TOWARDS UNDERSTANDING THE ROLE AND VALUE OF PATENTS IN A KNOWLEDGE-BASED ECONOMY

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Abstract: *Patent, as a form of intellectual property has existed for centuries with the underlying purpose of balancing between the interests of the inventor and those of the society and thus stimulating innovation, research and creativity. In the business milieu, for a long time patents were mainly deployed for two fundamental strategic purposes – to sustain exclusion rights or in cross-licensing negotiations with competitors. However, with the entrance of non-producing patent dealers (e.g. Intellectual Ventures, Rambus, Rembrandt IP, Acacia Technologies) to the high technology market, the strategy of "being infringed" has emerged as the new stream in the strategic use of patents. Patent dealers have reached an exceptional growth rate in scale and scope of operations and today they significantly affect companies of all sizes in many industries, not only in the high technology sector. Moreover, the new strategy and new players changed the basic postulates in understanding the use and value of patents. Therefore it is not surprising that in the last decade intellectual property, and especially patents, have emerged in discussions and debates on topics as diverse as public health, food security, education, trade, industrial policy, traditional knowledge, biodiversity, biotechnology, the Internet, the entertainment and media industries. This chapter is intended to review the role of patents in a knowledge-based economy and the various ways patents are used and valued today, to identify emerging trends and to outline the areas where further research is needed.*

Key words: *patent value, role of patents, knowledge-based economy, high technology market*

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1. Introduction

With the emergence of a knowledge economy, importance of knowledge as a driving force of innovation and economic growth worldwide has increased significantly. In the dynamic arena where creativity, knowledge and the production of novel ideas have a central place, traditional manufacturing moves to lower cost economies and new technologies become the most important wheel in global economic trade. In such an economy, intellectual property rights (IPRs) are becoming one of the most important businesses mechanisms in extracting economic value from creativity and encouraging greater investment in innovation. IPRs include patents, trademarks, copyrights, trade secrets, and a number of more specialized instruments. Among them, patents are arguably the most important form of intellectual property for business firms and this chapter focuses on them.

By definition, a patent is an exclusive right of limited duration over a new, non-obvious invention capable of industrial application. It ensures inventors the right to exclude others from using the invention. The patent system promises to the owner the right to a temporary monopoly on a technical invention, in return for an early publication of a description of the invention (with all technical details) rather than the use of secrecy to protect its misappropriation.

From the first recorded granted patent to John of Utynam, in 1449, the patent was introduced as a mechanism facilitating access to knowledge (Thomson Reuters, 2013). Namely, in return for a granted patent and a twenty years monopoly over the glass-making process, previously unknown in England, John of Utynam was required to teach his process to native Englishmen. That same function of passing on information is now fulfilled by the publication of a patent specification.

However, with the increasing importance of knowledge assets and innovations to enterprises, the basic idea and intention of the patent system has evolved over time towards more strategic modes of patents' use for business purposes. Consequently, the patent increasingly gained a strategic value independently of invention and innovation (MacDonald, 2004). Patents contribute to an enterprise's research and development results, revenue, stock performance and reputation – they are one of the most important strategic assets for R&D-intensive firms. Patents have been highly influencing firms' value in different ways, being at the same time a sort of signalling device to consumers, competitors, venture capitalists or other investors. They are recognized as a monetary asset as valuable as a bond or currency by world trade regulation. This chapter is intended to review the various ways patents are used and valued today, to identify emerging trends and to outline areas where further research is needed.

The remainder of the chapter is structured as follows: Section 2 gives a review of literature related to patent value and patent value determinants. Section 3 explains the emergence of a new strategy and a changed value proposition under the new strategy; while Section 4 presents the data about the impact that patent dealers have on companies of different sizes across industries. A discussion of emerging

challenges with a summary of our results and a discussion of implications, limitations and further research follows in Section 5. Finally, Section 6 concludes.

2. What is known about Patent Value?

This chapter is focused on the private value rather than the social value of patent rights. Therefore, the key question is whether the patent owner finds the patent valuable, not whether the patent in question contributes to social welfare. The value of a patent is different from the value of the patented invention. It can be understood as the difference between the value of the invention when the inventor holds a patent right (monopolistic situation) and when the inventor has no patent on it (competitive situation). The value of patents is not uniform, it is highly skewed – only few patents are valuable, and a majority of them are associated with very little or no value. For example, a recent large scale study (PatVal-EU, 2005) showed that only 7.2 % of the patents in the sample were worth more than 10 million Euros (around 1% worth more than 100 million), while about 68% of the patents from the same sample produced less than 1 million Euros (with about 8 % worth less than 30.000 Euros). These results are mirrored in the fact that many patents (inventions) are never exploited, and only a few of them are translated into commercially profitable innovations.

