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www4.fsanet.com.br/revista
Rev. FSA, Teresina, v. 17, n. 7, art. 1, p. 3-24, jul. 2020
ISSN Impresso: 1806-6356 ISSN Eletrônico: 2317-2983
http://dx.doi.org/10.12819/2020.17.7.1

Are you Looking for Innovation? What About to use a Free Tool to Check 110 Million Patents?

Procurando por Inovação? Use uma Ferramenta Gratuita e Pesquise 110 Milhões de Patentes!!

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Editor-Chefe: Dr. Tonny Kerley de Alencar Rodrigues

Artigo recebido em 25/03/2020. Última versão recebida em 14/04/2020. Aprovado em 15/04/2020.

Avaliado pelo sistema Triple Review: a) Desk Review pelo Editor-Chefe; e b) Double Blind Review (avaliação cega por dois avaliadores da área).

Revisão: Gramatical, Normativa e de Formatação

ABSTRACT

In the midst of different academic researches that investigate the generation or not of innovation through patents, this paper aims to broaden this discussion. We introduce the use of a free patent mining tool exploiting Espacenet, a database that contains more than 110 million documents. Because the gap in the literature regarding training for the use of this type of tool, we present a practical example of how to use it. The objective is to motivate the debate and its dissemination among students and researchers, as well as among small entrepreneurs, to take advantage of the technological advances towards innovation and new business opportunities. The example can be used in the academic area and in business training courses, to identify other business opportunities that can be effectively implemented. The conclusion is that by teaching about intellectual property, complementing with practice in the use of the patent mining tool, it is possible to foster innovation. By defining topics of interest and looking for existing patents throughout the world, it is possible to find those that may be relevant and analyze their characteristics, identifying opportunities that can be developed, or even directly applied, once the legal requirements are met. By showing practical results in learning and using this tool, this paper hopes to shed light on the subject and challenge further work that can be discussed in the academic and professional fields.

Keywords: Innovation. Patents. Patents Mining. P2Net. Small Business Entrepreneurs. Entrepreneurship.

RESUMO

Em meio a diferentes trabalhos acadêmicos que estudam a geração ou não de inovação por meio de patentes, este artigo se propõe a alargar esta discussão. Apresenta-se a utilização de uma ferramenta gratuita de mineração de patentes que explora a Espacenet, base que contém mais de 110 milhões de documentos. Pelo fato de existir na literatura uma lacuna em relação à capacitação para o uso deste tipo de ferramenta, apresenta-se um exemplo prático de como é possível usá-la para que, assim, possa ser reproduzido discutido e difundido. Pretende-se motivar esta prática junto a estudantes e pesquisadores e também junto a pequenos empreendedores, estes com a finalidade de tomar proveito de avanços tecnológicos que sejam aplicados a novas oportunidades de negócio. Sua utilização pode ocorrer junto à área acadêmica e também nos cursos de capacitação nas áreas de negócios, para a identificação de outras oportunidades que possam ser implementadas na prática. A conclusão é que através do ensino a respeito da propriedade intelectual, complementado pela prática na utilização da ferramenta de mineração de patentes, é possível fomentar a inovação. Definindo temas de interesse e procurando patentes existentes nas bases mundiais, é possível encontrar aquelas que possam ser relevantes e analisar suas características, identificando oportunidades que possam ser aperfeiçoadas ou até mesmo aplicadas diretamente, desde que respeitados os requisitos legais. Mostrando resultados práticos no aprendizado e na sua utilização, este artigo espera trazer luz ao tema e motivar a realização de trabalhos futuros que possam ser compartilhados nos âmbitos acadêmico e profissional.

Palavras-chave: Inovação. Patentes. Mineração de Patentes. P2Net. Pequenos Empreendedores.

1 INTRODUCTION

Perhaps the most well known purpose of patents is the protection of intellectual property for legal purposes. Additionally, patents are also recognized for their teaching purpose, once their content is available, thus contributing to the joint development of technology and of innovation (Seymore, 2010). Aligned to these perspectives, among other purposes, patents also allow the identification and analysis of technology trends and business opportunities, represented by so-called patent vacuums (Abbas, Zhang, & Khan, 2014). With the growing number of patents filed annually worldwide, with nearly three million two hundred thousand patents in 2017 (WIPO Intellectual Property Statistics Data Center, 2019), and the existence of at least 33 patent databases (Singh, Chakraborty, & Vincent, 2016), many are the sources for consultation. Several tools have been developed to facilitate patent search and analysis (Yang, Akers, Klose, & Yang, 2008), but there is a gap in the teaching and training of academics, researchers, and practitioners to use these tools (Reymond & Quoniam, 2016). In order to contribute to the dissemination of this teaching and practice, this article provides a real example for identifying a new business opportunity, specifically in this case, how to bring investors and entrepreneurs closer. The steps required to access and use Espacenet, one of the biggest publicly available free patent databases (Clarke, 2018), are detailed and illustrated.

By protecting intellectual property, in particular, through patenting, countries generally preserve the inventive and innovative capacity of researchers and organizations, motivating them to innovate and develop new products or technologies that can be commercially exploited (Kieff, 2001). On the other hand, patenting makes public, inventions that would not be available if not protected (Mayerhoff, 2009). To manage this process, in many countries there are specialized patent-receiving, reviewing and granting offices (Long, 1991; Melvin, 2002). With recent advances of information technology, patent databases have become easily attainable remotely (Singh et al., 2016). Thus, we can infer that there are a large number of patents in the world, with their respective data open for free consultation, resulting in a huge database that may support business decisions (Kasravi & Risov, 2007).

