



Patent searches opinion: How to minimize the risk when reviewing patent applications



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ABSTRACT

This paper is addressed towards minimizing the risk inherent in making patent search opinions and to increase reliability especially in clearance product analysis. Indeed, in recent years, it has become more and more complex to provide professional patent analysis due to the growth of the total number of patent documents, of which two-thirds are patent applications. Always more often, the pool of documents resulting from a patent search contains documents that have not ended their procedure, contain amended parts and/or are still waiting for future events that might radically change the fortune of the patent, misleading any earlier opinion about it. Thus, patent specialist cannot simply search for all relevant patents and interpret the first version offered by patent repositories. In order to avoid grossest errors, it is crucial to identify the most representative document from a patent family, gather information from all other patents of the same family, work always on the last updated files, fix the patent in the timeline procedure in order to measure future changes that can still happen. This paper analyses some of most frequent problems and errors faced in patent searches and offers a vade-mecum about most critical aspects to be taken into account, useful links and good practices, resulting from procedural and/or legal reasons.

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1. Introduction

The reasons for which lead a patent search can be very numerous; for simplicity they can be summarized in three main categories:

- The first collects all kinds of search dealing with patent intelligence that means transforming patent data into technical, business and legal knowledge as the monitoring and survey of a specific technology or product, the survey of competitors patents, technology transfer, identification of emerging technological and technological trends;
- In the second group there are searches related to the state of the art for evaluating the patentability of a new innovative idea, writing a new patent, avoiding potential infringements with other patents, preparing legal action in order to protect our business/patents, determining the residual life of a competitor protection;

- The last group deals with due diligence for investment or transfers/acquisitions.

Each of these activities needs a specific patent search having its own peculiarity, with specific strategies, techniques and search tools. In this paper, we focused on activities of the second group that require to analyse patent applications and to state an opinion before the patent grant. Unfortunately, such a kind of searches includes most of the aforementioned activities in the second group. It is not trivial to navigate among these researches as they lack precise, unanimously shared definitions.

For example, both WIPO in its guidelines edited by *Trippe* [1] and *Alberts* [2] consider clearance, freedom-to-operate, infringement and right-to-use, as synonyms, whereas *Hunt* [3] discriminate between infringement and clearance, while not distinguish right-to-use and freedom-to-operate from clearance. We also found many IP specialists that introduce specific definitions for clearance and for freedom to operate exchanging their meanings [4,5].

One of the most important search addressed by this work is the clearance search. To avoid doubts, with clearance search we intend a search where “the objective is to learn what exist in the public domain and, therefore, is free to use”, whereas as infringement

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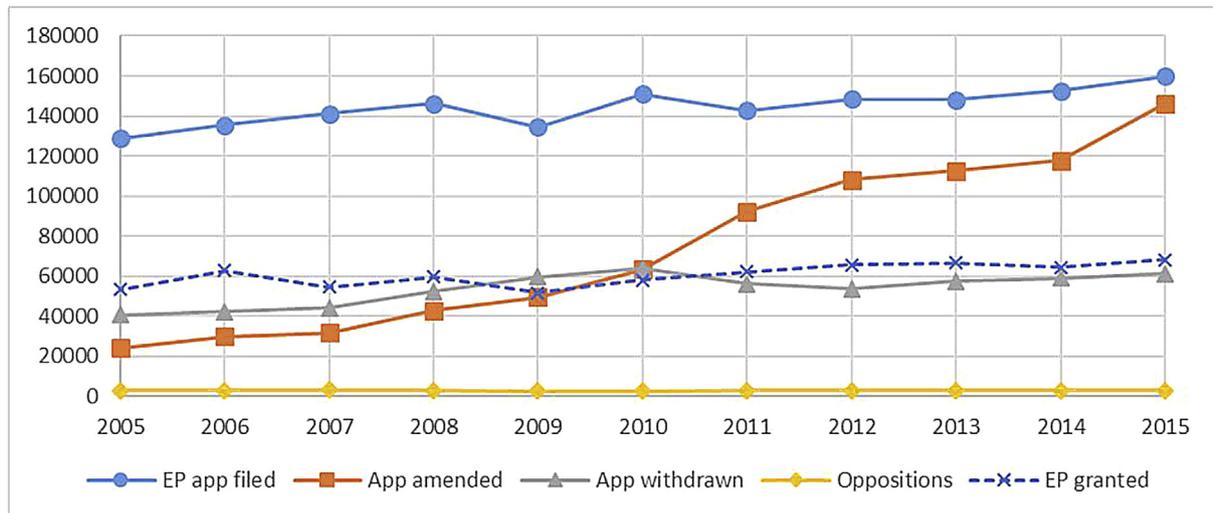


Fig. 1. Patent documents behaviours per year at EPO- elaborated from PASTSTAT. It shows the absolute number of: applications for patent filed with the EPO, both directly and from PCT; EP applications amended; EP applications withdrawn; EP patents granted; EP granted patents opposed.

search it means a search “directed to the claims of all enforce patent and patent applications” [3]. This kind of search puts particular attention on the claims of a patent in order to define which is the matter bound by it and what is free from restriction.