The fact that the distribution of patent rights value is skewed means that it is not possible to use row count of patents in order to compare values of companies' portfolios or single patents; and induces two crucial questions: which patents are valuable and if valuable, how valuable they are. Knowing which patents are valuable is especially important for those who make decisions about the usage and management of patents. It can help businesses to determine company value and settle on mergers, license deals and do acquisitions. It is important to measure and compare innovative output of companies and countries. Furthermore, it can help determine damages in litigations. Finally, value is important to policy makers because it can help to distinguish important from insignificant patents, and consequently to design a patent policy focused on more important patents.

Following these priorities, economists, business scholars, practitioners and policy makers have sought to measure patent value for a long time. However, the task of assessing the value of patent rights is a particularly difficult one because patents exist in a blind market with high information asymmetry (Lemley & Myhrvold, 2008) and their value depends on highly idiosyncratic details, including the strategic function they have in a competitive environment (Cohen et al., 2000).

In order to design value-weighted patent counts, scholars have been using patent statistics searching for reliable predictors and estimates of the economic value of patents. As a result, they come up with different empirical strategies, valuation algorithms and various predictors that could be used to produce value-weighted patent counts. However, the literature about these topics can be roughly organized into two broad categories based on value indicators employed and two categories based on the type of value proxies.

2.1 Value Indicators

Articles in the first category are based on value indicators that could be readily extracted from publicly available databases. Thus, we refer to these indicators as objective value indicators. Until today, a variety of objective value indicators have been tested in empirical surveys. From Trajtenberg's study of medical scanning devices (1990), forward citations had been validated as indicators of patent value in numerous subsequent surveys (e.g.: Harhoff et al., 2003, Lanjouw & Schankerman, 2001, and Allison et al., 2009).

It is argued that the number of forward citations measures the technological value of a patent (Lee, 2009). Backward references, to both patent and non-patent literature, have been frequently found to be positively correlated with patent value (e.g.: Harhoff et al., 2003; Allison et al., 2004). While backward citations to scientific articles are understood as a proxy for the 'science intensity'of patents (Callaert et al., 2006) and its inventive step (Sternitzke, 2009), citations to patent literature are seen as an operationalization of market potential (Harhoff et al., 2003).

The family size indicator represents the number of countries in which protection is sought for the same invention. It is one of fairly well validated indicators (Lanjouw and Schankerman, 2001; Reitzig, 2004 and Harhoff et al., 2003). The scope of a patent, measured as the number of different International Patent Classifications (IPCs) into which an invention is put by the PTO was proposed as a predictor of patent value by Lerner (1994) and used by several other authors (Guellec & van Pottelsberghe, 2002; Harhoff et al., 2003; Allison et al., 2004) with mixed evidence about its importance.

Patent life time (age) was considered as a value indicator in numerous studies, starting from Nordhaus' (1967) early work. Also, the number of claims (Lanjouw and Schankerman, 2001; Allison et al., 2009), grant decision (Guellec & van Pottelsberghe, 2002), patent oppositions (Harhoff et al. 2002), prosecution length (Allison et al., 2004) and the number of pages (van Zeebroeck et al. 2009) are recognized as a value indicator. The highest degree of theoretical and empirical validation shows forward citations, backward citations and family size variables.

A second stream in the literature is based on value indicators which are collected mostly as experts' responses and thus, they are subjective by nature. In this category fewer variables have been used. Klemperer (1990) and Gilbert and Shapiro (1990) used the patent breadth in order to capture its generality or degree of protection afforded to an invention. Greene and Scotchmer (1995) introduced novelty (technical non – obviousness) and disclosure as indicators which impact on the patent value. Gallini (1992) suggested and Reitzig (2003) demonstrated that the difficulty of inventing around a patent is of importance in determining its value, while Teece (1986) highlighted importance and dependence on complementary assets. Finally, Reitzig (2003) showed that learning from competitors through disclosure influence the present value of the patents. Obviously, collection of subjective value indicators is a more costly and thus less popular approach.

