

Locating Prior Art Gold: The Five Keys to Successfully Uncovering Strong Prior Art

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Locating close prior art provides a critical edge in patent litigation or licensing, by documenting that the patent in question should not have been granted due to anticipatory (102) or obviousness (103) art. However, the prior art defense is contingent upon successfully locating such art. As most law firms have discovered, there is a wide range of outcomes when a prior art search is commissioned. This is dramatically evident when a Joint Defense Group commissions 3 searches and compares the results, only to find that while they purport to cover the same materials, the outcomes are dramatically different.

This article will address why there is such divergence in the outcomes of prior art searches. Drawing on the experience of over 4,000 cases, many of which involved conducting searches against patents that were previously litigated or survived Re-Exam, the article will cover the 5 keys to a successful search. These critical success factors are 1) the background of the searcher; 2) The Search Coverage; 3) the search implementation; 4) the international coverage; and 5) a realistic budget. We will describe these key factors and illustrate how they influence the direction of a search and the likelihood of success. Lastly, the article will address how attorneys can manage the process to significantly enhance the likelihood of locating prior art gold.

INTRODUCTION

Locating close prior art provides a critical edge in patent litigation or licensing, by documenting that the patent in question should not have been granted due to anticipatory (102) or obviousness (103) art. However, the prior art defense is contingent upon successfully locating such art. As most law firms have discovered, there is a wide range of outcomes when a prior art search is commissioned. This is dramatically evident when a Joint Defense Group commissions 3 searches and compares the

results, only to find that while they purport to cover the same materials, the outcomes are dramatically different.

The challenge of assessing the quality of a search is difficult, since attorneys have no way of knowing what critical findings were missed. Consequently, they tend to rely on proxies to gauge the quality of a search, e.g. the number of findings uncovered, the total number of databases reviewed, length of the search report, etc. However, there is no evidence that any of these factors correlate with search integrity.

The stakes are high since attorneys make major decisions based on their assessment of the prior art uncovered and perceived search coverage. Typical decisions include:

- Patent acquisitions involving millions of dollars, based on a search report indicating that the patent is solid;
- Litigation, where defendants incur huge liability exposure and a serious professional tab (e.g. \$3-\$5 million) at trial where the outcome may turn on the strength of the “uncovered” prior art;
- Litigation initiated by plaintiffs against competitors based on a prior art assessment trumpeting their patent’s strength;
- Myriad licensing demands

A central issue for attorneys is to understand what factors are the keys to a successful search and the reasons behind divergent search outcomes. We will cover the 5 keys to a successful search and illustrate how these key success factors influence the direction of a search and the likelihood of success. In reality, a search has low probability of uncovering useful prior art if these factors are not in place. Drawing on these “Best Practices,” we will address the role an attorney can play in maximizing the likelihood that a search will uncover prior art gold.

Experience gained addressing over 4,000 cases provides a rich database for analyzing the above issues. Many of these cases involved conducting searches against patents that were previously litigated or survived Re-Exam, which provides an opportunity to compare findings against

the cited art uncovered by earlier search efforts. Other data comes from cases where clients are surprised that a search did not locate close art, and requested that we analyze the search report to identify gaps in coverage and recommend search options.

The five factors described below are central to the success of a search. They greatly influence how a search is carried out, whether the most fertile areas will be reviewed, and the likelihood that close prior art within the sources covered will actually be identified as relevant.

THE KEYS TO A SUCCESSFUL SEARCH

Success Factor I. The Searcher Has Strong Technical Background in the Subject Area

It is essential that the searcher have in-depth knowledge of the subject matter in order to conduct an effective search. In a typical search, the prior art may be described using a broad range of terminology, or may be disclosed in an Exhibit. A searcher with knowledge of the technology is able to flag important sources as relevant while they may be missed by the “generalist.” The specialist will also follow up important leads and review work by key groups active in the space. In contrast, a “generalist” proceeds using narrow key word strings to limit the number of findings that must be reviewed, which further reduces the likelihood of locating useful art. A related issue is that an unqualified searcher tends to flag irrelevant references, which consumes an attorney’s valuable time to closely review.

Our experience is that technical competence requires solid academic and industry credentials. For instance, a searcher should have a Masters with relevant coursework in an area such as VLSI design to effectively search in the electronics art, while a Masters or Ph.D. in Wireless communication is typically needed to understand communication protocols and routing. To avoid an unhappy outcome, an attorney should interview the search team and confirm they have relevant technical experience for the matter at hand.