Although little interest has been given to the topic by the literature, its importance is increased due to the great growth of patent applications in the last years, as shown by the main Patent Offices reports: EPO (www.epo.org/about-us/annual-reports-statistics/annual-report.html), WIPO (www.wipo.int/ipstats/en), USPTO (www.uspto.gov/web/offices/ac/ido/oeip/taf/reports.htm).

The complexity of patent searches is not exclusively related to the number of patent applications, but there are other three main factors that worsen the effort, and the risk taken on, in writing a patent opinion:

- The content of the document, that is not definitive and may change during the procedure;
- The legal status of the applications and granted patent, that may be not updated;
- The patent family, that may mislead the patent specialist in the selection of the most interesting member.

To estimate how much these factors affects the patent search results, we considered some related indexes that measure, year by year, their influence in new patent literature published.

The first one is the ratio between the number of filed applications and the sum of filed applications and granted patents. According to European Patent Application summary of the EPO annual report, the application cover around 70% of new documents annually published. Moreover, the applications filed often and often undergo to amendments during the procedure. As shown in Fig. 1, the amendments on applications have achieved the great increment of 500%, going from 24.387 cases in 2005 to 146.320 in 2015 and from the 20% of the all application filed to more than 90%.

Actually, the patent text may also change after that the patent application has been granted, but fortunately, the impact of the number of oppositions on the number of granted patents is very low and almost constant.

The second index refers to the legal status of documents. From PATSTAT we collect the data about the number of EP applications withdrawn and compared it with the number of EP applications

filed. This index shows that in the last years the applications that change their legal status are almost the 40% of the filed European ones.

The third index relates to the patent families. Their analysis is useful in order to understand which patent are more representative than others for the search opinion. The family parameters are useful also to learn latent characteristics of patents of a third party [6], estimate whether a granted patent will be opposed [7], esteem a patent value [6–8], also using particular methods [9,10]. Fig. 2 shows the behaviour of the number of members of a family along time.

Although the mean size of patent families¹ is decreasing over time since the first years of 2000s due to the growth of single patents, there is an increase of the number of families that has almost reached 300.000 per year. Especially there is a great increasing in families having between 2 and 6 members, while the larger ones are decreasing. The larger family set includes more than 100 members, 6 of which with more than 300 members, up to 472 (US7309763B2).

This paper collects what is now available to lead a patent analysis based on patent applications. We are sure that a consistent and well-structured representation of known intrinsic problems can help specialist and high experienced people to better conduct their patent analysis.

Chapter 2 lists the main software available to lead a patent search, citing their most important characteristics related to the aim of the paper. Chapter 3, 4 and 5 offer a survey about the text, legal status and family issues respectively, which are the most common sources of risk, and where the patent specialist can collect information about it in order to limit their negative influence.

2. Search tools

Current patent searching tools allow you to obtain some useful information in order to reduce the risk associated with the above three factors. In particular, you can access to the procedural documents of many countries, to the legal status of patent documents in most jurisdictions in the world and get the list of the members of a

¹ We considered the DOCDB patent family definition.