2.2 Patent Value

The above mentioned indicators are used as independent variables or predictors of patent value. On the other hand, in the literature diverse dependant variables, proxies of the patent value are used as well. There are two broad approaches for measuring the value of patents. In the first, approximation of patent value is based on objectively observable data: firm market value (Lerner 1994; Trajtenberg 1990; Lanjouw & Schankerman 2004; Hall et al. 2005), renewal data (Pakes and Simpson, 1989; Schankerman 1998; Lanjouw 1993; Bessen, 2007), new firm creation (Shane 2001), infringement and challenge suits (Lanjouw & Schankerman, 2001) and litigation (Alison et al., 2009).

The market value or portfolio approach is based on regression of firm market value on various firm characteristics including the patents owned by a firm. Using this approach Hall et al. (2002) found that one additional patent per million dollars of R&D increases a firm's market value by 3 per cent.

Renewal data help understanding the distribution of the value of patents by looking at how many patents are renewed at different lifetimes. Finally, Allison et al. (2009) used litigation as the proxy of patent value. Based on the findings about characteristics that distinguish the most-litigated patents from other patents they concluded that that the most-litigated patents are also the most-valuable patents (Allison et al., 2009).

The second group is based on patent owners or inventors survey with an idea to elicit an estimate of a patent's value. This approach is subjective by nature. Here authors rely on the monetary value of each patent estimated by inventors and owners and collected through surveys (Harhoff et al., 2003, Gambardella et al., 2008) or on the present value evaluated by experts on a value scale (Reitzig, 2003). For example, Gambardella et al. (2008) found that the mean value reported by inventors for their patents is 3 million euro with a median that is one tenth that value.

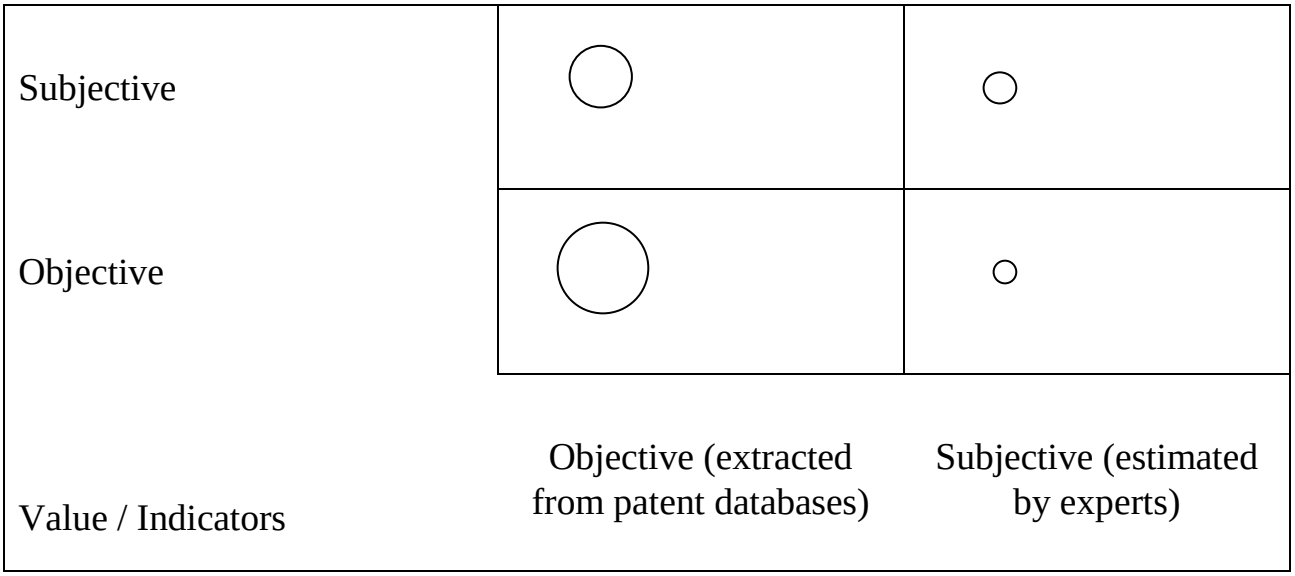

Fig 1. Existing literature on patent value and patent value determinants(the size of the cycle presents the relative size of the body of the literature)

Different proxies of patent value have resulted in very similar findings (Hall, 2009): the distribution of patent rights value is skewed, with most patents worth very little and a few worth a lot; chemical and pharmaceutical patents are worth more on average, followed by electronics, computers, and communication equipment.