It is worth noting that the patent analysis process is not simple, requiring great effort, technical knowledge and experience (Hall, Oppenheim, & Sheen, 1999). That is because although available, documents are in a static format, it means, in Portable Document Format (PDF). This characteristic makes it difficult to select patents by categories, by country or by legal status, among other fields for search. For this reason, automatic patent mining tools play

a key role in automatically processing and analyzing patent documents (Zhang, Li, & Li, 2015). Nowadays, to facilitate the access to patent documents and their contents, search engines called crawlers were developed and used, allowing access to non-referential patent databases. Some of them are paid services, like Intellixir (Masiakowski & Wang, 2013) and Matheo Patent (H. Dou & Bai, 2007; H. J.-M. Dou, 2004; H. Dou, Leveillé, Manullang, & Dou Jr, 2005). However, there are other crawlers like The Lens (Christie, Dent, & Liddicoat, 2016; Palangkaraya, 2010) and the Patent2Net (P2N), free and open (Ferraz, Quoniam, Reymond, & Maccari, 2016).

Another perspective in this paper, concerns the users of such tools. Potential users of patent mining tools vary from experts working on innovation development up to sporadic users, all of them with different knowledge and interests, covering from science development to business opportunities (Bonino, Ciaramella, & Corno, 2010). Despite this wide variety of users, patent-related documents are not considered from the perspective of education programs (Durand-Barthez, 2013; Reymond & Quoniam, 2018). On the other hand, small business owners who could use this information to leverage their business, understand that it is difficult to work with intellectual property rights, tools and processes, but are open for opportunities to be trained for this purpose (Gennari, 2013). An example comes from Brazil, where the literature presents at least one case where a patent was developed abroad and not protected in that country (Carvalho, Storopoli, & Quoniam, 2014). It regards to a higher education institution that, during the construction of one of its units, used P2N as a search tool in patent databases to find an option for using steel spacers to reinforce concrete. By using P2N, the institution found a viable solution, economically, operationally and sustainably, allowing the reuse of raw materials and avoiding additional construction costs.

That said, the following research question arises: How is it possible for a student or a small entrepreneur to use P2N to access a patent database to identify an innovation or a business opportunity? This article proposes to answer this question, demonstrating the steps required. For that, after this Introduction, we present a brief Literature Review about main topics in this paper: patents and their databases, the free tool P2N, and the importance of getting closer small entrepreneurs and investors. In the Methodology section, we present the method applied to gather the information used, highlighting the operationalization of P2N. In the sequence, Results point out the data obtained with the use of the tool, followed by a Discussion. Finally, in the Conclusions section, we stress the implications of the results brought by this work, its limitations and proposals for future research.

2 LITERATURE REVIEW

To establish a common basis and to facilitate the understanding on the main topics covered in this paper, we present a brief Literature Review for each one of them.

2.1 Patents and their databases

A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application ("Inside WIPO", 2016). Patents are not abstract concepts but instead, they may be perceived in everyday life as the result of development of innovations and new technologies in all markets or business fields around the world. For instance, they vary from electric lighting (patents held by Edison and Swan) and plastic (Baekeland), to ballpoint pens (by Biro) and microprocessors (by Intel) (Wild, 2003).

In the other hand, patent is a type of intangible asset or a resource that does not have a physical embodiment and whose industrial and economic exploitation gives a claim to future benefits (Kodama, 1992). Among the wide range of resources called intangible assets, a subset of them is called Intellectual Property assets (IPs) being covered by legal protection (IP rights) and it can take different types as shown in Figure 1 (Gilardoni, 2007).

Figure 1 – Types of Intellectual Property Assets

Patent	It protects an invention. To be patented an invention must be new, non-obvious, and industrially useful. The invention could be a product or a process that provides a new way of doing something, or offers a new technical solution to a problem.
Utility model	It protects functional design that meets the same general criteria of patent
Trademark	It is a sign or symbol to identify goods and services
Copyright	It protects originally literary and artistic works

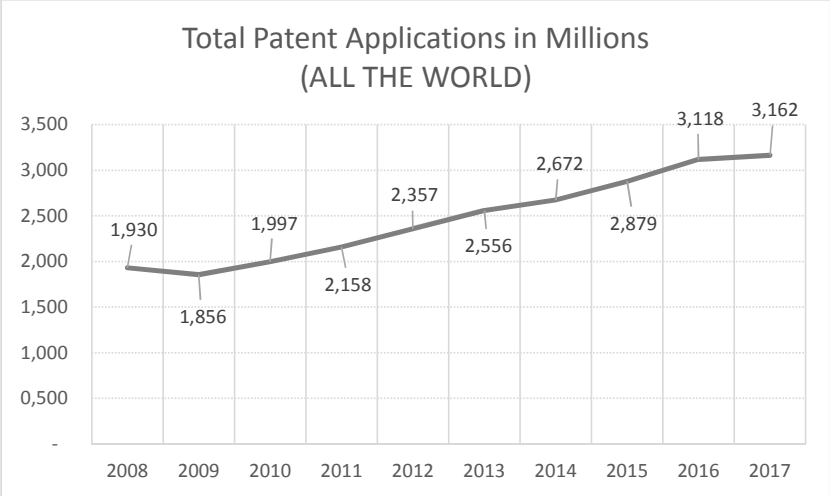
Source: Gilardoni (2007)

Despite different types of IPs, this paper focuses on patents mainly because the interest about them is growing among business community, practitioners and academic researchers. The person to whom a patent was granted may commercialize it giving permission to, or licensing other parties, to use the invention under certain and mutually agreed terms. The

owner may also sell the right to the invention to someone else, who will then become the new patent owner. Once a patent expires, usually after 20 years of its application, the protection ends and the invention enters the public domain; it means, anyone can commercially exploit the invention without infringing the patent (“Inside WIPO”, 2016).

Patents are granted by national patent offices or by regional offices that carry out the task for a number of countries. Nowadays, the following regional patent offices are in operation: African Intellectual Property Organization (OAPI), African Regional Intellectual Property Organization (ARIPO) Eurasian Patent Organization (EAPO), European Patent Office (EPO) and Patent Office of the Cooperation Council for the Arab States of the Gulf (GCC Patent Office) (“Inside WIPO”, 2016). Beyond those regional offices, there are other relevant national offices like the United States Patent and Trademark Office (USTPO), the Japanese Patent Office (JPO), the Chinese State Intellectual Property Office (SIPO) and the Korean Intellectual Property Office, among others. Working as an international forum for intellectual property (IP) services, policy, information and cooperation, the World Intellectual Property Office (WIPO) was created in 1967 by the United Nations and currently has 192 member states. Its mission is to lead the development of a balanced and effective international IP system that enables innovation and creativity for the benefit of all. (“Inside WIPO”, 2016). Based on statistical data from WIPO, Figure 2 shows the number of patents applied worldwide annually in the last ten years. The almost 64% growth reflects an increasing intellectual activity and, especially, the growing number of opportunities for the knowledge development and new ideas discussion and application.