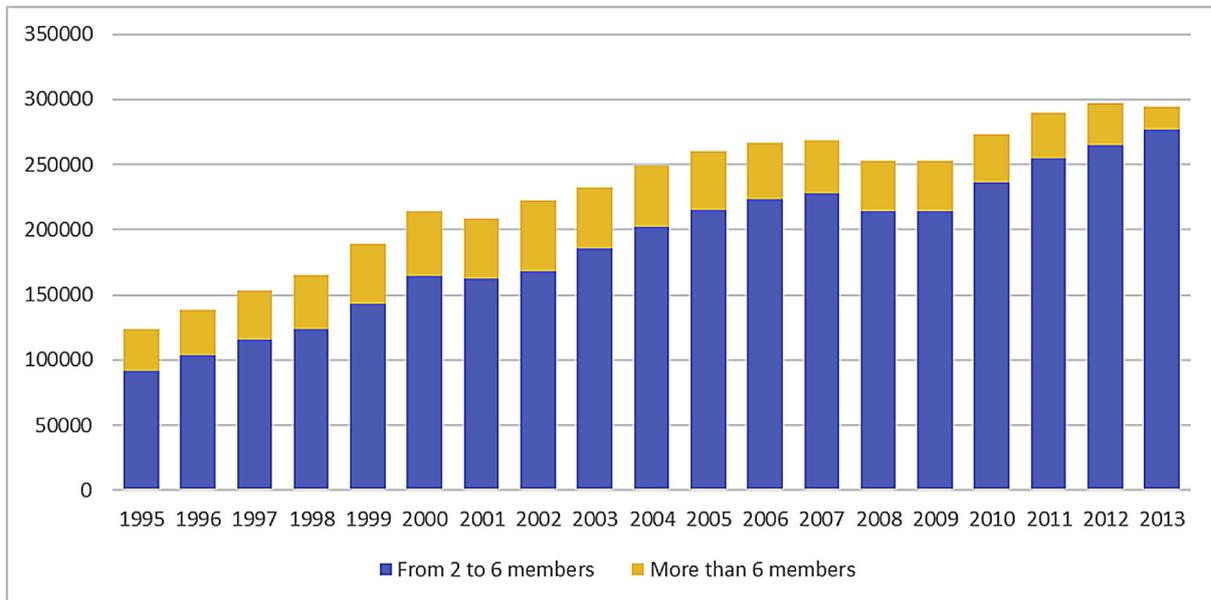


Fig. 2. Count of families per earliest filing year grouped by family size. Families are defined according to the definition of DOCDB. Classes of family size are: families composed by a number going from 2 to 6 members; families with a number of members larger than 6.

patent family.

2.1. Espacenet and EP register

Espacenet offers to the user the link to EP Register page in order to retrieve the most updated text of an application. It collects all documents related to the patent procedure, even the correspondence between examiner and the representative. Furthermore, it embeds the Global Dossier that collects similar documents from the main Patent Offices (JPO, KIPO, SIPO, USPTO, CIPO, WIPO IP other than EPO). To reach the legal status of patent documents, Espacenet shows the link to the INPADOC database that stores the information about the legal status of the whole INPADOC family. Regarding the family, Espacenet allows the user to navigate in the “equivalent” and INPADOC families.

Unfortunately, the documents collected in the Global Dossier are not complete as the EP Register, furthermore they may suffer delays in updating. The user cannot completely rely on the information about the payment of fees and must verify it in every national patent office, where available. EP filings and related documents can be not in English but also in other official language as French and German. Some documents are not in txt format but are scanned from the original as image, thus preventing any automatic translation. Summary map of the legal status of the whole family is missing. Finally, the page preview does not allow to see if the text is the most updated or not, so you have to check inside the Register.

2.2. Patentscope

Patentscope is the reference tool from WIPO for retrieving the information about the PCT procedures. It is the most updated about them but lacks in all others functions.

2.3. PATSTAT

PATSTAT is the tool focused on the statistical analysis of the EPO. It offers the larger collection of patent raw data. However, it does not include the full text of patent document, has an SQL interface that requires the specific knowledge and does not offers the text of

procedural documents.

Due to the lacks of the tools, the patent specialist must employ a rigorous working process in order to avoid, or limit, the risk taken on due to the uncertainty caused by the presence of applications in the search results.

2.4. Private patent search DB providers

Some commercial software offers a summary map of the legal status of the family, but it is always less updated than official patent office, like Espacenet. They provide different legal repository (e.g. Orbit uses PatLegal that collects documents from less countries than INPADOC). Furthermore, the method for grouping patent into a family can follow different rules [11,12], as e.g. FamPat database. Also the list of events is generally less complete than the one of the Register.

Patent tools do not eliminate the problem of making mistakes in patent opinions. In order to support this activity and minimizing the risks of errors, the authors collects the main topics to be kept under control in a map, see Fig. 3, that graphically shows critical points where a mistake can occur. Each point is then described more in detail in the following chapters.

3. Ultimate version of a patent text

One of the major problems faced by patent examiners is the fact that during the progress of the procedure, the patent application has many occasions to change its contents. This causes uncertainty in its interpretation. Below, we report some events that might happen and some indications about the sources of information in order to know whether they occur and eventually, which modifications they cause.

