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Espacenet, Patentscope and Depatisnet: A comparison approach

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ABSTRACT

Espacenet, Patentscope and Depatisnet are known as the main multinational patent databases offered by patent authorities which are available to the public free of charge. As all three systems have substantially improved in the last few years, a comparison of their functionalities and capabilities, as discussed herein, is useful for those unfamiliar with the recent developments. In order to present the comparison, the following aspects were analysed: data coverage, search functionality, result list, bibliographic view of records and patent data export options. Case studies are presented where the search systems were compared in the field of nanotechnology. The analysis concludes that Espacenet has the best features for searching, Patentscope the best for analysis and Depatisnet the best for complex search tasks.

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1. Introduction

Online patent search systems have evolved considerably over the last two decades; from cryptic 'text only' command-line databases accessible via modem dial-up on a costly pay per record basis, to today's sophisticated web-based search systems accessible via the Internet which are often free of charge. These free databases made patent information popular to a wider audience and have substantially improved over the last few years, now offering patent search functionalities and additional features which were previously only available from commercial providers.

When it comes to understanding more about the advantages and disadvantages of patent databases, few studies are available which compare these databases. Many studies have become outdated or do not include a description of sources that are free of charge. Smith [1] compared online host patent databases available in the late eighties, Lambert [2] compared online host databases and the upcoming Internet patent databases in the late nineties and Schwander [3] evaluated patent searching resources comparing professional and free online databases in 2000. The more recent studies are from Stock [4] and González & Zuleta [5], both of which compared some commercial providers with various free providers. None of the studies focused on free of charge sources or gave a direct comparison of their features and functionalities.

Regarding free patent and open access sources, Espacenet, from the European Patent Office (EPO), Patentscope from the World Intellectual Property Organization (WIPO) and Depatisnet from the German Patent and Trademark Office (DPMA) are all patent search systems offered by major patent authorities which do not only cover their own patent collection, but also collections from a multitude of countries—making them one of the most popular free of charge patent searching tools available.

Although there are many similarities between these three products, it is of interest to know more about each database in order to choose the right one for the purpose of the patent search. In this study we analysed these patent search systems, taking into account all of their new features and functionalities which were added in recent years and directly compared them according to four key aspects outlined in Section 2.

The study was completed in the framework of a study about nanotechnology patents in Spain (see Acknowledgements section), in order to find out more about the strengths and weaknesses of these patent search systems and to evaluate their potential use for this study.

2. Material and methods

Espacenet, Patentscope and Depatisnet are all accessible via links on the homepage of their corresponding patent authorities (www.epo.org; www.wipo.int and www.dpma.de). Furthermore they can be accessed via their direct webpages, Espacenet being the only one with its own domain (Espacenet.com) whereas

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Patentscope and Depatisnet are accessible on subdomains of the patent authority's homepages (<http://patentscope.wipo.int> and <https://depatisnet.dpma.de/DepatisNet>).

Regarding the analysis methods used to compare all three patent searching systems, a direct comparison was made during the period of July–September 2014 by taking into account their functionalities and features.

The following aspects were analysed:

- Data coverage
- Search functionality
- Result list of records
- Bibliographic view
- Patent data export

This direct comparison makes it easier to see the differences of each product and helps a user to understand the special features of each analysed patent search system.

3. Results

3.1. Data coverage comparison

Before starting a patent search it is crucial to know the country coverage of the database, since it is of no use if a database has a good search feature but does not offer coverage for the country the searcher is interested in. Therefore, first of all, the patent data coverage of Espacenet, Patentscope and Depatisnet was analysed. The data for this analysis was extracted from dedicated webpages provided by the corresponding patent authorities containing statistical information about the databases [6–8].

As seen in Fig. 1 both Espacenet Worldwide Database and Depatisnet currently covers nearly 90 million patent documents, which makes them the two free of charge patent databases with the largest coverage. Patentscope has a substantially lower coverage with 37 million documents, but according to WIPO [9] the record counting in the Patentscope statistics is one record per invention and not per publication (e.g. patent application and patent grant) so we estimate that the comparable figures of Patentscope are 30% higher. Patentscope therefore covers approximately 50 million documents, still significantly less than Espacenet and Depatisnet.

