areas.

***Find new employees, consultants, and experts:***

A subject search may reveal universities filing patents in an area of interest, revealing an economic way to engage temporary scientific talent, obtain contract research, or license cutting edge technology.

***Locate licensees:***

A thorough search of a company's area of patented technology may reveal newcomers to the field who should obtain a license to practice their patents.

## Analyzing Patent Quality

Patents are not created equal. Most patents become colorful wallpaper and never return the costs of filing. Sometimes a close look at a patent document will provide clues to its inherent value.

A glance at the front page of a patent can reveal a great deal about the quality of the document.

***Reputable corporate or institutional source as assignee?***

If the patent is held by a private inventor, there is a probability the invention was not the result of a well funded R&D program. If the inventor drafted the patent (indicated by lack of a legal rep.) then there is a strong chance it is worthless.

***Patent Cooperation Treaty Filing?***

If the priority filing was a PCT app., this would indicate considerable funds has been expended for international filings, indicating some confidence in the technology.

***Prior art cited? Literature cited?***

Studies indicate that patents issued to universities and research institutions providing generous citations reflect quality research.

***Several inventors?***

Many inventors indicates well financed research team.

***Continuations in part?***

Indicates ongoing serious research.



***Prosecuted by solid law firm?***

Certain patent firms specialize in particular industries and are not cheap. In theory a patent produced by such a firm would be well drafted.

Patent quality can be further tested by doing a little patent research.

***Is the patent highly cited?***

If the patent has been issued for a few years and no one has cited it as prior art then it may be a dead end technology. Highly cited patents represent seminal technology.

***Any foreign equivalents or counterparts?***

A patent family search will reveal whether corresponding patent applications have been made in other countries and whether they are being expeditiously prosecuted. Often a PCT application will be filed and the case will stagnate in limbo, effectively abandoned.

***Litigation, opposition or re-examination?***

Legal status files may reveal that the patent has been abandoned due to failure to pay fees. On the other hand, litigation, opposition and reexamination are indicators that there is some value at stake.

***Claims valid, supported and broad?***

A patent agent or consultant could be engaged to review the claims. A validity search could be conducted to verify there is no prior art missed by the examiner, and that there are no other patents restricting freedom to operate.

## Patent Portfolio Analysis

The thrust of a competing corporation's current and future technology development can be analyzed by reviewing its IP portfolio. The geographic coverage of the IP indicates global market strategies. The age of patents and frequency of filing disclose the product life cycle and maturity of technology. Citation counts reveal the importance of a patent within the industry. A look at the inventors on research teams may indicate personnel trends in R & D management. Professional analysis of the quality of patents reveals how well a core technology is protected

In analyzing patent portfolios, many experts use the number of foreign counterparts as an indication of the "weight" of a patent. If a company spends \$100,000 in patent costs, then the invention represents a substantial research investment, implying a serious effort to gain market entry. By comparison, a single patent filing in the US may cost as little as \$5,000.

Vigorous patent prosecution or lack thereof may indicate the priority placed on a technology in development. If a PCT application lies in limbo for years, with little prosecution activity apparent, one can assume the invention will eventually be abandoned. Many institutions view patents as options on technology, and abandon applications for inventions that do not immediately get attention from investors or the marketplace.

The history and correspondence of patent prosecutions is available through file wrappers, which may reveal weaknesses in a patent position discovered during examination. Reviewing the legal history of a patent portfolio, as well as the infringement, opposition, re-examination, and other IP and trade-related litigation pursued by a company, indicates the company's degree of enforcement. Opposition proceedings against pending patent applications are a national sport in Japan and some European countries.

Statistical analysis of a competitor's patent portfolio often uncovers new trends and themes as they focus on new market opportunities and discontinue activity in other fields.

## Analyzing a Technology Using Patent Data

In any technical field, the two most important elements are:

- ? The number of prior art patents (how crowded is the field?); and
- ? The rate of technology adoption (accelerating? decelerating? stagnant?).

A crowded technology of rapid product cycles, many new players, and skyrocketing sales is risky, but lucrative. In an area such as software, the need to be first to market in order to dominate the sector may be a primary consideration, and the profitable life of a software package may be 18 months. However, taking the time to build a strong IP portfolio may also pay off in the long run. STAC's portfolio of a few highly important patents in the field of data compression was enough to win an infringement suit against Microsoft to the tune of \$124 million in 1994.

The pharmaceutical business is a mature industry characterized by crowded art, slow change, and little freedom to operate. Drugs cost hundreds of millions of dollars to develop and test, but the rewards are also very high. Patents are critical in the biotech and pharma industry.