3.1. Amendments in PCT procedure

The PCT procedure allows the applicant to amend its PCT application at specific steps [13], which are:

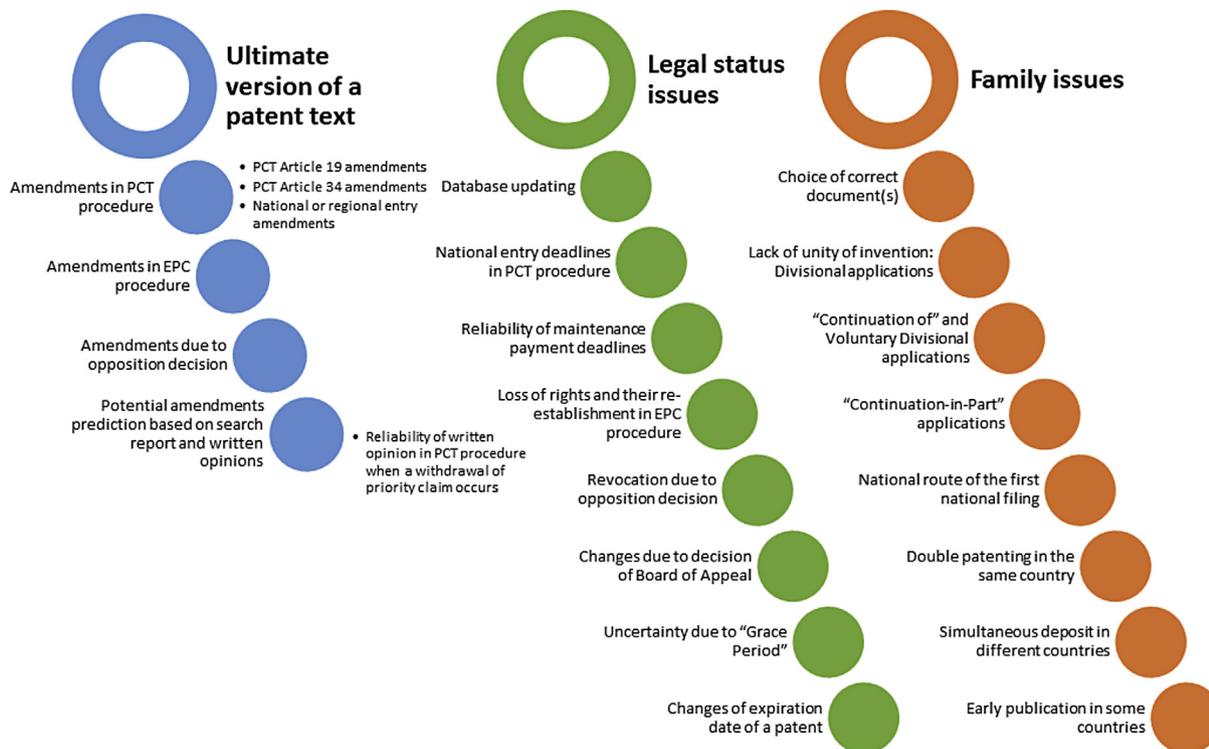


Fig. 3. Critical points for a search opinion based on applications. The three main topic and related lists of critical points that may generate mistakes in writing a search opinion.

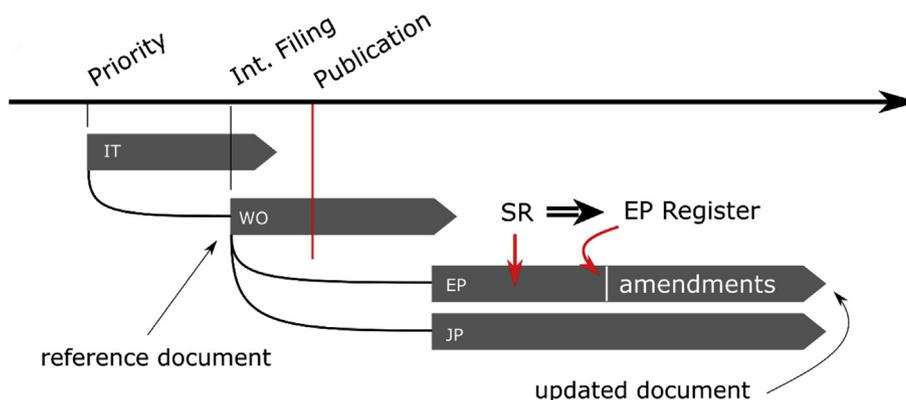


Fig. 4. Choice of the correct document in a patent family. Depiction of an example of a process of selection of the most interesting document into a patent family.