When it comes to the coverage per countries we analysed a sample including some major patenting countries and authorities (CN, JP, US, DE, EP, WO) and the patent collection of Spain (Fig. 2). Once again Espacenet and Depatisnet showed similar coverage levels in the main patent collections (WO, EP, US and JP). The German collection in Patentscope was not available at the time of

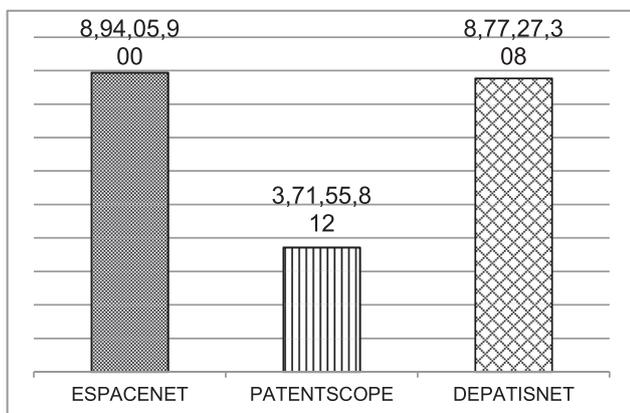


Fig. 1. Number of available patent records in total.

the study, but has been added by the end of 2014 [10]. It is surprising that Espacenet shows slightly more German patent document records than in Depatisnet, since one would assume that the database from the German Patent Office has the most complete German collection. This finding had no evident explanation and could be explored in a more in-depth study about coverage and counting methods but would exceed the scope of this article.

Regarding the number of countries or the number of patent office collections per database a similar result is given: both Espacenet and Depatisnet have more than one hundred patent collections (country + WO and EP collections) – figures which more than double Patentscope's total (Fig. 3). This also explains the much higher number of patent documents in their databases.

Full text search can be an important aspect for a patent searcher, since sometimes the features being searched may not at all appear in the title and abstract. In this case the comparison is in favour of Patentscope due to an ongoing effort of WIPO to digitalize country patent collections via optical character recognition (OCR). Although this technology is not always accurate and may lead to text recognition errors, thanks to this initiative, Patentscope can provide 19 patent collections with full text searching capability, whereas Espacenet offers full text search only for EP and WO documents and Depatisnet for DE patents (Fig. 4).

3.2. Search functionalities

After the patent coverage, the second most important aspect in comparing the search functionalities of each database is the search interface, as it determines whether complex patent searches can be conducted. To have a better understanding of this aspect, we first took a closer look at the search interfaces available in each database and what characteristics they offered to the patent searcher.

In patent databases one can distinguish between number search, form search and command line search interfaces. As we can see in Table 1, all three databases offer these types of interfaces to the users, although the search interface names can differ quite substantially and in some cases could confuse the user e.g. the form search in Espacenet is called "Advanced Search" whereas the same type of search interface in Depatisnet is called "Beginner search".

3.2.1. Command line searching & search fields

Espacenet's Smart Search interface is a "Google style" single entry multi-search field. The function is named "smart", because the search engine tries to automatically recognize the type of search field corresponding to each search term. For example if "Bayer 1999" was entered, the system will identify the German company Bayer as an applicant or inventor and 1999 as a publishing year.

In addition, Espacenet's Smart Search allows command line searches using operators and field identifiers [11], but many users are not aware of this functionality. As shown in the example in Fig. 5 operators and field identifiers were used to retrieve nanotechnology-related patents with Bayer as an applicant, the keywords "nano" and "tube" in the abstract and 2010 as publication year (see Fig. 6).

When it comes to the number of available search fields in each of the available search interfaces, Patentscope provides the most powerful search interface with 51 search fields available [12], followed by 36 in the command line search of Depatisnet (Expert and Ikofax search) [13], and 16 in Espacenet's Smart Search [14].

3.2.2. Number search

The approach taken to enable number searching in patent databases is another important aspect to consider, since unfortunately the syntax of patent publication numbers is not always the same

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