In the early days of breakthrough technologies such as genetic engineering or photonics, the seminal patents in areas of sparse art can be very broad and profitable, in terms of enforcing licenses on latecomers in the field.

The mechanical arts generally produce slow change, and patents are not valuable since they are mostly very small incremental improvements on existing devices, rather than new platform technologies. However, some companies such as Newnes Machinery in BC (now owned by CAE) have become successful through patenting automated mill equipment to include scanners, sensors and robotics. Creo Products has developed more efficient color printing technology, shaking up a stagnant, multi-billion dollar industry.

The value of any IP portfolio depends to a very great extent on shrewd marketing and good corporate management. An astute administrator can leverage a handful of patents on a hot technology that is object of litigation or a corporate acquisition to amazing valuations. There are several war stories regarding IP portfolios of liquidated companies being turned into gold mines in the right hands.

Often it is the case of finding the right niche for a technology ahead of its time. Industry Liaison Officers at the University of BC tried for ten years to sell international manufacturers of excavation machinery their suite of force feedback joystick patents to use as controllers. Ultimately the Immersion Corp. of California paid a high price for the portfolio to consolidate their hold on the force-feedback video game joystick market, which is currently booming.

## Patent Strategies and Tactics in Portfolio Management

As a defensive strategy, IP managers should periodically conduct searches on their own patent portfolios to determine if other corporations are citing their company patents to "patent around." Regular state-of-the-art searches may indicate who is about to launch a new technology that could be substituted or added to

current products. Trends should be mapped and statistically analyzed to decide where the industry technology is heading. Companies need to be aware of competitors who are preparing to leapfrog ahead with innovations such as “smart” products with onboard chips.

IP analysis can play a critical role in advancing corporate goals. Penetration of specific markets begins with analyzing the barriers to entry, such as scrutinizing blocking patents for invalidation, purchase, license, or reverse engineering. A powerful technology position in the marketplace can go hand-in-hand with an aggressive licensing strategy.

Small companies pursuing strategic alliances with corporate giants may obtain a strategic advantage by searching for chinks in the larger company’s IP armor. Filing provisional patents around the larger firm’s core technology can pave the way for an equitable joint venture or cross-licensing agreement.

Market timing is everything. While being first to market is critical, the IP foothold must be secured for the long term. For example, Kodak learned that Fuji Corp. was about to market a single-use camera in Japan, and expected that Fuji would turn to the US market next. Kodak had prepared a good patent base and rushed its product to the US market first, with a good media splash, and became dominant in that market. Fuji had poor patent protection in the USA, and had to beat back 28 companies who were copying Fuji’s single-use camera.

Several strategies may be adopted when a competitor’s patents block a company. These strategies may include buying the patent or the company, licensing or cross-licensing the IP, creating better technology and patenting around, suing for infringement or invalidating the patent by legal action or re-examination, and opposing pending applications. The IP of acquisition targets must be studied: often a company in turmoil has a portfolio of lapsed, invalid, misassigned, expired, and mortgaged patents that poorly protect the technology under negotiation.

On the other hand, a more profitable path may be to avoid confrontation, and cross license or swap IP in order to share different segments of the market in a joint monopoly, a strategy commonly used by IBM and Intel. Other situations may warrant major players forming a patent pool to dominate an industry. Two competitors with minor interests in a new technology may be better off forming a new joint venture company with the combined IP.

## Conclusion

In all cases, an IP manager must have a complete understanding of the strengths and weaknesses of the IP portfolio. The IP manager must also understand how IP can be used strategically for best advantage. IP strategy needs to be aligned with the corporate strategy, and monitored both to provide a benchmark for the corporation and to determine the status of the competition.

IP data is best used by integration with information from a wide spectrum of other industry sources in order to build a broad, coherent picture of the competitive environment for a corporation.

### Discussion Exercise: Competitive Intelligence

- ✍ Discuss the strategic value of patents;
  - ✍ Discuss developing strategies that are difficult for competitors to replicate;
  - ✍ Discuss life-cycle implications;
  - ✍ Discuss the importance of technologies and processes;
  - ✍ Discuss identifying potential new business areas.
- 
- ✍ Identify competitors.
  - ✍ What needs to be learned? What are the best information sources?
  - ✍ What are the industry trends, forecasts, projections or predictions?
  - ✍ How can this information best be used to gain advantage?
  - ✍ Who will be responsible for implementing the plan?
  - ✍ How can a culture of continuous CI activity flourish in the company?