Figure 2 – Total Patent Applications all around the World



Source: Statistical Data WIPO (2019)

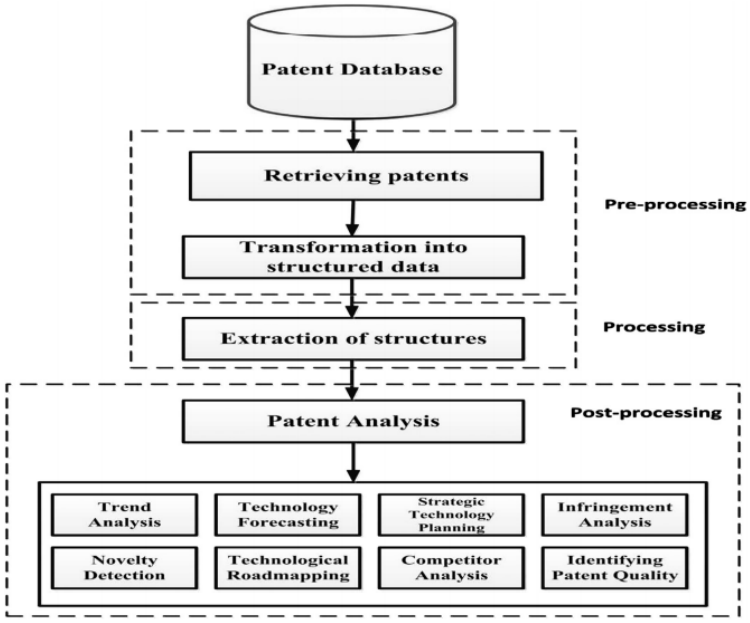
These patents are stored in a large number of patent databases, freely accessible through the Internet. Among those patent databases, we point out the Espacenet, made available by the European Patent Office (EPO), which allows the search and consultation of more than 110 million patent documents around the world. However, it is noteworthy that Espacenet, despite allowing the research and consultation of patents in their entirety, did not have an internal interface that would allow the joint analysis of them. However, in 2006, with the release of a technology application, the Application Programming Interface (API), the EPO made it easy to access and download large amounts of information stored in its database, opening doors for analysis in mass of patent documents (Kallas, 2006). With this purpose, we present Patent2Net (P2N) as a free tool for extracting and analyzing patents in the Espacenet.

2.2 Patent2Net (P2N)

The P2N is an open source software, developed in Python language, and released in 2014 by members of the University of Toulon. It arose from the need to provide users, professionals and patent researchers with a free search tool, and especially to facilitate the analysis of large amounts of data in patent documents stored in the Espacenet patents database (Reymond & Quoniam, 2016). According to these same authors, the tool name comes from the possible visualization of how patents relate to each other, forming networks. Generally speaking, P2N takes advantage on the fact that EPO released the API, which is a set of computation patterns and routines that allow search engines, the crawlers, to use many of their features without necessarily engaging in complex computing details, which for data mining is critical (Imielinski, Virmani, & Abdulghani, 1996). By collecting bibliographic data and the full text of patents made available by EPO in the Espacenet, P2N speeds up data mining, especially in terms of the large volume and variety of information (Ferraz et al., 2016).

To facilitate the overall understanding, the P2N structure follows the generic process for patent analysis proposed by Abbas et al. (2014), which can be seen in Figure 3. It shows in a schematic view, the three main steps: a) collect patents corresponding to certain criteria set forth in the application; b) filter and segment data according to specified fields (preprocessing); and c) deliver the content for analysis (processing).

Figure 3 – Generic patent analysis workflow



Source: Abbas *et al*. (2014)

Additional tools and software should support the analysis (post-processing). One of them is Gephi (https://gephi.org/), a specialized and free software that allows graphical visualization of data in the form of networks. Another software that supports post-processing analysis is Iramuteq (http://www.iramuteq.org/), a free software for statistical analysis of textual data as well as table data. One example of P2N use, associated with other software is available in the case study of the popularization of 3D printing (Reymond & Dematraz, 2014). Other illustrations, are the work of verifying the technological discontinuity in the areas that use coal ash (Braum, de Sá, Lopes, & Neri, 2015), and also, in the study of the innovation process from the extraction and use of patent information (Mazieri, Quoniam, & Santos, 2016).

2.3 The relationship between small business entrepreneurs and investors

To facilitate the understanding of the exercise proposed by this paper, it is worth explaining, albeit not deeply, the relationship between small business entrepreneurs and investors.

Initially, among different definitions existing in academia, we used one that shows entrepreneurs as the people who play the role of bringing a new organization into existence

(Peterson, 1981; Van de Ven, 1980), or by necessity or by opportunity (Borges, Filion, & Simard, 2009). We also stress that small business serve as the economic foundation for many nations because they stimulate innovation and, as they can rapidly adapt to change, are flexible to adopt new strategies that supports strategic innovation. As a result, strategic innovation is a key driver of sustainable competitive advantage for small businesses (Taneja, Pryor, & Hayek, 2016).

In any case, for a new venture to emerge, it is required to have a financial foundation, increasing its chances of survival not only in the launching period, but also when facing shocks from the economic environment (Brüderl, Preisendörfer, & Ziegler, 1992). Moreover, there is no question that access to funding sources is considered one of the biggest factors for small business development and success (Ou & Haynes, 2006).

