

Full Length Research Paper

Patent Intelligence and business strategy

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Patents are one of the major sources of technological and competitive information. Patent intelligence is vital for future business success. This paper addresses how patent intelligence can be used to make intellectual property strategy. Many patent analysis methods were used in experimental examples to illustrate worldwide innovation distribution, a competitor's relative patent strength therein and new application of core technology in other fields. This study provides business managers with basis of decision-making for R&D strategy and intellectual property strategy based on patent intelligence research in following sides: (1) Choice of IP strategies: whether to apply for a patent or protect as commercial/technical secret or register trademark. (2) Opportunity and type choices of applying for the patent. (3) International patent prosecution and marketing strategy. (4) Choice of patent strategies: including basic patent strategy, patents siege, patent transfer/licensing, cross-licensing, patent buy, combine patents with products or trademark, strategic use of patents in capital, technology and product output and transfusion strategy.

Key words: Intellectual property strategy, business strategy, patent intelligence, patent analysis.

INTRODUCTION

Intellectual property (IP) can be exploited to build competitive advantages by creating a legal monopoly in the market, generating extra revenue through licensing arrangements or even maintain a competitive edge by protecting business image and goodwill. IP can be used as a business strategy by forming a monopoly over a protected product, process or technology; licensing rights to a brand or design – through franchising or royalty arrangements, maintaining the position of the business in the market through a distinctive business name or logo, leveraging a competitive advantage by gaining exclusive rights over an efficient process or new product or service, developing an exclusive image of the brand, product and business through registered trademarks, stop or deter competitors from entering the market entering into joint ventures through the supply of IP increasing the value of goodwill by protecting the registered trademarks.

But, how to make a successful IP strategy for self-development is determinant for success and failure. Patents become more and more important for competitive advantage in modern society. Patents give a range of valuable dynamic indicators unlike any other type of publication, which is useful for estimating and assessing current and future commercial activity of an individual or

an organization. Patent information has been used in many fields. Holger (2003) showed the use of patent information in core areas of technology management. Tetsuaki Oda and Kiminori Gemba proposed a citation analysis, as a method providing the patent strategy. Rebecca and Shing-Yi (2010) analyzed international patent prosecution for Taiwanese applicants based on Patent Cooperation Treaty (PCT) application. James Bessen's work in "Patent Thickets" shows that the level of patent standards influences R&D incentives.

This paper proposes the way how to make reasonable intellectual property strategy on the basis of patent intelligence research, which is used in the paper to reveal worldwide patent embattle, trends of development, core technologies with great value ("hot" patents) and new technologies, organizations with leading technologies (leaders), inventors and their employers with leading technologies, which are just some of the groups that contribute to and influence decisions made related to intellectual property in the field. This paper is also to help people to streamline workflow processes, to improve decision making, to get useful business insight out of IP data, to extend collaboration throughout their organization and ultimately reduce the time and expense

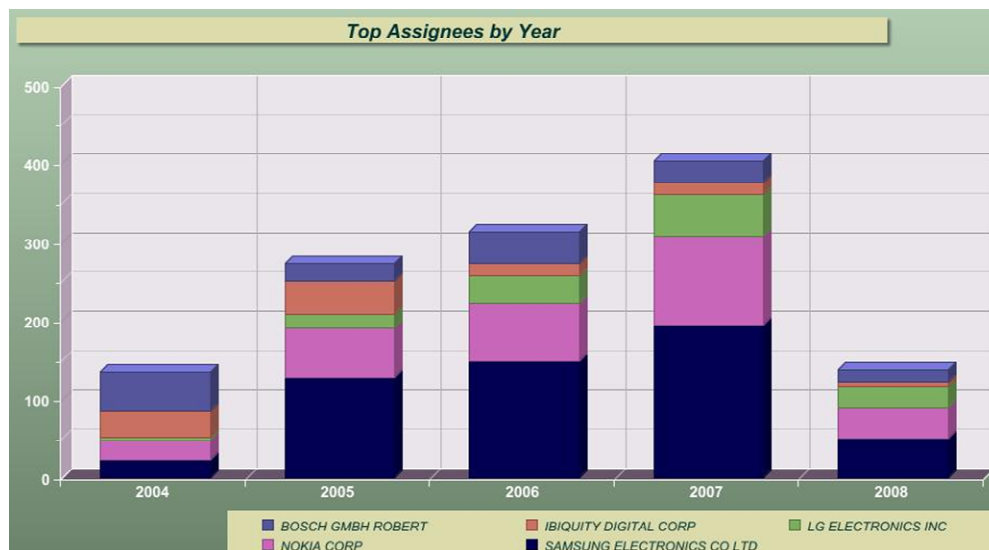


Figure 1. Structured statistic analysis of assignees.

associated with IP creation and management in the field.