To summarize, many potential methodologies to approximate the value of a patent have been used, relying on different objective and subjective value proxies and a wide variety of indicators, objectively observed or subjectively determined. Finally, this can be visualized as a matrix on Figure 1, where the size of the cycle in each matrix field presents the relative size of the body of the literature.

3. Emergence of a New Strategy

Although the literature has been describing a variety of functions of patents, two fundamental principles of their strategic exploitation can be recognized (Hall, 2009). These distinctive functions of patents usage are: patents as exclusion rights and patents as "bargaining chips" used for cross-licensing. In the first, more traditional concept, patents are used as a means to exclude others from the use of patented intellectual property and to prevent litigation (Cohen et al., 2000). Chemistry, pharmacy and biotechnology are examples of discrete industries where patents are used in this way, providing the period of monopoly and an opportunity for extra profit.

In contrast, in complex product industries (e.g.: semiconductor industry, telecommunications, consumer electronics) firms are patenting for cross-licensing and trading/negotiation purposes, as well as to prevent litigation (Hall & Ziedonis, 2001). In these industries innovation is complex and dependent on information from a multitude of sources and patents are used as so-called "bargaining chips" that allow companies to enter cross-licensing negotiations which are crucial for the survival of a company within these sectors.

However, the beginning of the 21st century has brought non-producing patent dealers to high technology market. These new players are sometimes recognized as patent aggregators and patent distributors, sometimes as patent trolls and sharks (Millien & Laurie, 2007; Detkin, 2007). Common for all of them is that they do not produce goods but rather deploy their (originally developed or acquired) intellectual property to earn the majority of their revenues (Yanagisawa & Guellec, 2009) though the strategy of "being infringed" (Reitzig et al., 2007). This new stream in the strategic use of patents is based on idea to license or sell patented technology to a manufacturing firm but only at a point in time when one side can credibly argue that the other party has already infringed the patent (Reitzig et al., 2007). This is a perfectly legal activity because the law grants patent owners exclusive rights and a very profitable idea because they have the ultimate bargaining power in "negotiation" (with infringers) when infringement is detected. In these situations, there are only limited exit options, all of which lead patent owners to higher profits than from offering the technology to a manufacturer before infringement (Reitzig et al., 2007).

This new strategy turns around the whole system in industries with cumulative technologies (e.g.: telecommunications, semiconductor, consumer electronics and computer industry) where patents were used as a means to "exchange technology" with competitors (Rahn, 1994), because the traditional response to infringement threat does not work anymore. Namely, counter-claim of infringement and the subsequent stalemate by cross-licensing is not possible anymore because new competitors do not make or sell any products, so they can not infringe anyone else's patents (Rivette & Kline, 2000).

The IP playfield has changed and a new type of player has arrived. Specialized patent dealers have emerged as market intermediaries without an interest in producing products. They accumulate and deploy their IP in order to generate supra-normal returns on patent-protected technology, threatening producers with litigation. As great chess grandmasters, patent dealers know that the threat is stronger than the execution and after sending the first cease-and-desist letter they will let the threat of litigation create new advantages and a possibility of an out-of-court settlement. These specialized patent intermediaries have derived numerous business models from this idea (Detkin, 2007; Millien and Laurie, 2007) and made patent ecosystem evolve towards the market for patents.

Patent dealers have been around for some time. However, their impact on business has recently reached an exceptional scale and scope (Patent Freedom, 2012). Lawsuits initiated by patent dealers affected 2,150 different companies through 5,842 lawsuits and totalled about $29 billion in direct cost (including the costs of non-litigated assertions, but excluding indirect costs such as diversion of resources, delays in new products, and loss of market share) in 2011 (Bessen and Meurer, 2012).

Patent dealers affect companies of all sizes in many industries, not only in the high technology sector. Bessen and Meurer (2012) find that patent dealers in recent years increasingly seek to enforce their patents against small and medium-sized companies and that these companies account for 37% of the above mentioned direct costs (about $10.7 billion). On the other hand, Patent Freedom (2012) reports that patent dealers are increasingly targeting the users and sellers of technology, especially companies in retail and financial services, automation and transport industries. Finally, some of the largest patent holders (e.g. Intellectual Ventures) are buying hundreds of patents in the biotechnology industry. Bearing in mind the evolving nature of the mentioned industries, patent dealers could very soon become an issue for companies in these industries as well. Therefore, it is of value for companies across industries to understand how they impact patent value.