The literature review by Abdulsaleh & Worthington (2013) shows different sources of financing for small businesses, such as the entrepreneur's own reserves, public funding, venture capitalists and “business angels”. The latter, are prosperous individuals with long business experience who prefer to invest directly in small companies with high growth potential, even if they have no previous relationship with the entrepreneur (Madill, Haines, & Riding, 2005). Regarding public funding, as small businesses are important for the countries’ economic development (Audretsch, 2002; Bebczuk, 2010; Chong, 2012), government institutions play an important role in developing investment laws, policies and programs that support them, mitigating investor risks (Busenitz, Gomez, & Spencer, 2000). However, there is evidence that small businesses face serious constraints to their growth, and that they have less access to sources of external financing, although financial organizations can help them through different options, such as loans or leasing (Beck & Demirguc-Kunt, 2006).

Finally, among so many funding options, Fairchild (2011) shows that the small entrepreneur foresees a closer relationship, and is more comfortable with “business angels,” showing greater empathy and trust with them than venture capitalists, even though the latter are more capable of bringing value to the business. Thus, the conclusion is that the ideal condition for a small entrepreneur who does not have his own financial resources, and therefore seeks external financing to start his business, would be to find a "business angel" to support him financially.

3 METHOD

This work is descriptive in nature because it aims to demonstrate how a process works (Barros & Lehfeld, 2007), in this case, the search for opportunities provided by patent databases, using the Patent2Net (P2N) tool, being considered as exploratory, because it is the search for a poorly researched phenomenon (Creswell, 2013).

It is also worth noting that patent research can be considered as a metric study of information, as it deals with the search for factual information gathered in free public access databases (Rostaing, 1996). From this perspective, however, it goes beyond the concept of bibliometrics applied to the study of scientific activity (Price, 1969), of its use as a tool for monitoring a company's competitors, or even for monitoring the scientific environment (Rostaing, 1996). Because it is a consultation to technological information databases and serving to identify and measure the state of the art of a given technology, the patent search exercise addresses some of the approaches studied in the vast literature on technology, a discipline that measures and assesses technological change (Coccia, 2005).

As this is an experiment to demonstrate mainly the search process, we choose one of the cases already handled by P2N and made available on an Internet provider, the vlab4u. Among the different cases available, we picked up the "entrepreneur". The initial screen containing the results provided by P2N can be seen in Figure 4, and in the lower part of this screen are highlighted the cases for which P2N already has a database formed. The available cases can be better observed in Figure 5, where the red arrow indicates the term “entrepreneur”, chosen for this work.

Figure 4 – Home screen of *crawler* P2N – http://patent2netv2.vlab4u.info

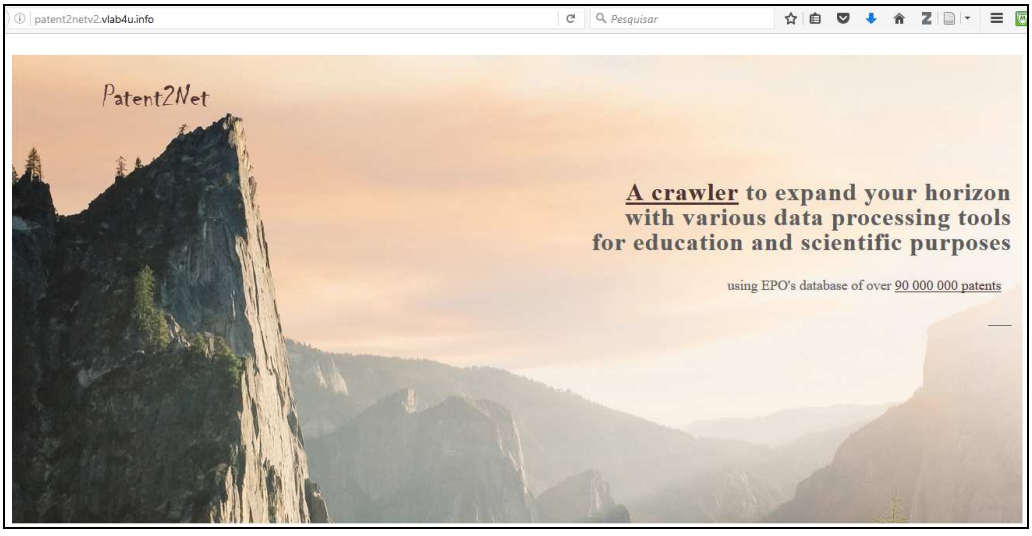
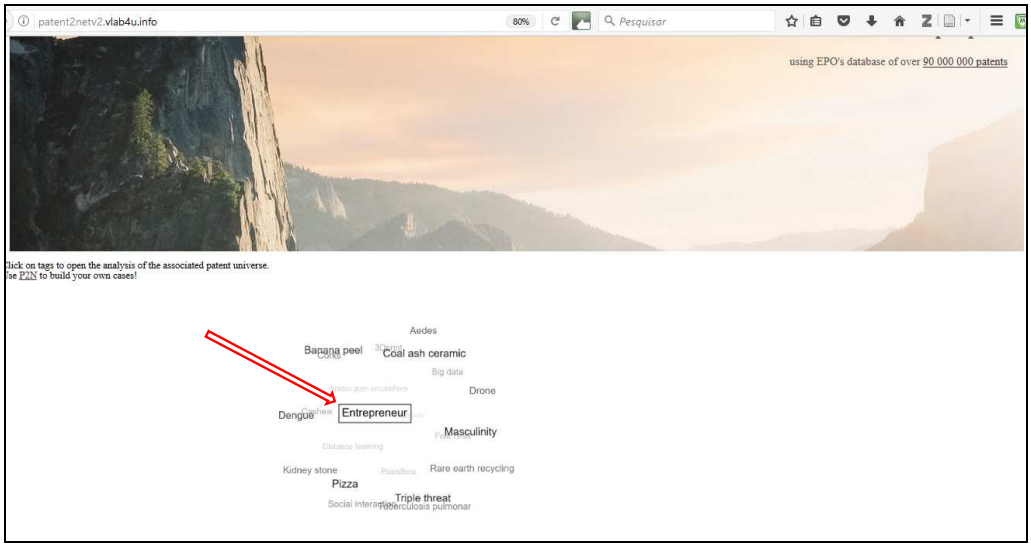