MATERIALS AND METHODS

Here the software package used at the Johnson Matthey Technology Centre is Aureka (a product available from Thomson Reuters, an advanced IP management and analysis platform, the world's leading source of intelligent information for businesses and professionals) which includes patent data sets from the Patent Cooperation Treaty (PCT) and European Patent offices, plus a range of national patent collections including those of the U.S.A., Japan, the U.K., France, Germany, Switzerland and Russia. More other patents to analysis can be imported into the software from Derwent Innovation Index.

Qualitative and quantitative analysis methods used here include patent analysis, patent mapping, citation analysis and text clustering. Patent mapping can be used to visualize patent distribution, competition status and trends of development. The clustering results can be used to show hot patent topics quantitatively. Patent citation analysis uses bibliometric techniques to analyze the wealth of patent citation information, which can be used as a measure of technological quality and influence, in studying diffusion of technological information and can be used to construct technological indicators. In addition, patent co-citation analysis can be used to "map" the inter-related development of technical fields.

RESULTS

This paper gives some experimental results to express some ways of patent intelligence research in the progress of intellectual property strategy making.

Patent mapping

Structured statistic analysis are used to identify competitors and to find changing competitors. Figure 1 shows that Samsung Electronics Co Ltd, Nokia Corp and LG Electronics Inc are growing competitive, while Ibiqity

Digital Corp and Bosch GMBH Robert are declining competitive. The patent map Figure 2 illustrates the patents distribution in the field attended, through which research focuses and technology gap areas are presented to the technical staff.

In Figure 3, the green dots represent innovation of company A, the red dots represent innovation of company B. It can be used to illustrate that patent-intensive areas is the highly competitive field which has good market prospects. As for corporate strategy makers, if they choose to enter the competition in the highly competitive market, they have to be careful to patent mines.

In Figure 4, the green dots represent innovation of ASML' integration circuit published in year 2006, the red dots represent innovation of ASML's integration circuit published in year 2002. It help the strategy makers to know technology distribution intuitionisticly in some period and gain a clear idea of technology evolution and context of technological development by time slice analysis, which are very helpful for strategy makers to draft the direction of their own development. When a company does not know whether to implement the merger or technology alliance, and with who, the comparison patent map between different companies can offer strategy makers some ideas. Through merged companies, as shown in Figure 5, the firm can joint monopoly market and enhance core competitiveness fast.

Citation analysis

Citation analysis can be used to find core patents and hot topics. To some extent, more citation means better market prospects. Those highly cited patent technologies