Success Factor II. Cover the Most Critical Sources

A successful outcome requires that the most fertile sources within patent classes and literature be reviewed. The subtle impact of this factor was highlighted in several recent cases. The first involved a camera related technology that pertained to the manipulation of images. The client had an

extensive search of U.S. patents and literature carried out and was surprised it failed to uncover any close art, or even flag references from Japanese camera companies he knew were active in this space. The search report was quite extensive, listing many patent databases and dozens of U.S. literature databases that are currently popular (e.g. IEEE, IP.Com, Compendex, Thomson Innovation, Science Direct, NTIS, Google, etc.) (see Exhibit 1) However, based on previous work germane to camera technology, the coverage seemed inappropriate for this technology. Therefore, the supplementary search emphasized core photography related sources (e.g. Professional Photography, American Photo, Kodak publications) which yielded closer prior art.

Another recent case involved educational software with an incentive feature. This feature provided students with important motivation to study, since each time a certain level was mastered, the program rewarded them with a game. Although significant searching had been carried out, this seemingly simple feature had not been uncovered. Therefore, for the next phase it was recommended that the search emphasized the specialized body of literature germane to educational software (e.g. Educational Technology, Journal of Computer Based Instruction, Computers and Education, Electronic Learning) which yielded close prior art. It should be noted that these specialized sources are not covered by IEEE and Dialog and thus were invisible to the searcher.

These two examples highlight a common problem. Searchers tend to focus on sources that they are familiar with rather than covering the most critical sources. There is also a common tendency to use the same databases for a wide range of technologies (e.g. semiconductors, software, telecom, multimedia streaming, consumer electronics, manufacturing). In reality, the search coverage should be customized to reflect the most relevant literature available for each technology.

Thus, product databooks are vital sources of prior art when dealing with circuit design matters, while non-IEEE sources are critical for topics involving software. Unless the most critical sources are covered, a search is unlikely to locate useful prior art no matter how much time is devoted to the effort.

Success Factor III. Search Implementation

Search Implementation plays an important role in a successful search. This factor is illustrated by the common occurrence of a Joint Defense Group authorizing three parallel search efforts that yield wide differences in results. What you see defines perceptions of the relevance of a reference, as well as the likelihood a critical document will be uncovered. This impact is quite subtle, for a searcher can cover the most critical patent classes, yet miss the most relevant art due to the search implementation. This is illustrated by the reference "Once more, with Meaning," which was published in 1988 (3). A searcher reviewing the prior art based on title or abstract would skip this reference as irrelevant for a focus germane to device drivers that can track device features and conduct transforms. Yet, this is a critical reference with key teachings buried near the bottom of the third page (i.e. page 56). For the case of educational software, a searcher relying on the IEEE database would be unaware of a critical reference in Machine Mediated Learning, since this journal is not covered. Similarly, a search on Google Scholar provides limited information.

The impact of search implementation is even more dramatic when searching foreign patents and literature. Japanese patent art plays a critical role in many electronics, telecom, computer architecture, software and mechanical design matters. Figure 1 contains an illustration from Japanese Utility Model

S60-262307, a key prior art reference identified by a manual search of Japanese patents carried out in Tokyo (4). If the search was carried out using Japanese coverage within standard U.S. databases, the only information available is a title. Thus, a search carried out using English abstracts would have low probability of uncovering this critical reference. Another example is H6-311753, which pertains to a power converter and has no U.S. counterpart. Thus the Japanese patent contains many rich details and schematics in comparison with the English abstract. Lastly, Figure 2 highlights the front page of the European counterpart to Japanese patent application S60-129941U, an application of Terumo which pertains to a luer connector used for a medical device (5). What is interesting is that the European patent abstract describes a device using a "ruer" connector, so this reference would be missed by a searcher using keywords due to translation errors.

Reliance on English language abstracts introduces several risks. First, the searcher is making decisions based on an incomplete and often inaccurate sense of a document's important. In many instances the art is contained in the Exhibits and associated Japanese text and can only be uncovered by a search of the original Japanese language document. Another problem with this approach is that it conveys the impression that a search of Japanese art was carried out, when in reality the search was limited to a review of English language abstracts.

Success Factor IV. International Coverage

For many topics, international prior art plays a vital role. Thus, Japanese prior art is critical in any case involving semiconductor devices, microprocessors, solar cells or video games. German patents and literature often yields '102 art for topics involving wireless communication, GSM protocols, automotive electronics, broadcasting, compression technology and multimedia. When addressing technologies pertaining to lasers, materials, medical devices or drilling technologies, Russian Inventor Certificates and literature represent an important source.

The decision to cover international sources involves an important bet on where to focus the prior art search. Since it is prohibitively expensive to cover many international regions, a rational means is needed to limit the coverage.

Our experience is that the following country characteristics should guide the international coverage decision: 1) technical leadership in the period before the priority date; 2) the impact of First-to-File patent requirements; 3) staff training regarding publications; 4) state security regulations; and 5) motivations for filing patents or writing articles.