3.1.1. PCT Article 19 amendments

First amendments may occur within 16 months from priority date² or, if later, 2 months after the transmittal of the International Search Report (ISR) by the International Searching Authority (ISA) to the applicant [14]. The available publications of the PCT application can have different kind codes, which gives partial information about Article 19 amendments progress. The patent analyst can perform simple checks to better understand whether the applicant filed amendments, still has time in order to file them or did not file

them:

- **A1 code: application with ISR**
- **in amended form** (e.g. WO2014059450), in which the amended sheets show "AMENDED SHEET (ARTICLE 19)" stamp. In case the amendment is only a cancellation of entire sheets, the "Letter accompanying Amended claims" record, in PATENTSCOPE, proves the exploitation of Article 19;
- **with subsequent A4 publication** (e.g. WO2016038606), that is the official publication of the amendments;
- **having remaining time to be amended.** This is a risky situation because the patent search is done within the time available to the applicant to exploit the Article 19 amendments, hence no information about them might be found. The risk lasts for some time after the two-month-long window,

² This is a theoretical time limit only, indeed "Amendments received by the International Bureau after the time limit are still accepted if they have been received before the technical preparations for international publication have been completed" [14].

because there is technical delay in publication on PATENTSCOPE of amendments. Some indications are available in § 3.4.

- **not amended** (e.g. WO2014172463). The analyst can state the application was not amended if he/she does not find available documentation about amendments in PATENTSCOPE during the search made beyond the reasonable time-limit of 15 weeks from the date of the ISR transmittal, which is reported in the “Date of mailing of the international search report” field in ISR. In such a case, the reference application is the A1 publication.
- A2 and A3 codes: application without ISR (A2) and later ISR publication (A3)
- **with subsequent A4 publication** (e.g. WO2016050173), that is the official publication of the amendments;
- **having remaining time to amend.** Like above, this is a risky situation for the same reasons. Notice that A3 publication (the ISR) will ever published, but the delay can be very long (e.g. for WO2015090938), so also the time before ISR transmission can be considered a risky period. Some indications are available in § 3.4.
- **not amended** (e.g. WO2015196121). Again, there is a reasonable time window of 15 weeks from the ISR transmittal beyond which the analyst can state the Article 19 was not exploited. In such a case, the reference application is the A2 publication.

3.1.2. PCT Article 34 amendments

As intrinsically suggested by WIPO [14], the applicant who wants to hide as long as possible its definitive application does not exploit the Article 19 amendments, but files for Demand for Preliminary Examination.³ This gives him/her the chance to amend the application under Article 34, hiding the changes which are confidential till to the 30th month from priority date. The demand automatically indicates that the results of examination will be used in all PCT countries (*PCT Applicant’s Guide 10.001*). The only available information about Article 34 procedure is the filing date of the demand, available, if filing was done, from the “International Report on Patentability (IPRP) Chapter II of the PCT” field of International Application Status Report (IASR), on PATENTSCOPE. The applicant can file the demand up to 22 months from priority date or, if later, 3 months from the ISR transmittal date. Three countries, Luxemburg, Uganda and Tanzania, have shorter time limit for filing, i.e. 19 months from priority date, because they not yet adapted their national law to the PCT Article 22 [15]. If the applicant files the Demand within this shorter time limit, the procedure in these countries pursues like other ones, otherwise they start the national phase, upon fee payment, within the 21st month. The potential scenarios are:

- demand filed
 - **within 19 months from priority date**, then the international application will undergo potential amendments and be examined for all PCT countries;
 - **between 19 and 22 months from priority date** (or, if later, 3 months from ISR transmission), then the international application will be examined and will undergo potential amendments for all PCT countries, less Luxemburg, Uganda and Tanzania;
 - demand not yet filed and search done

- **after 22 months from the priority date** (or if later, 3 months from ISR transmission), then the international application can enter in national phase in its published form (A1, A2 or A4);
- **between 19 and 22 months from priority date** (or if later, 3 months from ISR transmission), then the applicant still have chance to amend under Article 34 for all PCT countries less Luxemburg, Uganda and Tanzania;
- **before 19 months from priority date**, then the analyst has no data to reduce the risk about amendments under Art. 34.

Amendments under *PCT Article 34* can be filed together with the demand or after, up to the international preliminary examination report is established. Anyway the patent analyst cannot get them before the end of international phase, that occurs at the 30th month from priority date. At that time the International Bureau (IB) publishes all documents about the international application. The IPRP⁴ is the final document of the international phase.

3.1.3. National or regional entry amendments

The national or regional phases are independent each other, indeed each jurisdiction complies with its own national/regional patent law. The applicant can start them before the end of the international phase. Furthermore, the entries may be done in different times. For the countries with prior entry, the subsequent amendments on the international application not need to be take into account [16]. Contrary for other countries in which the entry occurs after the amendments filing, the reference application is the amended one. Nevertheless, at the entry in national phase each national/regional application can be further amended, worsening the risk. Unless the US Continuation-In-Part procedure, which allows the applicant to add matter to the prior disclosure (*US MPEP 201.08*), the amendments cannot add new matter to the first application.