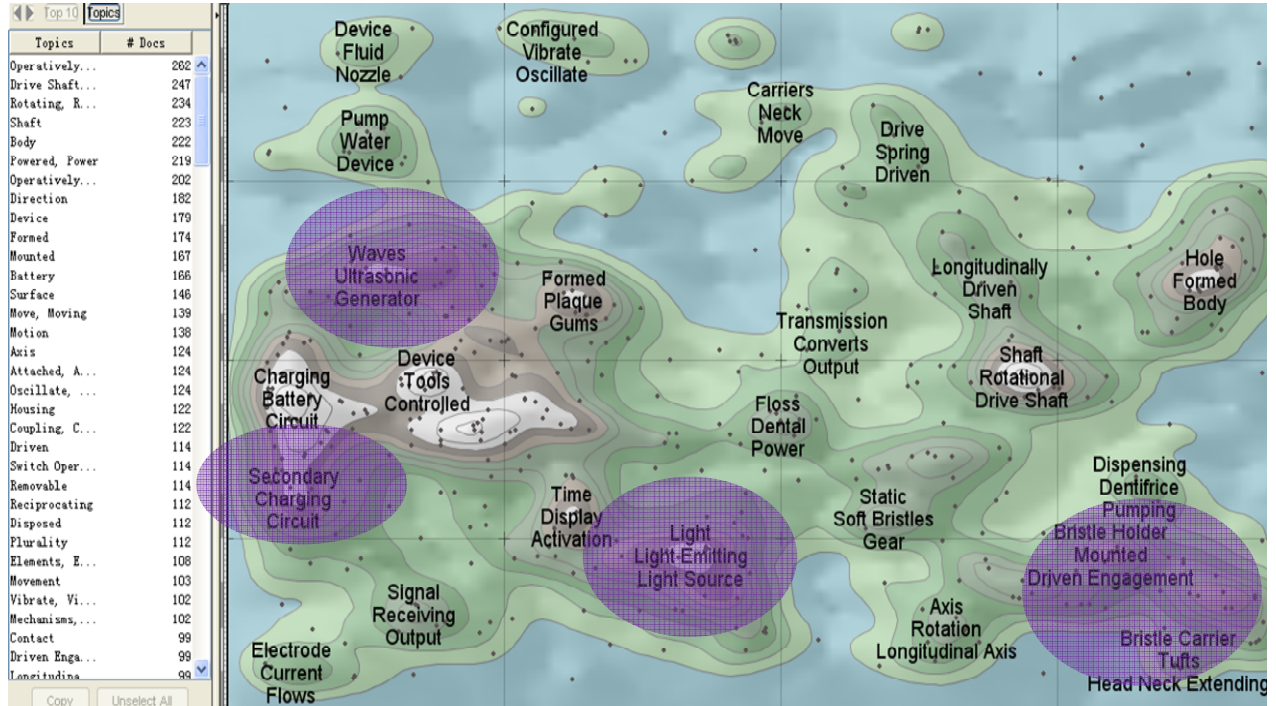


Figure 2. The map of electric toothbrush.



Figure 3. Competitive states of different competitors A and B.

were well concerned by competitors in the field and they also deserve strategy makers attention. As shown in Figure 6, backward and forward citation trees (expressed in company) of some patent technologies can be used to know competitors' patent pattern, to find new applications of core technologies. Some patent technologies were

concerned by the company and other competitors. If a technology was cited mainly by the company himself, it means that the company valued the core technology and adopts patent defense strategy.

Otherwise, if the technology was cited by other companies (competitors), it means the assignee of the

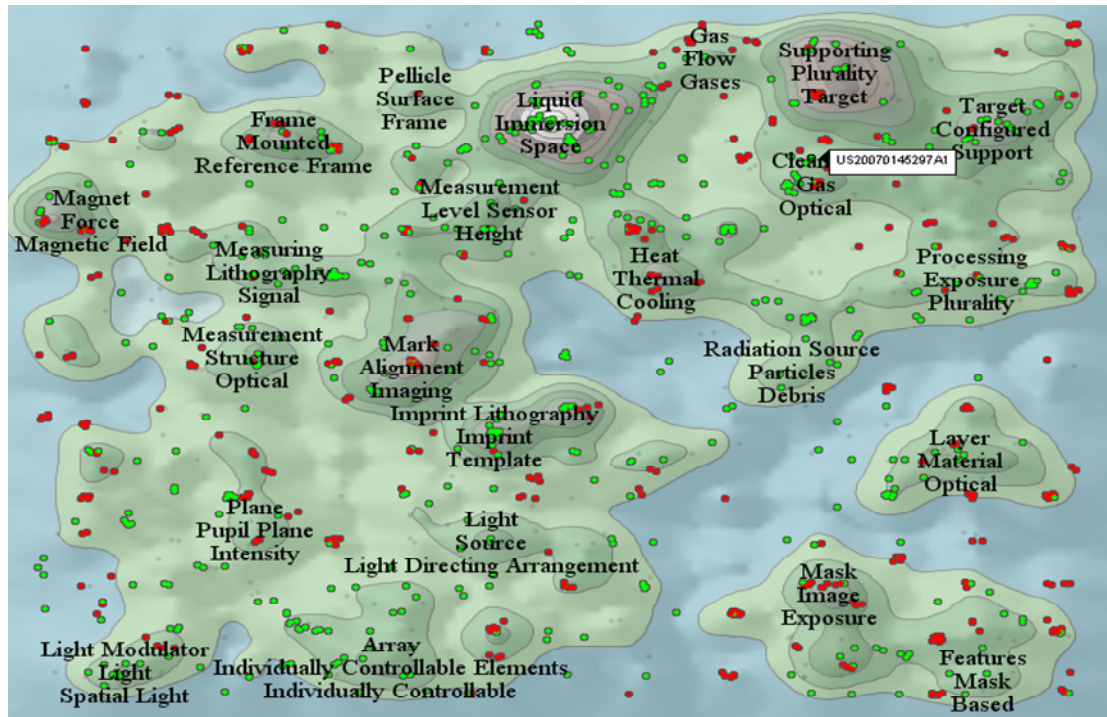


Figure 4. Patent map of ASML with time slice in the field of integration circuit.