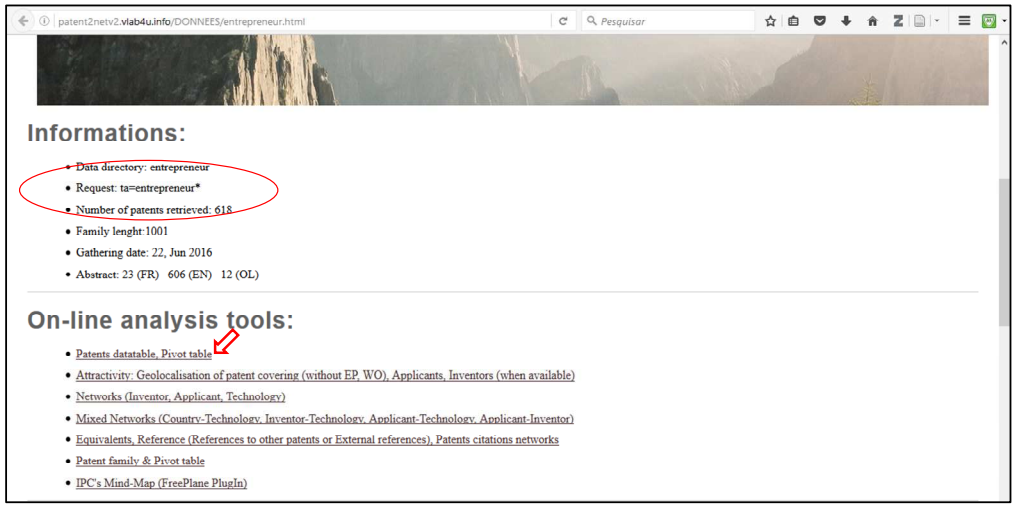
Figure 5 – Indication of the term chosen for this work (*Entrepreneur*)



Source: **http://patent2netv2.vlab4u.info/**

By choosing the search term "entrepreneur" directly from the vlab4u site, the home screen returned 618 patents, as shown in Figure 6. In this same figure, the arrow indicates the first post-processing analysis feature made available by P2N, which refers to the Patents datatable interface, Pivot table.

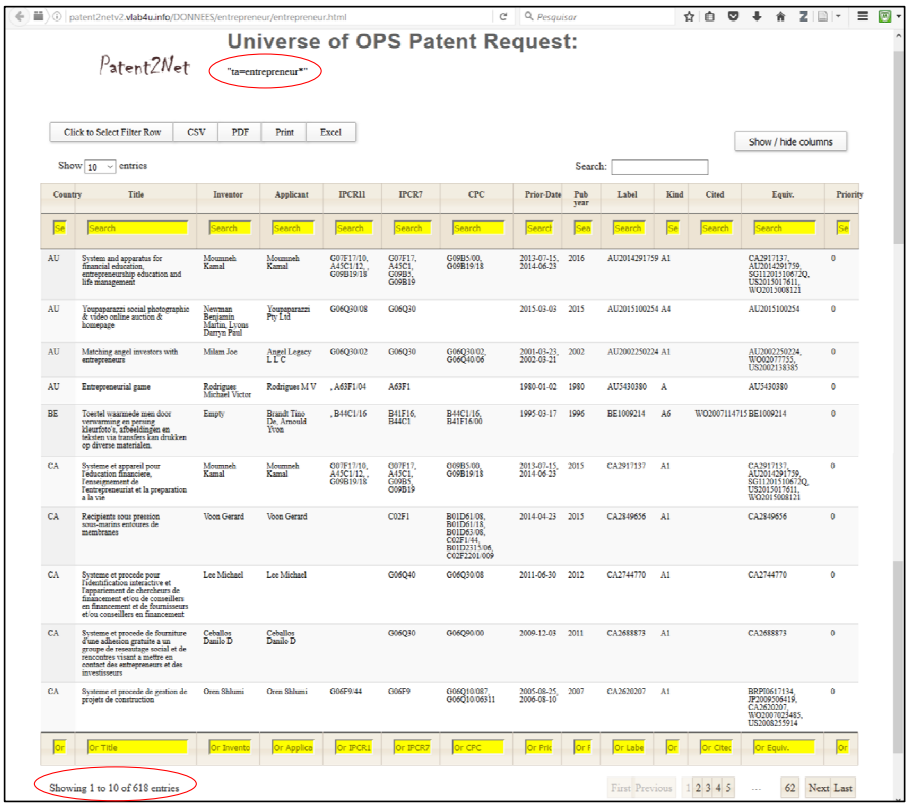
Figure 6 – Screen showing partial result after choosing the term *entrepreneur*



Source: http://patent2netv2.vlab4u.info/DATA/entrepreneur.html

By accessing this link (Patents datatable, Pivot table), we may access the screen where we can get a summary regarding the patents that contained, at the time of the extraction, the word “entrepreneur” in their title or in their abstract (Figure 7).

