Proceedings of GLOGIFT 07
November 15-17, 2007
UP Technical University
Noida, pp. 602-605

PATENTS AS A KNOWLEDGE SOURCE IN NEW PRODUCT DEVELOPMENT

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Introduction

A patent is a contract between an individual or organization and the state that is made in order to protect inventions and improvements to existing inventions. By the individual or organization disclosing in the sufficient detail of the invention, the state will confer the legal right to stop others benefiting from the invention for the following 20 years. In exchange to granting exclusive rights to the invention in question for a pre-determined amount of time, the invention is made public in the form of a patent application usually 18 months after the patent application has been made. The rationality behind grating exclusive rights is to encourage creative and innovativeness inside the economy, as the knowledge that is contained in the patent is made a part of the public sphere. (Trott 2002[1998]: 377).

For a patent to benefit from legal protection it must meet the following three criteria (Trott 2002[1998]: 378.

1. *Novelty:* The invention cannot be a part of the 'state of the art', i.e. it is not publicly known through publications (written, oral, or even anticipated).
2. *Inventive step:* The invention should include an inventive step, i.e. a novelty that is not obvious to a person skilled in the area in question.
3. *Industrial application:* The invention has to be machine, product, or process.

Discoveries, scientific theory, and mathematical processes are not patent able. For a patent to be granted its contents need to be public so that others can be given the opportunity to challenge of exclusive rights. For this purpose there is a formal registering and indexing system to enable patents to be easily accessed by the public.

For this reason patents follow a very formal specification. Patent information, i.e. the information contained in public patent documents published by the various National patent offices around the World, is contained in the patent specification and patent abstract. The specification is a detailed description of the invention and must disclose enough information to enable someone else to repeat the invention. This part of the document needs to be precise and methodological. It will usually contain references to scientific papers and other patents.

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The patent abstract is a short statement printed on the invention and the advance that it represents. These abstracts are usually accompanied with drawings. (Trott 2002[1998]: 380

Thus in conclusion, the information contained on patent documents is very detailed, applied technical information is a formal form.

Patents as a Source of Knowledge

Patents are good indicators of the research and development output of organizations. If one company owns more patents than another, it indicates that the company has a stronger commitment to research and development. However, very few patents are for radical innovations, most of them are granted for incremental inventions. This is why a patent that is more widely cited than others of the same age is regarded as a patent of greater impact or of higher quality. Links between patents are often used to measure the knowledge transfer that occurs between different companies, industries, regions etc. As a source of knowledge for new product development, patents have three major advantages: it offers a very large source of information that is unique and new.

First of all, patents are one of the largest public databases in the world. According to the Finnish National Board of Patents and Registrations of Finland, today almost 40 million patent documents have been published, describing approximately 15 million different inventions internationally. The annual number of new patent documents is currently approximately 1.5 millions. The information is also increasingly available on the Internet.

(National Board of Patents and Registrations of Finland 2006)

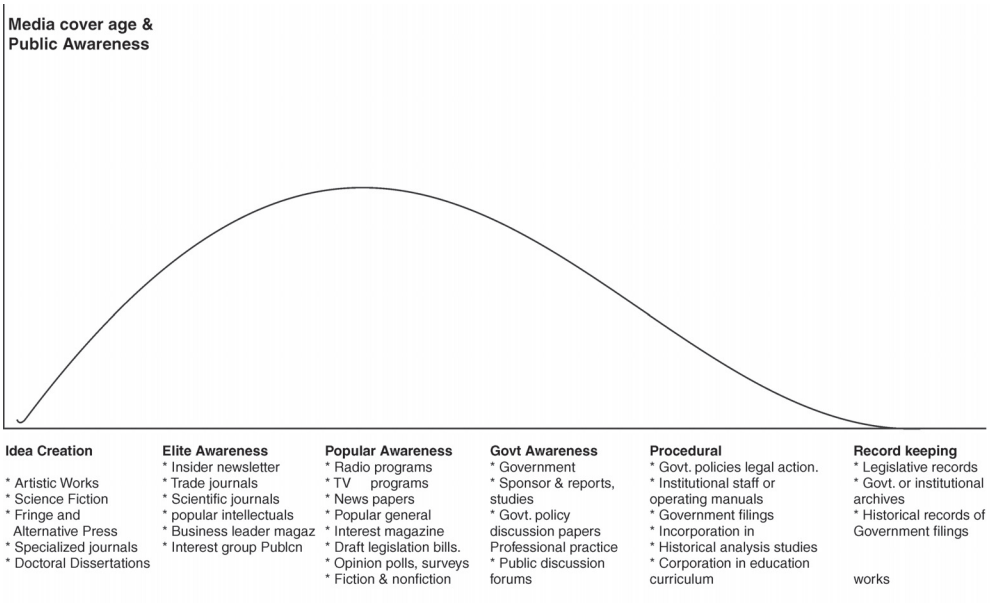
The knowledge included in patents is also relatively new. In most countries the patent application is published 18 months after it is filed, so there is a time lag between the publication of the patent application and the time of invention. Generally, however, patents are granted well before a patented product is introduced in the market. So the publication of a patent application is the earliest moment when the relevant information becomes available to the public (WIPO 2005). As we can see in the information lifecycle, presented in Figure I, when patent applications are made public the same kind of information can basically be found only in doctoral dissertation and specialized journals, and the general awareness of the information is still low (Choo 2002[1998]: 170.