4. Changing Notion of Patent Value

From an economic viewpoint, value can be classified into two types: use-value and exchange value (Marx, 1867). The exchange value of an object is equal to the relative proportion with which a certain product can be exchanged for another product (commodity) of a different kind. Its closest approximation is product's market value. On the other hand, products have use-value – an intrinsic utility or

usefulness to whoever owns or purchases them. This value is beyond market value. It is realized only by use or consumption.

Patents are commercially transferable by definition and some authors (e.g.: McDonough, 2007) see patents as commodities. However, it is not completely true because their valuation is based on highly idiosyncratic details. Namely, commodities are of uniform quality and interchangeable, while patents are not. Understanding this, as well as the distinction between the two types of value, help us to shed more light on the nature of patents' value under the new strategy. Valuing patents under the being infringed strategy is based on identifying use-value other subjects realized by a using specific patent. If high use value is detected, like in case when a patent covers one component of a complex, profitable, and popular product, high exchange (monetary) value can be obtained (because of the threat of an injunction) negotiating royalties far in excess of the patent holder's true economic contribution.

Under these circumstances patent value is not determined anymore by the firm market value or the owner's willingness to pay renewal fees on the patent, but by the ability to create credible threat of litigation (McDonough, 2007; Detkin, 2007). The value of patents relates not to the actual infringement by other companies, but merely the prospect of infringement (MacDonald, 2004).

Bearing the above mentioned in mind, a patent's (monetary) value under the new strategy is principally driven by the fact that there is evidence about its infringement. When this condition is fulfilled, a variation of the frequently used definition by Harhoff et al. (2003) can be applied to size (monetize) the value. Namely, it is necessary to consider prices, costs, and sold quantities of patent-protected products by the infringers in order to come up with the monetary value of a patent.

Our recent research (Tekic & Kukolj, 2013), one of the first based on data from patent dealers, quantitatively proved that threat of litigation is the main mechanism that encourages the exchange in the patent market and supported the main premise of the threatening with litigation strategy: the higher the threat of litigation the higher the (monetary) value of the patent. At the same time, the data provided showed that a majority of patents are of very little or no value and there are only a few worthy ones. Although value assessment was tailored to capture the values of patent rights under the new strategic perspective, this result is completely in line with other assessments of the patent value – only few patents are valuable, and a majority of them are not.

5. Emerging Challenges

When patents are used in two fundamental strategic ways – as exclusion rights (Cohen et al., 2000), or in cross-licensing negotiations with competitors (Hall & Ziedonis, 2001) a lot of facts are known and empirically supported. The standard set of indicators which have been found to be positively correlated with the value of patents includes: forward and backward citations, renewal information and family size. Under the new strategy, all these results should be re-checked and verified to

link practice and theory and to offer technology managers an inside view of the realpolitik of patents in the world of patent brokers.

The strategy of threatening with litigation is not such a recent development. Practitioners have been assessing patent value under the new circumstances and the changed notion of patent value for at least ten years. However, there are no quantitative empirical studies of patent value and patent value indicators under new strategy; case studies are dominant. The reason – the patent market is not transparent and exact data about patent monetization are not available to researchers. Considering both the change in strategy employed to extract value from patent rights as well as the importance of patent evaluation in a booming market, there is an urgent need to provide and analyse large-scale empirical evidence on patent value under the "being infringed" strategy. In particular, its goal should be to provide initial answers to some of following questions:

- How to identify valuable patents based on their individual (bibliographic) characteristics?
- Which patent value indicators determine an individual patent's value under the "being infringed" strategy?
- How do they relate to previously used value indicators?
- How does the change in the strategic function of the patent influence used value indicators?
- Finally, are there any indicators that can help in sensible search of patent databases in order to identify patent infringement or does expensive human work still not have an alternative?

The first steps toward this goal have been made. Tekic and Kukolj (2013) used a dataset of 392 US patents invented by one consumer electronics firm between 1989 and 2006, and sold on a market by a patent dealer during 2010 and 2011, and gave a profile of patents which create high threat of litigation: they are older, they cover (small) part of mainstream technology which is currently used, they are broadly drafted and it is possible to provide ambiguous evidence about their infringement. The authors claim that combination of these factors results in a patent posing high threat of litigation because its broadness makes differentiation between the patented inventions harder; its long lifetime and closeness to mainstream technology make it possible to relate the patent to many existing products and therefore make infringement speculations easier. Finally, because the goal is to threaten competitors it is more important to provide ambiguous facts that patent is infringed than complete evidence.