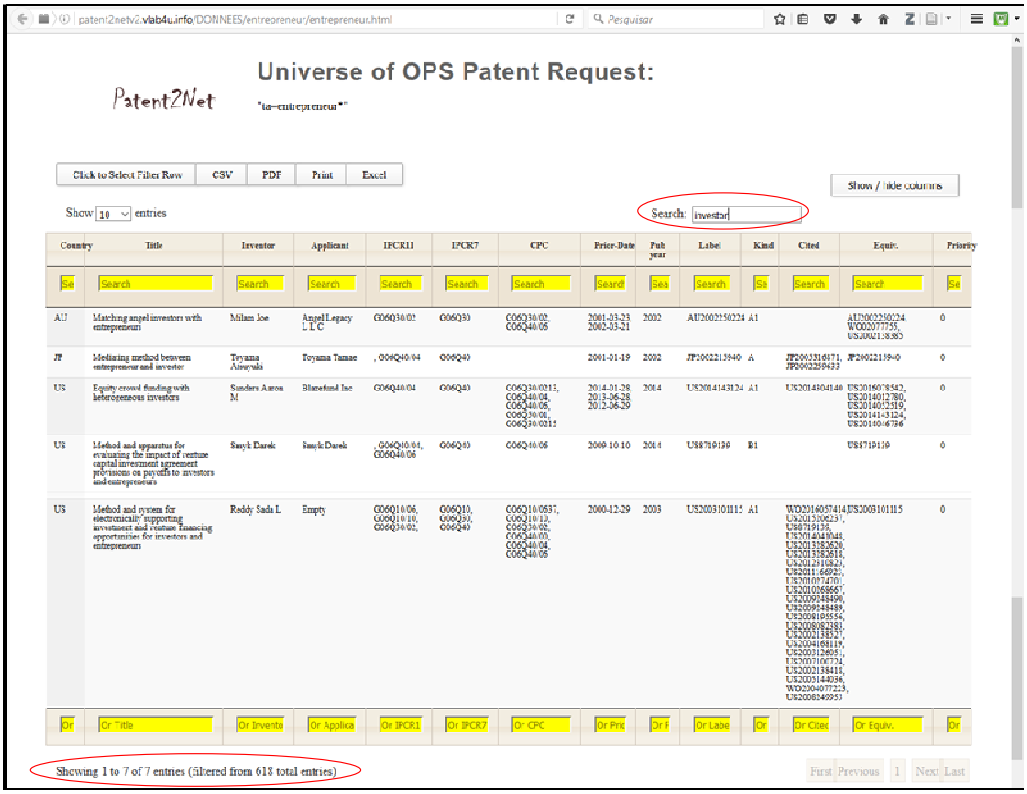
Figure 7 – Screen with results after accessing the link *Patents datatable, Pivot table*



Source: http://patent2netv2.vlab4u.info/DATA/entrepreneur.html

With the 618 results returned, it was necessary to apply a second filter, which should facilitate the recovery of patents that allow getting entrepreneurs closer to “business angels”, accomplishing the goal proposed in this exercise and explained in the literature review. For this, we chose the word “investor”. Figure 8 shows the field where this keyword was thrown, and also shows that only seven results were selected based on the combination “entrepreneur” and “investor”.

Figure 8 – Screen with results after applying the filter *investor*



Source: http://patent2netv2.vlab4u.info/DATA/entrepreneur.html

The simple steps described in this methodology led to the identification of patents with the terms "entrepreneur" and "investor", in their title or in their abstract, bringing the results that will be explained in the next section of this paper.

We point out that P2N can be freely downloaded and used by anyone interested in repeating this procedure. It is possible to search for other topics, and use other functions that are accessible through the creation of an account in Espacenet, enabling the crawler use in the database. By searching bibliographic data and full patent texts, P2N allows the creation and visualization of various networks between the recovered patents, facilitating the research work. There are other interfaces, not contemplated in the present work, which allow identification of the inventors' geolocation, of companies and of patent filings, as well as interfaces that allow the crossing of various indicators related to patent documents. They allow the graphical visualization of a series of information that can contribute to the selection of patents of interest, as well as patent critical analysis on a particular subject around the world. The use of P2N in combination with other softwares allows the user to maximize

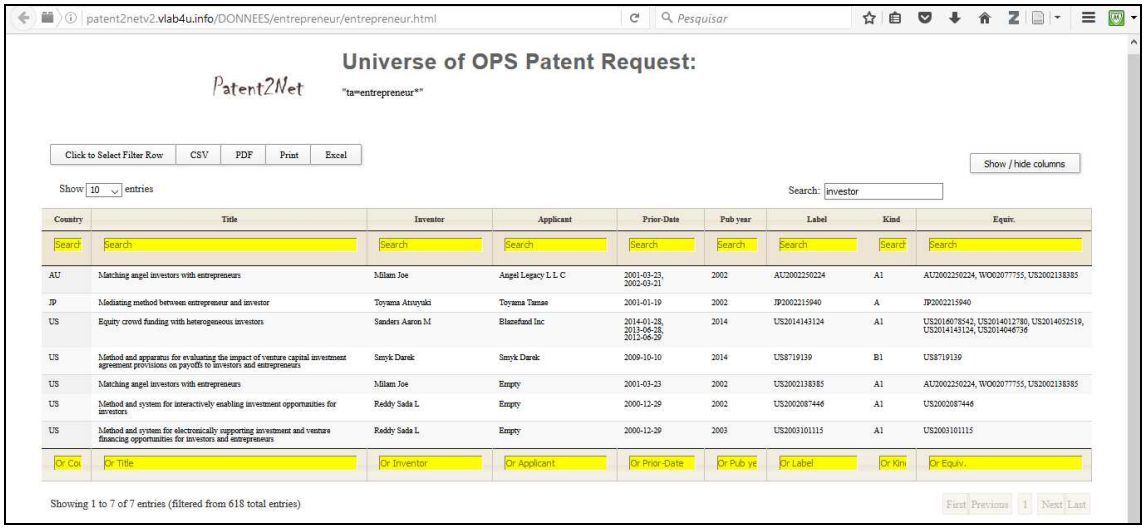
research possibilities, contributing to the dissemination of the patent utilization culture (Ferraz et al., 2016).

4 RESULTS

With the P2N was possible to identify, on a database of more than 110 million patents provided by the EPO, seven documents that met the objective of this paper. Thus, it was facilitated the identification of some means that can make it easier for small entrepreneurs to have access to investors called “business angels”, opening the opportunity to research their details, to verify their characteristics and applicability, and the preliminary information of each one of them, what we can observe in Figure 9. P2N functionalities make it easy to identify the country where the patent was filed, its title, the inventor's name, the date it was filed and the year it was published, it means, when it became public and therefore open for consultation. In addition to this information, it is also possible to identify the patent number, as well as its legal status and if there are other equivalent patents.