3.2. Amendments in EPC procedure

Also EPC procedure allows the applicant to amend its application in description, claims or drawings, but only after the receiving of the Search Report (*EPC Rule 137*). Also in this case the amendments cannot add new matter to the first disclosure. If a European application coming from a PCT procedure, the amendments can be done in response to the International Search Report after the entry in regional phase (e.g. EP2793232). Information about the amendments can be retrieve from the EP register.

3.3. Amendments due to opposition decision

The opposition proceeding is an objection made by third party about the grant of a patent. Decision in opposition cases may amend the text of the granted patent. The opposition mechanism is defined by each jurisdiction complying with its own patent law. Its procedures differ, inter alia, in filing time limits. The EPO lets the opponent to file within nine months [17] from the publication of the grant, like the USPTO which calls this kind of procedure Post-Grant Review [18]. The limit for the JPO is shorter, 6 months [19]. In China the opposition procedure was abrogated in 2001, thus the only current procedure allowing third party to oppose a grant is the invalidity procedure [20], which does not have time limit (likewise other countries). The EPO publishes the documents about opposition to EP patents in the EP Register, USPTO collects them in the Patent Review Processing System (PRPS) (ptabtrials.uspto.gov) and

³ The Demand filing is always possible, regardless the exploitation of Article 19.

⁴ Chapter II if the demand was filed, Chapter I otherwise.

JPO publishes the decisions in J-PlatPat (www.j-platpat.inpit.go.jp/web/all/top/BTmTopEnglishPage).

3.4. Potential amendments prediction based on search report and written opinions

When the applicant still has time to amend its application, the search reports and written opinions may help the patent specialist to evaluate what is the likelihood with which the text can change during the procedural steps left. Search reports from some authorities are more interesting than other ones, e.g. the US because USPTO examiners usually cite US document only for X and Y categories [21,22]. Very useful are the search report of Asian patent office, indeed they suggest precisely some documents otherwise not considered by patent specialist not skilled in Asian languages. Especially the JPO is considered the most eminent Asian office thanks to its efforts in accelerate the examination and stabilize the granted patents (*JPO Annual Report 2014*). Likewise, some offices are considered stricter than others, e.g. DPMA (Germany) and again JPO [23,24]. Granted patents in those offices are stronger than in many other countries and their search reports contains information hard to reach. The search reports are available on Espacenet in the EP register/Global Dossier or in national patent offices.

3.4.1. Reliability of written opinion in PCT procedure when a withdrawal of priority claim occurs

Time limits of PCT procedure are function of the priority date. Generally, this is the date of the first national filing, but the applicant might decide to withdraw the priority during the procedure (e.g. WO2015053620 and WO2013188948). All time limits based on the priority date, not yet expired, will be postponed on the basis of the new priority, up to the international filing (*PCT Rule 90bis*). In such a case, ISR will remain valid, indeed it collects the “relevant prior art” literature published before the international filing date [25]. Instead, the written opinion of the ISA provides a detailed explanation of the relevance of the references published before the priority date [25], and how they affect the patentability of the invention. The difference about the two dates could be very important, even more than 1 year (e.g. WO2013188948)! The patent specialist can reach the request of withdrawal on PATENTSCOPE some days after the receiving by IB.

4. Legal status issues

As mentioned above, a patent search into international databases will get a list of patent families. Not necessarily a family has uniform legal status among its members. The patent specialist can refer to dedicated databases (e.g. INPADOC and PATLegal) in order to check the legal status of each member of the family.

4.1. Database updates delays

The update of these databases is not in real time, so, for those patent searches for which it is important to know the legal status of the individual document, the patent analyst must check for information updates in the website of the national offices, when available, in order to avoid mistakes.

4.2. National entry deadlines in PCT procedure

The PCT procedure automatically designates all PCT countries (*PCT Rule 4.9(a)*) at the international application and allows the applicant to delay the choice of countries in which entry in national or regional phase. The time limit to do it changes from country to country going from 19 months from the priority date, for

Luxemburg, Uganda and Tanzania, up to 48 months for Singapore [15]. Germany, Japan and Republic of Korea can be excluded from designation (*PCT Rule 4.9(b)*), and the request will be accessible at the date of first publication in “(RO/101) Request form” record in PATENTSCOPE. Notice that the withdrawal of designation of Germany is binding only for PCT procedure, indeed if the patent application enters in the EP regional phase, the Germany will still a designated state from EPC procedure.