The common denominator for the above mentioned questions is the need to create a more successful model for predicting patent value under new strategy. This is the most interesting question and topic for further research. The model developed by Tekic and Kukolj (2013), based on five significant predictors explains more than 40%

of the variance of patent value. Although this result is better than the results achieved in some other studies (e.g., Harhoff et al., 2003; Gambardella et al., 2008) it is based on expert assessment, which is time consuming, expensive and subjective in nature. Therefore, there is need for new research in this field based on bibliographic (patent statistics) data to understand the unexplained residual. The first step in this direction would be to use a dataset with patents originating from different companies, in different technological areas and with different function in order to overcome the problems influenced by industry (technology) or company specific issues.

On the other hand, challenge is to try to use the new generation of indicators, probably based on patent full text analysis, to detect patents which overlap or "free space" where new patents (inventions) are possible. For this purpose, existing patent should be used. This expectation is based on the fact that patens are a unique information resource from which information. Patents are extremely valuable as a source of technical information because approximately 80% of all scientific and technical information can be found only in patent documents (Ruotsalainen, 2008). In addition to technical data, a patent document provides legal as well as business and public policy relevant information.

All information found in a patent document is collected and verified according to internationally agreed procedures. They are presented in a systematic manner, as a combination of structured and unstructured data, and published in a unified format. Information is either published in a patent document or derived from analyzing patent filing statistics. Table 1 summarizes the format and information contents of patent documents. The availability of all this information inside patents offers a full spectrum of possibilities for using them in key areas of technology management, including patent value assessment.

However, it is not easy to extract useful information from patents nor to track evidence about all patents that may be relevant. The most important barriers to frequent and efficient usage of patent information are: extremely high number of patents produced every year, increasing number of pages per patent, difficult language used in patents and lack of ability to understand relations between patents. World Intellectual Property Indicators for 2012 (WIPO, 2012) show that despite economic recession, around 2.14 million applications were filed and almost a million patents were issued around the world in 2011. With more than 65 million patent applications since the patent system was established, have been published; 7.88 million patents in force in 2011 and doubled number of granted patents over the last 15 years (WIPO, 2012) it is possible to imagine the size of a problem and understand why it is important to develop tools which will easier patent portfolio analysis and enable in-depth understanding technology trends, market place and competitors.

Bearing this in mind, a research group, composed of academics from the University of Novi Sad and practitioners from RT-RK Computer Based Systems LLC, has started developing a tool for patent data analysis and management (Tekic et al., 2012a; Tekic et al., 2012b). The tool is named PSALM and it is designed to analyse both structured and unstructured patent data, and to visualize the results of

both categories. The tool is based on MySQL database and web robot, both supported by routines developed in Java and PHP. The PSALM collects data on patents from publicly available data bases (USPTO and EPO) and analyses their bibliographic parameters (like: title, inventor(s), applicant, date of application, priority date, country of publication, priority number, priority country, references cited by the patent, patents citing the patent, abstract, international patent classification) but also does patent mining.

Text analyses includes analyses of patent text (abstract, description, claims or other data) using Term Frequency - Inverse Document Frequency (TF-IDF) as a weighting scheme for keyword extraction and data dimensionality reduction using Multi-Dimensional Scaling (MDS) method. TF-IDF is a statistical method for determining the importance of words within a document, which belongs to a larger set of documents (Wu et al., 2008). The importance of words within a document is directly proportional to the number of repetitions of the word in the document, to thereby compensate for the number of repetitions of the word in other documents. The output of the MDS is a 2-dimensional matrix that can be easily used to visually present patents similarities (Drazic et al., 2013). Two-dimensional matrices are further analysed and clustered which is the task of the software module named "clustering". Clustering helps identify meaningful patterns, undetected or unexpected groups from a set of unlabelled objects.