Initially, it is possible to look at the countries from which the patents originate, the inventor’s names and the companies that filed these patents, as well as the year in which they were filed. However, the most important information is the patent number, identified by the title label. Using this number, anyone can enter the Espacenet database and seek the details of patents, their history with the registration bodies, the countries in which it is protected, and also if it is still valid.

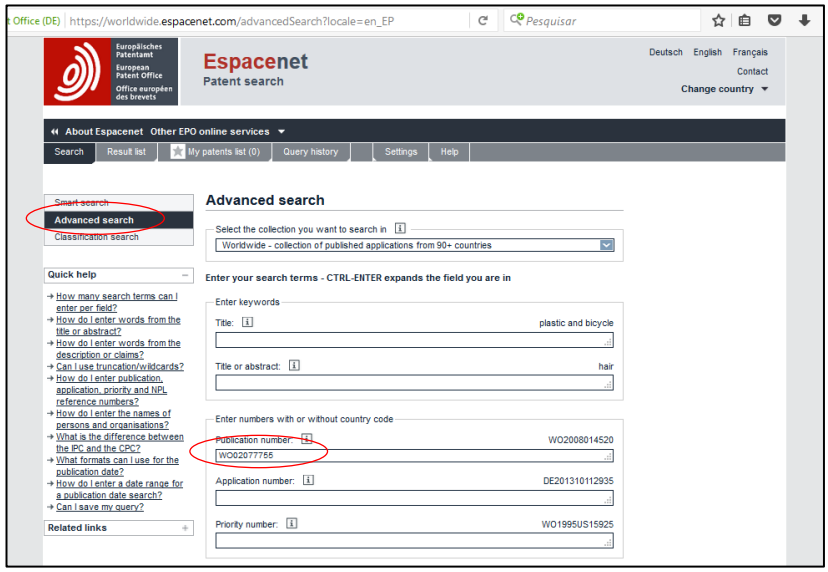
Figure 9 – **Screen showing seven patents after applying the method for search**



Source: http://patent2netv2.vlab4u.info/DATA/entrepreneur.html

Of the seven patents found, five originated in the United States, one in Australia and one in Japan. When checking the names of the depositors, we observe that the same inventor, “Joe Milan”, filed his patent with both Australia as it is in the United States, and it is exactly the one that is titled ‘Matching angel investors with entrepreneurs’. Looking more closely at patent numbers, AU2002250224 for the one filed in Australia, and US2002138385 for the other filed in the United States, it appears that both have an equivalent patent, WO02077755, which indicates that it is a worldwide protected patent. For more details regarding this patent, it is possible to enter its number in the Espacenet database using Advanced search, a procedure showed in Figure 10:

Figure 10 – **Advanced search at *Espacenet***



https://worldwide.espacenet.com/advancedSearch?locale=en_EP

This search in the database, among other possible results, allows access to all documents related to the respective patent. In Figure 11, we can check the official document with the initial data and part of the countries covered by the patent.

Figure 11 – Front-page upper part of a patent filed at WIPO

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 October 2002 (03.10.2002)

PCT

(10) International Publication Number
WO 02/077755 A3

(51) International Patent Classification[7]: G06F 17/60

(21) International Application Number: PCT/US02/06652

(22) International Filing Date: 21 March 2002 (21.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/814,949 23 March 2001 (23.03.2001) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 09/814,949 (CON)
Filed on 23 March 2001 (23.03.2001)

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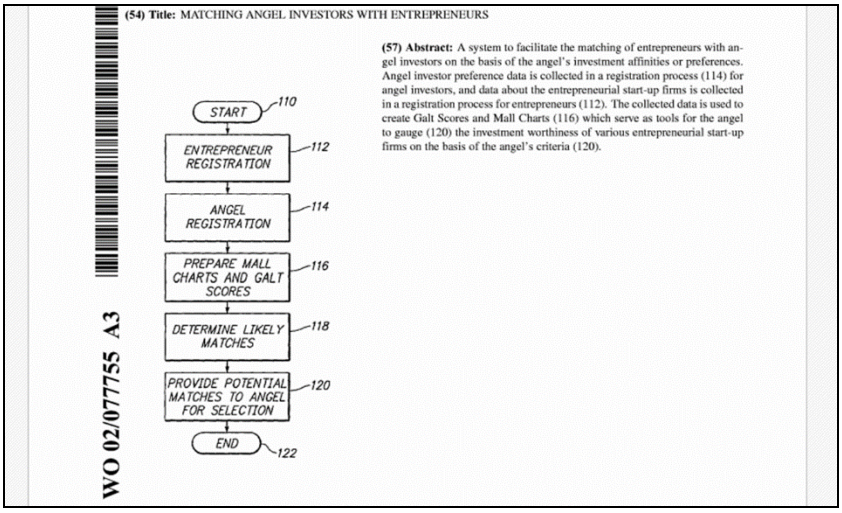
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,

[Continued on next page]

(54) Title: MATCHING ANGEL INVESTORS WITH ENTREPRENEURS

Figure 12 shows the second part of the same front-page, where it is possible to observe the existence of an abstract and of a scheme representing the invention.

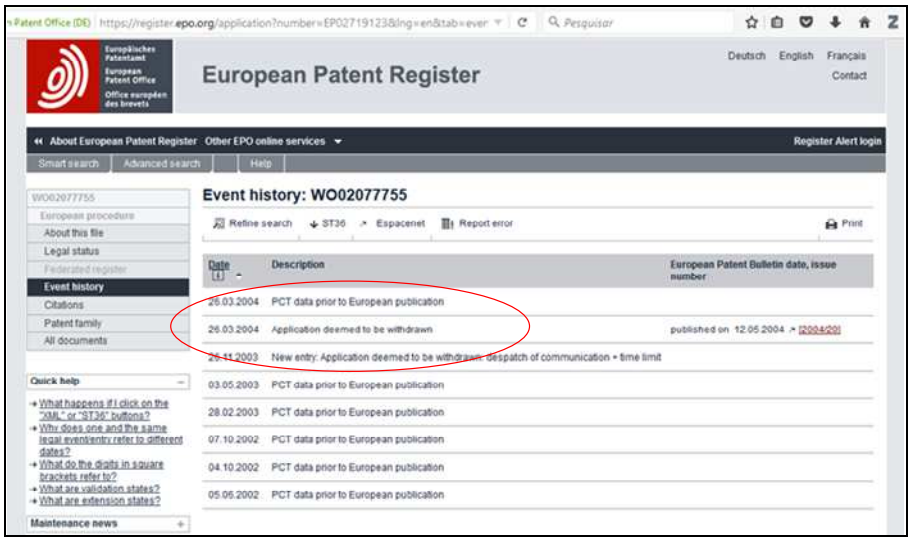
Figure 12 – Front-page lower part of a patent filed at WIPO