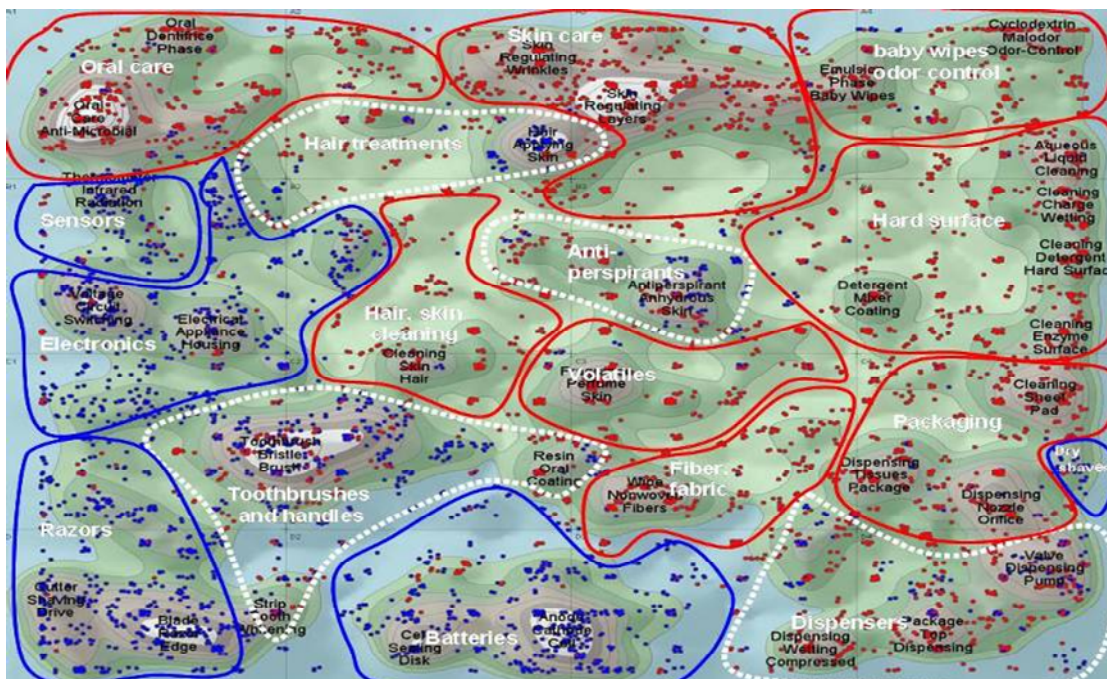


Figure 5. Company A (red) to acquire B (blue).

patent lost his monopolistic market position, and suffers patent siege from his competitors. In addition, citation tree expressed in IPC can help strategy makers to know

evolution of the technology and context of technological development and new other applications of the technology. A proverb says, "Know the enemy and know

