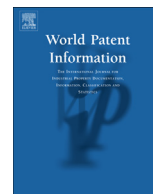




Contents lists available at ScienceDirect

## World Patent Information

journal homepage: [www.elsevier.com/locate/worpatin](http://www.elsevier.com/locate/worpatin)

## The use of mindmapping software for patent search and management



Dietmar Dirnberger

Fraunhofer Headquarters, B9 Patents and Licensing Dept., Hansastrafte 27c, 80686, München, Germany

## ARTICLE INFO

## Article history:

Received 7 May 2015

Received in revised form

12 April 2016

Accepted 30 August 2016

Available online 9 September 2016

## Keywords:

Mindmap

Digital mindmapping

Patent information mapping

Information access

Search workflow optimization

Legal status searching

Compliance

## ABSTRACT

Modern information technologies and in particular the internet have revolutionized the patent information professionals' work in terms of speed of access and information comprehensiveness from both company internal and external digital sources. Here, I describe how the digital mindmapping technique can be used to complement existing intellectual property management software solutions to meet the challenge of optimizing and managing patent search workflows as well as to rapidly organise and access highly dynamic, heterogeneous and scattered patent information sources. Both eye catching and highly memorable and at the same time self-explanatory mindmapping examples are presented. These were designed to include basic and advanced level digital mindmapping features tailored to significantly speed up and maintain a high work quality level of patent search professionals. A special emphasis is put on the great benefit of organising and accessing the plethora of internet-based worldwide online patent registers through mindmapping, both in terms of managing the constantly changing deep links to the actual search options for e.g., legal status information, and keeping track of the offered level of content.

© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Patent search professionals particularly within large research and technology orientated companies are nowadays in charge of conducting a growing range of different patent search types and analyses, such as patentability, freedom-to-operate, patent invalidation, patent statistics etc. For this purpose, the companies have to deal with steadily increasing amounts of both internal proprietary (intranet) based and with external internet based data resources relevant to these searches. Typically, these information resources fall into three broad thematic categories: (1) science and technology and associated business represented by the company (e.g., invention disclosures, patent/non-patent literature etc.); (2) patenting/patent search process relevant information including compliance with internal and external regulations (e.g., company policies, patent law, timelines); and (3) know-how on the underlying information technology, software and database systems required to quickly and comprehensively access the information relating to the two aforementioned topic groups ("information on the information", manuals etc.).

*Abbreviations:* CN, China; EP, European patent; EPC, European patent convention; IT, information technology; SOP, standard operation procedure; WO, PCT application; WON, *De Werkgemeenschap Octrooi-informatie Nederland* (Dutch Working Group for Patent Information); US, United States.

*E-mail address:* [dietmar.dirnberger@zv.fraunhofer.de](mailto:dietmar.dirnberger@zv.fraunhofer.de).

<http://dx.doi.org/10.1016/j.wpi.2016.08.004>

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

0172-2190/© 2016 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A major challenge in working with these information resources is not only their obviously high number but also their typically highly scattered and heterogeneous nature regarding their underlying IT systems, respective file organisations, modes of retrieval, as well as file formats; intranet portals, different internal database systems/content servers, shared (group) drives, office and E-mail software and respective various documents types, locally installed specific software relating specifically to patent data, internet websites including deep links, and organisational data such as calendar dates etc.

Further challenges typically arise when having to deal with free of charge external internet based information resources such as online patent registers. Here, frequent changes regarding respective deep links and information content contribute to their generally lower user friendliness as compared to fee based resources.

Obviously, all of the aforementioned central aspects of the patent search professional's work could strongly benefit from systems which ideally enable creating a single access point for integrating and managing respective information resources in terms of speed and comprehensive access to all relevant data. Industry patent departments across different industrial sectors typically rely on a combination of standard office software and applications, standard file and network management solutions, and specific intellectual property management software. For example, the PatOrg software from Brüggmann [1] is tailored to important aspects of the patent attorney's work including invention reporting, time

recording, financial accounting and IP decision management and is also helpful in related processes in the patent searcher's daily work. However, given the above outlined constantly changing broad and heterogeneous nature of information resources relevant to patent searching, which at the same time is highly company-specific, the customization of existing commercial IP management software into a single access portal suitable for patent searchers is in many cases not feasible in terms of high demand of maintenance and respective financial resources associated thereto. As a consequence, required complementary information resources outside such commercial IP management systems are often managed sub-optimally using the above mentioned standard solutions in which the information is frequently stored in a disconnected fashion from each other. Examples for such scenarios include frequently changing written standard operation procedures (SOPs) aligned with the company policy or patent law, which are stored for example in shared group drives and are not represented in the standard processes of a commercial IP management system. Particularly the high amounts of such scattered but essential complementary information can result in slowing down the overall progress of the patent search and/or patenting processes and in the worst case in noncompliance with the SOPs.