In addition to this basic information, there are a number of detailed documents that make it possible to verify that this invention is a computerized system where entrepreneur data is released after registration. Similarly, it means, upon registration, the data and preferences of "business angel" are also posted to the system and based on their investment preferences or affinities, this information is cross-referenced with the startup data. Through logical combinations, the system crosses this information and presents to the "business angels", a result with potential opportunities for them to choose where to make their investment.

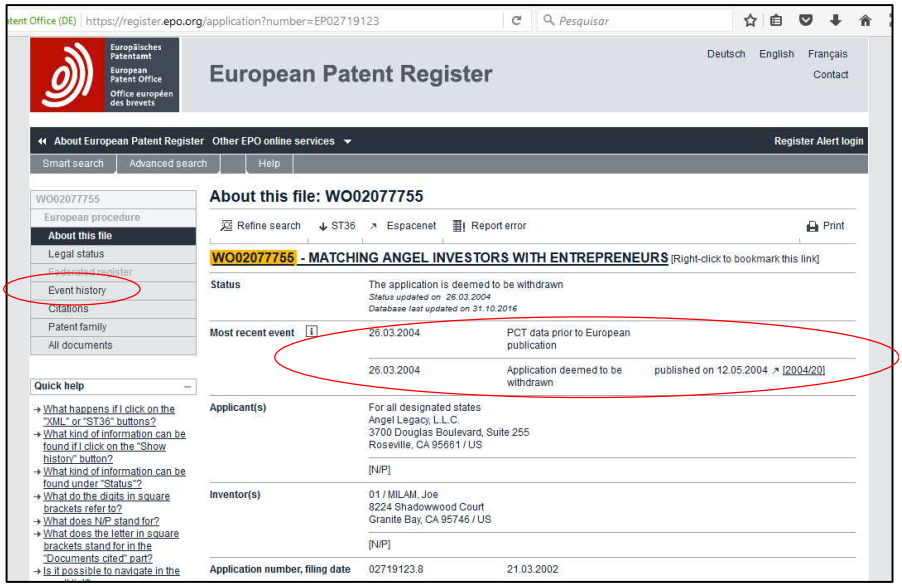
The Espacenet database also allows us to search a brief history regarding the researched patent, which in this case seems to have been withdrawn in 2004. Figure 13 shows this information highlighted in red:

Figure 13 – Screen showing historic events involving the patent WO02077755.



This information can be completed and confirmed in another Espacenet feature, which allows we to consult the patent's legal status. Figure 14 confirms that in May 2014 the worldwide patent covering this invention was withdrawn.

Figure 14 – Screen showing the legal status of patent WO02077755



Thus, the result of this exercise allows us to understand that a computerized system to facilitate the contact between “business angel” and entrepreneurs is apparently available to be studied, improved or even implemented in any country, without legal restrictions.

5 CONCLUSIONS

This paper demonstrated that using patent mining tools, in particular the free use Patent2Net (P2N), it is possible to identify opportunities for new business in a simple and available way to anyone. Studying this tool, showing its ease of use and applicability, we sought to answer the research question: How is it possible for a student or a small entrepreneur to use P2N to access a patent database to identify an innovation or a business opportunity?

After a literature review on patents and their databases and the P2N tool, as well as identifying the preference of small entrepreneurs to rely on the investment of the so-called “business angels”, we used a methodology for searching for patents that could allow such approach. Among 110 million patents, the tool used the key word “entrepreneur” to initially filter 618 patents and, with the application of just one more filter, using the key word “investor” the result was the identification of seven patents that could be used for this purpose. Entering the data of these seven patents into Espacenet, it was possible to study one of them in depth, identifying that, although initially having a worldwide protection when it was submitted in 2002, the patent was withdrawn in 2004, thus leaving open the possibility to be studied, developed, and even deployed without legal restrictions.

One of the most significant contributions of this paper is to demonstrate that it is possible to use P2N, a free tool, or any other data-mining tool to look for technical opportunities that are available in patent databases around the world. At the same time, it also contributes to challenging educational institutions to establish patent mining education programs, for both research and development purposes. Another contribution is to foster innovation facilitating the prospection of the state of the art on technology contained in such databases, thus opening new business opportunities.

One of the limitations of this paper was that it relied only on a single database, Espacenet, although this is currently the only database that provides its API for crawler free use. Similarly, the choice of a practical case of technology application, or even engineering, could present other conclusions of a more technical nature, and here is the proposal for a new work to be done with this perspective. Moreover, the spread of patent mining practice in

educational institutions can create new opportunities for study and debate not only within academia, but also within organizations that bring together small entrepreneurs or small businesses. In doing so, we would have more qualified professionals to use specific tools, resulting in concrete actions to find innovation opportunities and develop new business opportunities.

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Como Referenciar este Artigo, conforme ABNT:

DI PETTA, A; FERRAZ, R. R. N. Are you Looking for Innovation? What About to use a Free Tool to Check 110 Million Patents? **Rev. FSA**, Teresina, v.17, n. 7, art. 1, p. 3-24, jul. 2020.

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2) análise e interpretação dos dados.	X	
3) elaboração do rascunho ou na revisão crítica do conteúdo.	X	X
4) participação na aprovação da versão final do manuscrito.	X	X