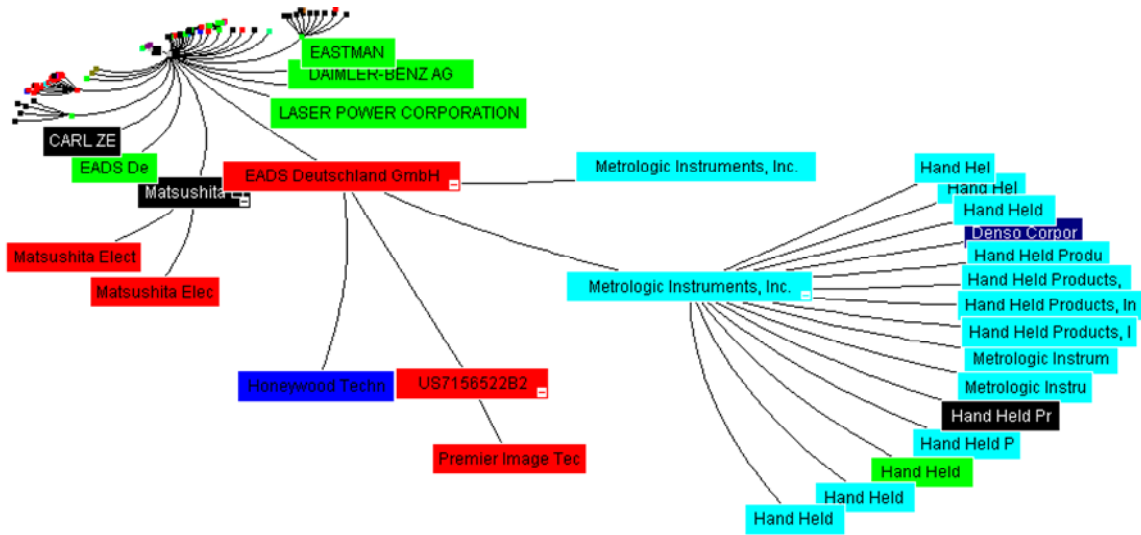


Figure 6. Citation tree.

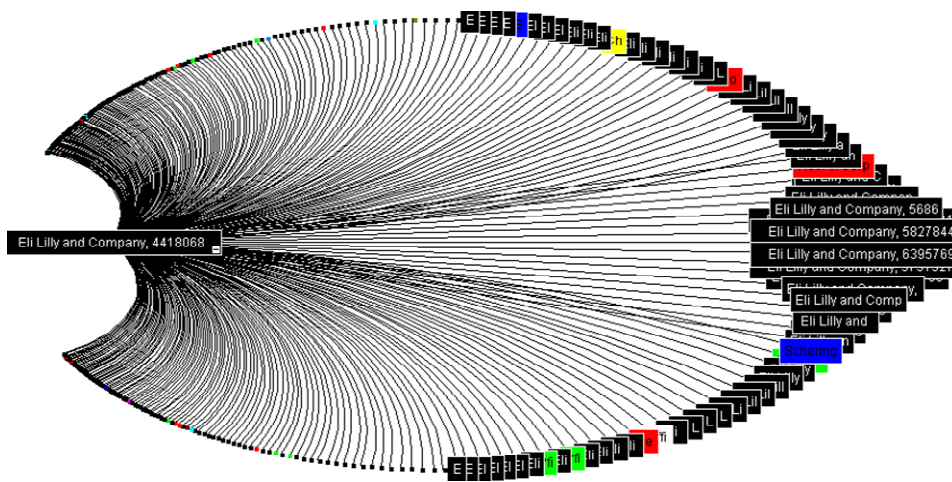


Figure 7. Eli Lilly's US 4,418, 068.

yourself, and you can fight a hundred battles with no danger of defeat". A firm should know his competitors. Citation tree of competitors illustrates how the patent is focused on by the assignee himself and other competitors. Patent protection strategies for U.S. patent 4,418,068 of the competitor as shown in Figure 7 are patent defense strategies. It demonstrates that the firm has real monopoly in the technology market. When your competitor adopt patent defense strategies, you should be careful and make sure not to step on patent mine field of your competitors before you put your products on the market.

Correspondingly, on the other hand, if you find technical defects of your competitor's, you could improve it and submit series patent applications as soon as

possible to break your competitor's technology line of defense, which is called patent counterattack strategy or patent siege strategy.

Figure 8 shows that Intertrust Technologies Corporation use patent siege strategy to surround the patent technology of the university, in order to capture the market. So, when a firm found some good basic patent technology from universities or institutes, it can be considered to improve the technology and own some improved inventions around others' basic patent to monopolize market, which will greatly reduce the R & D investments and shorten the development cycle. As shown in Figure 9, analysis of some patents' forward and backward citation, offers decision-makers development context of companies, some technologies and their new application areas.