4.3. Reliability of maintenance payment deadlines

Patenting procedures have some “flexible” deadlines that might be sources of risk for the patent specialist. As an example, USPTO offers a 6-month after due date, called “grace period”, within which it is still possible to pay the maintenance fee with a surcharge (*US MPEP 2506*) in order to avoid expiration of the patent. Furthermore, may occur some problems in the payment notice (*US MPEP 2530*) that slow down the update of the legal status. Moreover, the applicant may challenge the Decision of expiration of a patent within two months from the decision (*US MPEP 2580* and *2590*).

4.4. Loss of rights and their re-establishment in EPC procedure

If a loss of rights occurs, the applicant may file for a decision about the matter within two months from it (*Rule 112 EPC*). The potential re-establishment of rights competes to the department who took the decision about the loss (*Rule 136 EPC*). The event and document concerning the loss and re-establishment of rights can be found in the EP register (EP1043016).

4.5. Revocation due to opposition decision

Decision in opposition case may revoke the granted patent (e.g. EP0993241). It definitely changes the legal status of the patent in jurisdiction in which the opposition has been filed. See § 3.3 for details.

4.6. Changes due to decision of board of appeal

Every national laws let the applicant to request for review of a decision. An appeal against a decision on patent application at EPO has a suspensive effect (*EPC Article 106*) as long as the appeal proceeding. The appellant can appeal within 2 months of notification of the decision (*EPC Article 108*). The patent specialist can find the documentation about the appeal in the Register and about decision in the Board of Appeal Decisions Database (www.epo.org/law-practice/case-law-appeals/advanced-search.html). In USA, an applicant may appeal against a decision to the Patent Trial and Appeal Board within the six months (*US 37 CFR 1.134*). The appeal is available after the second rejection of the claims, also whether the claim belongs to different applications [26]. The proceedings are available for searches in the PRPS. The appeal against “Decision of Refusal” can be filed with the JPO within 3 months (4 months for overseas residents) from the date on which a certified copy of the examiner’s decision has been transmitted [27]. The decisions taken by the JPO are available at the dedicated web page (www.jpo.go.jp/torikumi_e/t_torikumi_e/decisions.htm). Also in China the time limit is 3 months from the date of receipt of the notification of rejection [28].

4.7. Uncertainty due to “grace period”

In some patent law systems (e.g. in USA since September 16, 2011 and China up to 2009) there is a so-called “grace period”, within which the inventor of a publicly disclosed invention can still

file for a patent on the same invention (*US AIA 35 U.S.C. 102(b)(1)(A)*). The Patent Office allows the applicant to exploit a *grace period* only in defined situations [29]. Thus, within the *grace period*, the public disclosure of an invention might not constitute prior art. The only chance in order to get information about this kind of uncertainty is to search into non-patent-literature published within the *grace period*.

4.8. Changes of expiration date of a patent

Generally, the life of patent lasts 20 years, assuming the applicant pays for all maintenance fees, but as function of some events, the term may change (*EPC Article 63*). USPTO makes available to the users a calculator, although having no legal value (www.uspto.gov/patent/laws-and-regulations/patent-term-calculator).

5. Family issues

The search for patents on the most diffused international repositories does not collect a list of single patents, but a pool of patent families. Usually, in a patent family there are applications and/or granted patents claiming rights for the same invention in different countries. In some families, however there might be applications and patents claiming rights for different inventions in the same country or, again claiming the same invention in the same country with different set of claims.

5.1. Choice of correct document(s)

The population of a family depends on the rules of the database [11], so, depending on the database on which the patent specialist leads the search, he/she will obtain different results. The rules about the building of family regard also the choice of representative document of it. It is essential for the patent specialist to understand which is/are the patent(s) to take into account inside a family (see Fig. 4), indeed there is high risk of mistakes if he/she rely on the reference document only.

5.2. Lack of unity of invention: divisional applications

The applicant has to limit its application to only one invention. Unless the PCT procedure, which requires additional searches and fees whether further inventions have to be examined (*PCT Applicant's Guide 7.016*) (ISR and Written Opinion indicate the claims not examined (e.g. WO2015114601)), the examiner who finds a "*Lack of Unity of Invention*" requires the applicant to reduce its application to only one invention ("*Restriction Requirement*" in US (*37 CFR 1.142*) and "*Lack of Unity Objection*" at EPO (*Guidelines for Examination 8.1*)) and possibly allows the filing of applications claiming the other invention(s) which will have the same priority and filing dates. Anyway, no new matter can be claimed in reference to the parent disclosure. Each country comply with its own law and time limits about divisional applications (*US MPEP 201.06*) [30–32]. E.g. EPO lets the applicant to file (so-called *mandatory* [32]) divisional application up to 24 months after the *Lack of Unity Objection* was notified [32], while US lets to file a divisional application before the parent will issued, rejected or abandoned. The patent analyst has to check whether in the patent family exist some divisional applications in order to choose the most relevant one. US applications must declare whether they are divisional on the first sheet (e.g. US7075825), while EP Register shows the information about EP parent/divisional applications (e.g. EP2892287).