Compared to these information sources, patent applications are somewhat more accessible to new product development, as the information is applied to technological domain in the form of an industrial machine, product, or process.

The Information Life Cycle (Choo 98)

Finally, patent applications contain also quite unique information. As the patent application is a requisite for obtaining a patent, almost all the relevant technical information from a commercial point of view is available through patent documents. The European Patent Office (EPO) estimates that 80% of the technical information contained in a patent document are never published anywhere else (Poynder 1998). As the patent document has to describe the novel technology on a very detailed level, the information is much more detailed than any other scientific or technical publication (WIPO 2005). There are also many different business areas can benefit from analyzing patent information. Some of the business applications are (WIPO 2005;Ashton&Sen 1988):

- Technology competition analysis
- Input to licensing strategy



- Supporting mergers & acquisitions
- New venture evaluation
- Guiding research & development
- Product area surveillance
- A tool for creative thinking

Patents in New Product Development

In new product development companies should seek an overview of the relevant technology field in order to forecast market needs when developing a new product. Patent information analysis makes it possible to map out the trend of technological change and the life cycle of a technology. It will also identify the competitor's technological assets and the problems and solutions in the development of a particular technology (WIPO 2005). So the use of patent information can reduce the risk of "reinventing the wheel" and help companies to monitor their competitor's research activities (Poynder 1998). As a tool for creative thinking, patent information can be used to find new solutions to technical problems. E.g. the TRIZ methodology was developed specifically on the basis of patent information (WIPO 2005). For example, engineers working in a particular field will often search patent databases in order to see how the problem has been tackled in the past. They will also use previous patents to identify how their current area of work fits in those areas of science and technology that have been developed and patented previously. Very often patents can provide a valuable source of inspiration (Trott 2002[1998]: 385.

In practice patent information continues to be one of the least appreciated sources of competitive and technological intelligence. In 1990s' EPO reported that only 59000 out of 170000 European companies made use of the patent system (Poynder 1998). It is estimated that even 30-50% of new product development efforts are overlapping, i.e. companies are trying to solve problems that already have been disclosed among patent documents (Koch 1991; Trevor 1994). On the European level, EPO estimates the cost of this duplicate research

at 17000 million Euros a year (Poynder 1998).

Especially small and medium sized enterprises have little faith in the patent system. They believe that the patent system is designed primarily for large multinational companies who have the finances to defend and protect any patents granted to them (Trott 2002[1998]: 382-383. This also increases the threshold to use patents as sources of information. Whereas large companies use patent information more extensively, especially in certain sectors such as chemical and pharmaceutical industries, small and medium sized enterprises and other and other industries such as engineering are at best intermittent users: patent activities are often limited to their own patent applications or identifying the characteristics of one specific patent (Ashton & Sem 1988).

This reluctance can partly be explained by the fact that patent information was once largely the preserve of patent agents or attorneys, skilled in conducting searches as the first step in filling in patent applications or preparing for patent litigation. But in the last decade, the development of computerized databases of patent information, many of them now online and free of charge, has opened the board to other users as well (Dou 2004). On the other hand individuals need to know how to use patent information and decrypt the often very complex, almost legal jargon of the patent applications. In large companies that can afford to have special patent engineers this is not a problem, but in small and medium sized enterprises people do not have the time to get acquainted with the way information is presented in patent documents.

However, patent documents have been calculated to be very profitable if used in new product development.

Conclusion

Patents generate more savings when used in new product development than any other formal knowledge source: empirical research has estimated the savings approximately at 13400 euros per one patent document (Nelke 2000). So even in small and medium sized enterprises the invested time and effort could really pay up as increased efficiency of new product development.

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