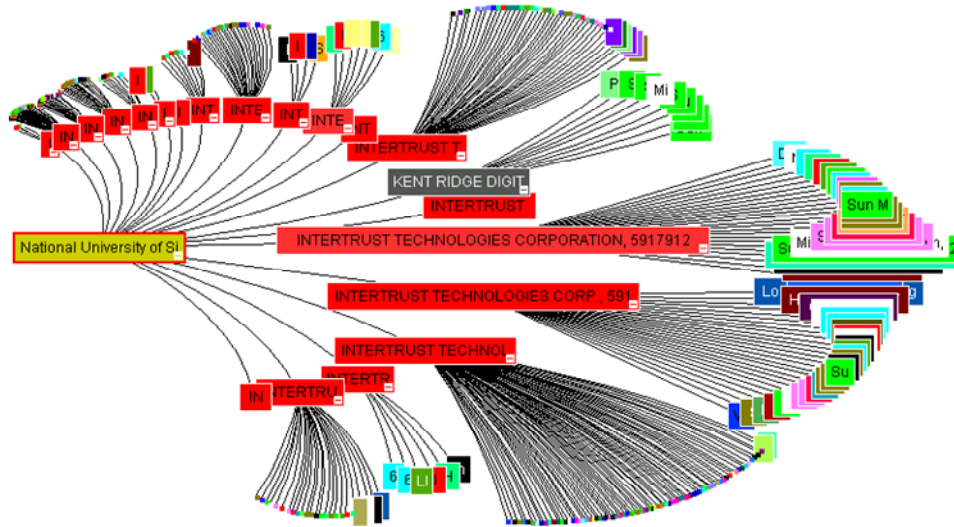


Figure 8. Citation tree of NUS's US5,499,298.

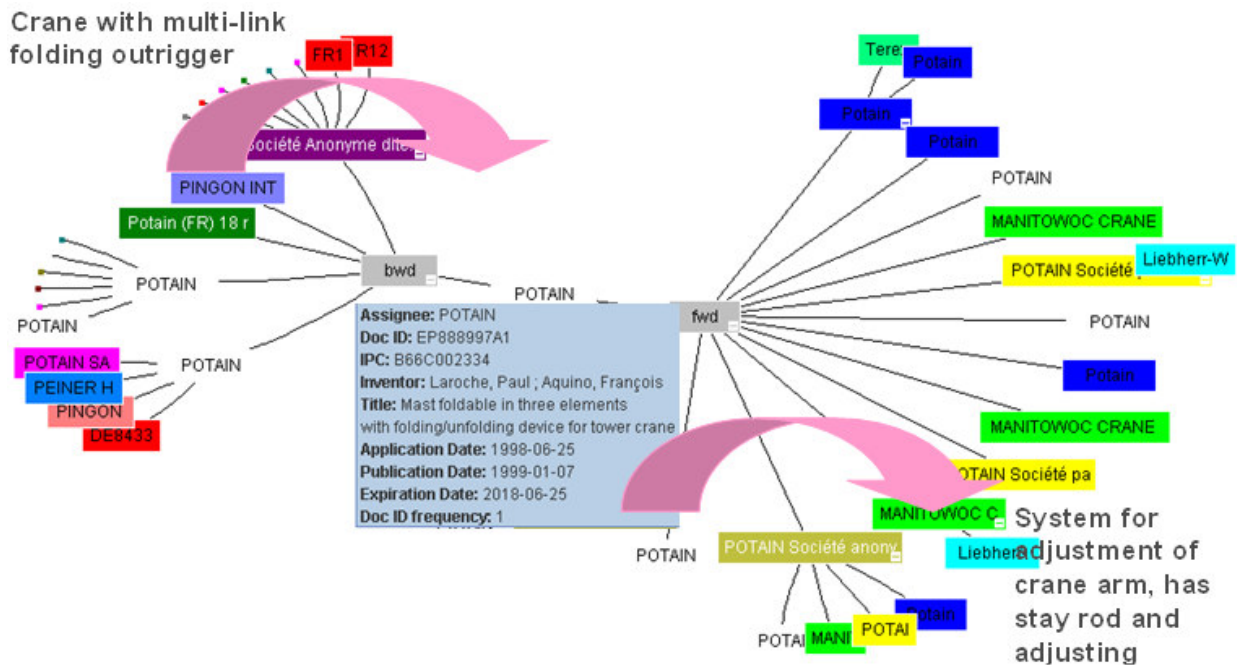


Figure 9. Citation tree of EP888997A1.

DISCUSSION

Patented technology competition is a part of core competence for a firm and perspective on the business competition to some extent. Status and patterns of competition, areas of technology focus and technology gap, and future market direction can be presented to corporate strategy makers based on the patent intelligence research.

Furthermore, the IP strategy makers oriented to their company development will know whether to apply for a patent or protect as commercial/technical secret or register trademark, how to grasp the opportunity and master types of patents, and how to choose appropriate international patent prosecution and marketing strategy. With the development of their own state and future development plans, strategy makers will be ready to customize correctly their own intellectual property

strategy development from the following patent offensive strategies: basic patent strategy, patents siege, patent transfer/licensing, cross-licensing, patent buy, combine patents with products or trademark, strategic use of patents in capital, technology and product output, and transfusion strategy.

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