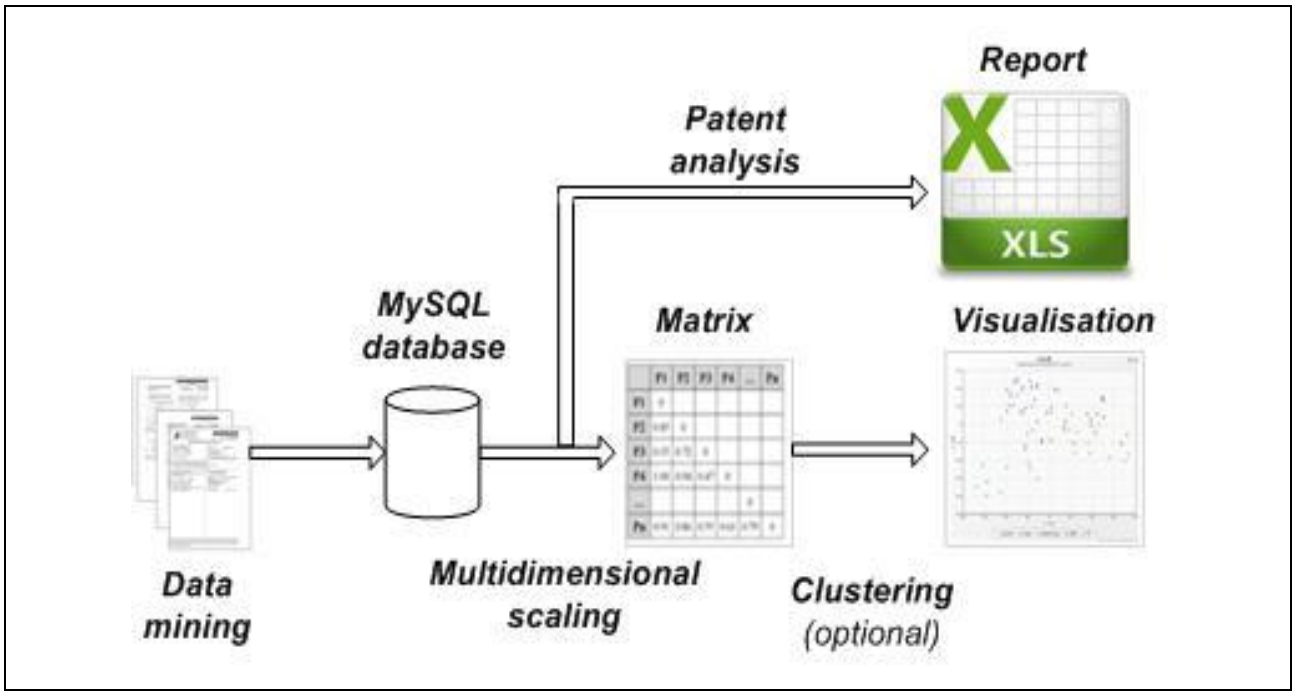

Fig. 2. Structure of the PSALM tool

Unsupervised clustering technique groups the given unlabelled collection of patent documents into meaningful clusters without any prior information of patent documents. It is shown that at least four clustering techniques (i.e. k-means, the neural-gas, fuzzy c-means and ronn) can be used in practical realizations of patent

data analysis tools, because of similar clustering performances and classification accuracy (Kukolj et al., 2012). Figure 2 presents main structure of PSALM tool.

The PSALM software consists of the following functional modules (Tekic et al., 2012a): web robot, text clustering, multidimensional scaling, visualization, analysis of the IPC codes, extraction and display of citing and cited patents, progress report module, module for recording data in the CSV file, and patent evaluation.

The PSALM enables visualizations of high (free text) as well as low-dimensional (bibliographic) data. The PSALM tool enables visualizations high-dimensional data based on patent mining by mapping the documents and clusters in proportion to each other, i.e. creating patent maps. Documents with similar subjects appear close to each other in maps. This makes it very easy to locate the most developed areas in the technology. It also shows outliers in the data, patents that do not have much to the subject but are in the data by accident. Low-dimensional (structured) data are presented as bar charts and pie charts of bibliographic data and could also help in better understanding of the technology areas, changes in the technology development, company competiveness etc.