5.3. "Continuation of" and voluntary divisional applications

If an application claims are too strict compared to the disclosure/description, or after a claim cancellation by the examiner, or for other reasons, the applicant can file a new application for the same invention claiming for same prior and filing dates. No new matter is allowed. US procedure calls it "Continuation of" application⁵, EP procedure refers to it as (*Voluntary*) "Divisional" [32]. Similar aspects can be found in Japanese divisional procedure [33]. Even in this case the patent specialist must check for divisional and continuations in order to consider the most interesting application. US *Continuation* shows its relation with prior filed application in its first sheet (e.g. US20150195331), and is allowed up to the issuance, rejection or abandonment of the parent application (*US MPEP 201.06*). EP *voluntary divisional* can be filed up to 24 months after the *First communication examination* was notified [32].

5.4. "Continuation-in-part" applications

The USA let the applicant to file a "Continuation-in-part" (CIP) application, which repeats some substantial portions of or all earlier application and adds new matter not disclosed before. The filing is available till to the issuance, rejection or abandonment of the earlier application and the new one has to declare on first sheet its CIP relation (e.g. US20110249806). The expiration term of the patent based on the CIP application is 20 years from the filing date of earliest application for which the benefit is claimed (*US MPEP 2701*). Notice that foreign applications, amended at filing can be considered a sort of CIP [11].

5.5. National route of the first national filing

Often, it occurs the first national filing proceeds on its own route independently from the PCT procedure (WO2014086620). The content of resulting applications may be different due to different proceedings, moreover the result of the procedures might be different.

5.6. Double patenting in the same country

Generally, the possibility to patent the same invention by the same applicant is prevent by the patent law of any country. WIPO, EPO, USPTO, JPO and SIPO rule it with different approaches and results [25,34,35] (*EPO Guidelines for Examination 5.4, US MPEP 804*). The general rule says an applicant having more than one co-pending applications about the same invention, claimed by the substantially same claim set, with the same effective filing date, cannot receive more than one patent about that invention. Notice that whether the descriptions/disclosures are the same, but the claims sets are different (like in parent-divisional cases) the co-pending applications are considered different. If the patent specialist finds a potential double patenting, he/she has to check in detail the correspondence of the claim sets.

5.7. Simultaneous deposit in different countries

Applicant may apply for patent in different country directly. Furthermore, he/she can file for the same invention, in the same day, in different countries without declare the reference between the applications. As a result, the applications will belong to

⁵ In the past the continuation practice caused great uncertainty on patent term [11,36]. Currently it is a source of interpretation risk only, indeed it allows the applicant to change the claim set (*US MPEP 201.07*).

different patent families. There are no tools or standard methods to retrieve the link between applications, so it is very difficult for the patent specialist to find it. The current opportunity to highlight it is through a foreign extension citing the applications (e.g. WO2013074032). In such a case the patent specialist can use the INPADOC patent family tool in Espacenet to retrace the simultaneous deposits.

5.8. Early publication in some countries

In some cases, the applicant needs to anticipate the publishing of the application for patent (e.g. WO2016080555) in order to earlier exploit the provisional protection. As said before, each national application is independent from others, so might occurs that the applicant publishes its application in some “urgent” countries and follows the ordinary route in other countries or procedures. In such a case the patent search reaches only a part of the family, while the rest will still hide up to the national/regional entry. If the early publication occurs for a PCT application, the EP register offers useful information related to the entry in national and regional phases.

6. Conclusions

The rapid growth of patent applications tends to increase the level of uncertainty in the patent context. This leads to take on greater risks, in writing a patent search opinion, than in the past. An improvement to the methods in order to reduce the risks and increase the reliability of a patent search opinion is increasingly felt. The paper focused on three main factors causing the uncertainty: the content of the document, that is not definitive and may change during the procedure; the legal status of the applications and granted patent, that may be not updated; the patent family, that may mislead the patent specialist in the selection of the most interesting member. For each of them, we listed some specific and common cases indicating the sources of information available in order to reduce the risk in writing an opinion caused by the uncertainty of the patent context.

A graphical representation has been created to keep under control critical points where a mistake can occur.

This work is useful for ameliorating already existent tools for patent searching, implementing new modules for organizing, navigating and comparing the whole information of a patent family, notify the user about the revised versions, get an overview of the patent evolution along the procedural time. This can reduce the risks.

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