For example, a search covering flash memory technology must cover Japanese art and Korean art, given the important role played by Toshiba and Samsung. German and other European patent art is a rich trove for cases involving video encoding, broadcasting, or automotive electronics. An international search must also keep in mind that these are First-to-File regions, where companies train their technical staff to file patents while tightly limiting publishing articles. For this reason, the patent art tends to be more fertile than literature. In contrast, academics and research institutes are more likely to publish articles than file patents.

KEY SUCCESS FACTOR ATTORNEYS' CHECKLIST

I. The searcher has strong expertise germane to the focus	Interview the search team. Confirm the technical training & search experience of team members
II. Covers the Most Critical Sources	How was the search coverage selected? Are these databases relevant for the focus? Were the most critical literature sources identified?
III. Effective Search Implementation	How is the search implemented? Is this being carried out as a patentability search?
IV. Solid International Coverage	Is the international coverage carried out by reviewing native language sources or English abstracts? Is it a keyword based search or a review of patents by IPC Class? Will the most relevant foreign literature be covered?
V. A Realistic Budget	Is the budget realistic for the necessary coverage?

State security plays an important role in the availability of prior art in Russia. Thus, publicly available patent art is quite limited in navigation technology or semiconductor processing. In contrast, Russian art is very extensive in such areas as drilling technology, lasers, materials, and medical devices.

To effectively locate prior art, the search should be carried out using native language sources (e.g. German patents and articles, full-text Japanese language patents, Russian inventor Certificates). It is also essential to cover the most critical sources germane to your focus, since each technology has a distinctive body of literature. For example, if the technology pertains to broadcasting technology, it is imperative to cover NHK Technical Research, NHK Giken Monthly Report, and the Journal of the Institute of Television Engineers of Japan. For topics pertaining to semiconductor technology, core publications include Papers of the Electronics Material Committee of the Institute of Electrical Engineers of Japan, Semiconductor World, and the Proceedings of the Annual National Conference on Semiconductor and Integrated Circuit Technology. An important maxim is "Cover what is important, as opposed to what is readily available."

Success Factor V. A Realistic Budget

The budget must be realistic to support a meaningful prior art search. An analogous situation exists under the search guidelines outlined by the U.S. Patent Office specifying the Accelerated Exam Procedure (see

6). As noted therein, the Accelerated Exam mandates a number of coverage tasks as the minimal requirements for an acceptable "patentability search." These requirements entail: a) a manual search of U.S. patents covering those classes/subclasses considered most relevant; b) a keyword search covering U.S. patents that "covers the subject matter of the independent claims using terms recognized in the art given their broadest reasonable interpretation"; c) a search of PCT patent documents carried by keywords; and d) a key word search of "non-patent literature (NPL) resources from the current USPTO search templates. These requirements define a search that takes 5-6 days effort to conduct.

A prior art search must be more robust than a "patentability search" and cast a wider net. Thus, while an "Accelerated Exam" allows covering foreign patents using keywords in an English language database, a prior art search should be carried out using native language sources to uncover critical art that a patentability search would miss. Serious coverage of U.S. literature is also required to flag critical prior art references that would be missed under the Accelerated Exam guidelines. Implementation requires identifying the most critical literature and conducting the search in a way that will uncover key references in this body of art. A realistic budget will reflect this coverage and the distinction between a patentability search and an invalidity search.

THE ATTORNEY'S ROLE IN LOCATING PRIOR ART GOLD

Prior art searching should be approached as a science. The factors that result in divergent search outcomes and missed prior art were identified above and can be controlled to attain consistently stronger findings. An attorney can have significant impact on a search outcome by confirming these Best Practices will be followed. For instance, a major factor leading to a flawed search is the searcher's lack of expertise in the subject matter. An interview with the search team can confirm if the searcher has strong expertise germane to the technical focus, as demonstrated by suitable academic training and ability to address probing questions on the underlying technology. In contrast, a searcher with weak technical background who asks what key words to use, typically lacks sufficient knowledge of the subject to search effectively. The Due Diligence should also include analysis of the search plan to confirm how the search will actually be implemented. To Guide the Due Diligence process, "A Checklist for Attorneys" was created (see Exhibit).

Locating Prior Art Gold: A Checklist for Attorneys

ENDNOTES:

1. Copyright 2011 Bruce Rubinger; Global Prior Art.
2. The author is Managing Director and Founder of Global Prior Art, Inc., an intellectual property research & analysis firm. <http://globalpriorart.com/>
3. "Once More, With Meaning", by Scott Luebking, ACM SIGCHI Bulletin, 1988.
4. S60-262307 was published on December 25, 1985. <http://www4.ipdl.inpit.go.jp/Tokujitu/tjsogodben.ipdl?N0000=115>
5. S60-129941U was published on August 31, 1985. <http://www4.ipdl.inpit.go.jp/Tokujitu/tjsogodben.ipdl?N0000=115>
6. Guidelines for Applicants under the New Accelerated Exam Procedure, http://www.uspto.gov/patents/process/file/accelerated/ae_guidelines_011111.pdf