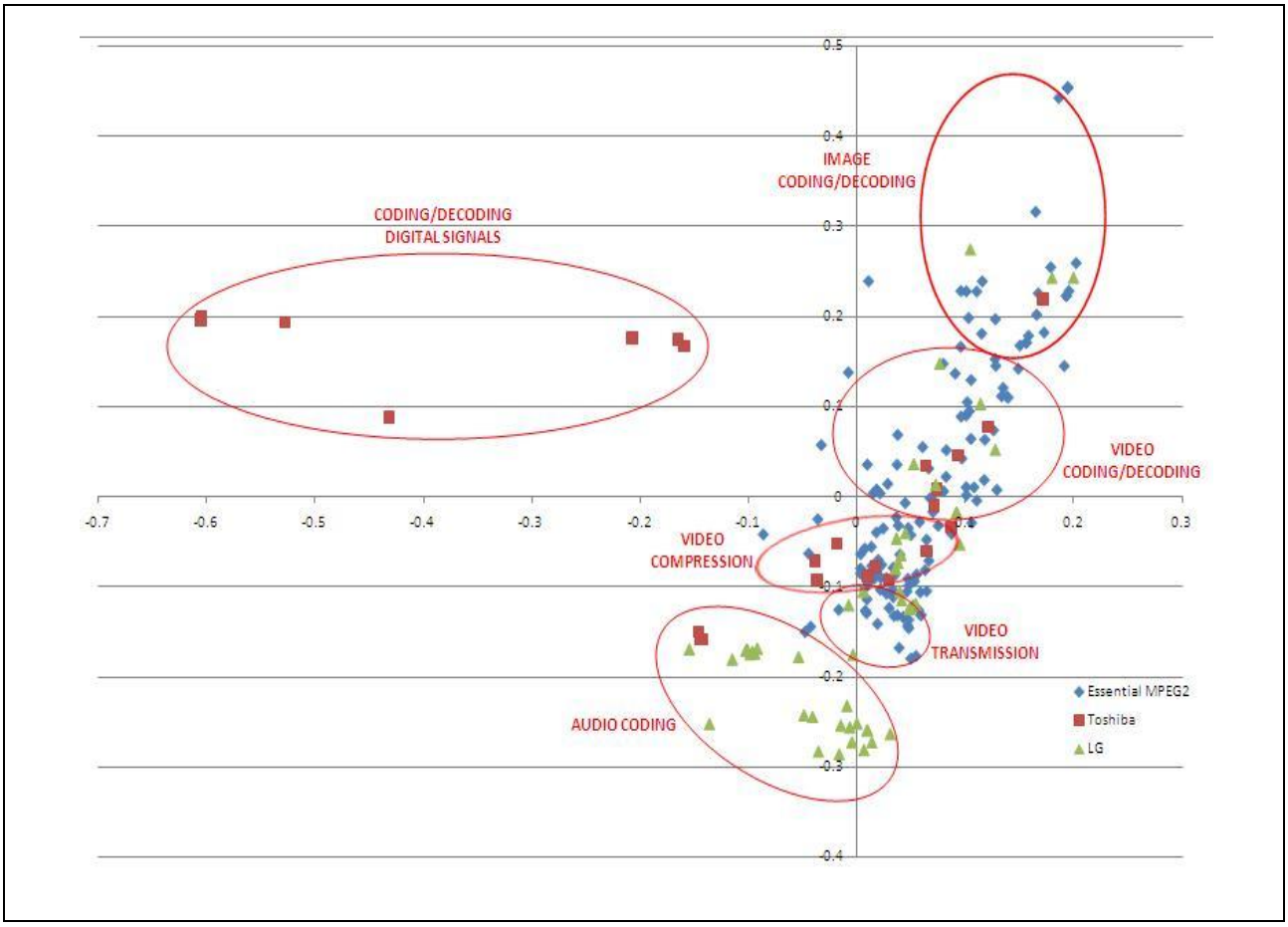

Fig. 3. Example of high-dimensional data visualisation

Patent data analyzes will still be hard, time and manpower consuming experts' work, but PSALM could help people involved in IP management to focus their time and efforts on the most interesting and most promising patents, but also to save time

in preliminary grouping them. For example, based on PSALM results (Figure 3 is an example) it is easier to target technology week areas or to select with higher probability patents interesting for infringement sues.

Knowing which patents are interesting and why they are interesting is important especially for those who make decisions about usage and management of patents. The results should offer grounds for developing powerful tools and improve results of patent valuation in new competitive environments, resulting in easier assessment and acquisition of interesting patents and portfolios.

6. Conclusion

Patents are a powerful business tool for companies. When they are used as exclusion rights or in cross-licensing negotiations with competitors, a lot of facts are known and empirically supported. However, recent emergence of a new strategy has changed some of basic postulates in understanding the use and value of patents. Therefore, there is a vital interest, both from a theoretical and applied standpoint, in revisiting and validating as many previously established facts as possible.

This chapter represents an effort in that direction. Starting from the literature review, the various ways patents can be valued are shown, and the changed role of patents in a knowledge-based economy explained. In its second part the chapter links current practice and existing theory improving the overall understanding of patent value in the booming patent market, identifying emerging trends and outlining the areas where further research is needed.

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