In the 1970s, the educational trainer and author Tony Buzan introduced the concept of "mind mapping", an illustrative method of depicting ideas connected to a central topic [2]. The classic features of this active learning method are the representation of information of ideas and concepts in short textual form and their relationships represented through interconnecting lines starting from a central textual topic "on a paper". Further sub-topics or associated ideas can be added in an iterative way to the main topics to express for example the hierarchy of the information, and further interconnecting lines can be drawn across different mindmap sections as required. In this way, mindmaps serve to indicate not only raw ideas, but also visually represent their relationships, their significance, and how they were derived. The benefit of using the classic mind mapping technique in promoting learning has been demonstrated previously [3], and continues to be used in classrooms across disciplines [4,5].

In recent years, the potential of the mindmapping technique was greatly enlarged through the development of softwares which allow for creating "digital mindmaps", which are also attractive outside the classic mindmap's scope of supporting learning. Several digital mindmapping software solutions exist, including free software such as FreeMind [6], and commercial software such as Cacao [7], Creatly [8], LucidChart [9], iMindMap [10], MindManager from Mindjet [11], MindMeister [12], and Xmind [13]. A central basic feature of all of these tools is that they greatly facilitate and speed up the creation of mindmaps through offering a choice from various mindmap template designs or default designs. These templates contain pre-set optimizations to ease the readability and overall visual impact of the mindmap, e.g., through the automatic application of optimal font sizes across the different hierarchy levels of the mindmap branches, optimal spacing between the main and sub-branches, as well as application of eye-catching colours to the mindmap elements such as fonts, lines and backgrounds. Depending on the type of software used, ranging levels of freedom exist to customize the layout regarding the aforementioned mindmap elements. While said layout features essentially address the limitations of "high content" handmade mindmaps "on paper" regarding their potential lack of clarity, digital mindmaps - again depending on the software used- are particularly attractive through offering the possibility to seamlessly integrate, and thereby to provide access to, many of the most important commonly used digital information resources, such as file explorer, internet browser software, E-mail programs, as well as directly to standard

document files, including .docx and .pdf files etc. For a recent general view on classic versus digital mindmapping please refer to a previous publication [14].

Exemplified through the MindManager software it is the scope of this paper to highlight the great advantage of the combined use of aforementioned classic and advanced level digital mindmapping features particularly to organise complex workflows and the plethora of scattered and highly dynamic patent information resources to speed up and maintain a high work quality level of patent search professionals.

## 2. Results and discussion

In order to demonstrate the particular suitability of the digital mindmapping approach for the optimization and management of patent search workflows and for the rapid access to heterogeneous and scattered patent information sources, I will refer to a number of mindmaps generated by way of example using the MindManager software (termed "mindmapping software" in the following). The largely self-explanatory mindmaps shown in this article were generated to highlight the capabilities of this technique in an iterative way, from the broad features and concepts of using and generating mindmaps, down to specific examples particularly relevant to patent searching. In particular, the latter specific examples have evolved as result of multiple years of hands-on-experience in the context of speeding up and raising the quality of professional patent searching within large company patent departments. It should be noted here that the overall structure and main concepts of organising and accessing patent search relevant information resources as detailed in the following mindmap-figures are essentially independent of the specific mindmapping software used. Therefore, other mindmapping software as mentioned by way of example in the introduction section may serve for similar purposes.

### 2.1. General digital mindmapping features of special interest to patent searchers

A largely self-explanatory introduction to mindmapping, and how it can be used to integrate, structure and access various information types and sources is shown in Fig. 1. A mindmap tree structure with three main branches was chosen according to said three main mindmap functionalities, which were found to be particularly useful for patent searchers.

Concerning the first main functionality to be discussed - "integration of various information types" - it is first of all important to highlight that the mindmaps can be used simply as a normal text editor to write and store e.g., simple notes relevant to patent search jobs, as exemplified in Fig. 1. Different notes may be assigned to different branches; thereby a to-do-list can be created easily. A more specific example is shown in Fig. 3, and will be discussed below.

An interesting feature of the present mindmapping software is the possibility to integrate hyperlinks which refer to various standard software into mindmap branches, e.g., to a file explorer, browser software, E-mail programs, as well as directly to standard document files, including .docx and .pdf files. Hyperlinks assigned to mindmap branches are automatically displayed through their respective software or document type icons, or internet webpage "favicons". This can be used to create eye-catching mindmap branches to visualise available information resources, and at the same time the hyperlinks can be used to conveniently open and access respective software, applications, or office documents. Also, it should be noted here that these hyperlinks can be created very easily and rapidly, e.g., by using the smart drag-and-drop option

Download English Version:

<https://daneshyari.com/en/article/6453171>

Download Persian Version:

<https://daneshyari.com/article/6453171>

[Daneshyari.com](https://daneshyari.com)