

## Successful IPRs - Lessons from the Trenches on Several Key Implementation Factors

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### Introduction

*Inter-partes* reviews (IPRs) have transformed patent strategy, providing a low-risk and (relatively) low-cost way to challenge the validity of patents. As of Sep. 30, 2020, nearly 12,000 IPRs have been petitioned before the PTAB since the AIA went into effect. Of those, roughly 9,500 IPRs have completed the Petition Phase to an institution ruling on the merits (excluding pending cases, settled cases, and cases dismissed or canceled), with nearly 2/3 being instituted in whole or in part by the PTAB (see Figure 1, courtesy of the USPTO). Based on data from RPX Insight, of the cases instituted on the merits and reaching final written decision, 53% were found unpatentable on all patent claims with another 28% found partially unpatentable (i.e., “mixed”). While these statistics suggest great petitioner success, they also suggest many thousand unsuccessful IPRs.

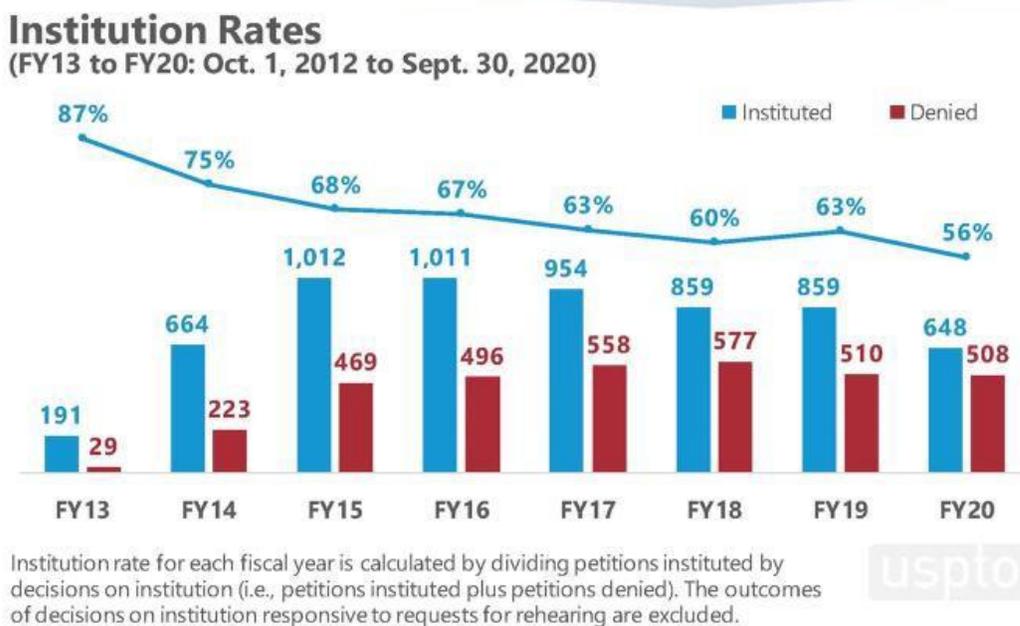


Figure 1. Post-grant Institution Rates, courtesy USPTO

It is legally and financially beneficial for a defendant in a patent infringement dispute to utilize the IPR process to attempt to invalidate the asserted patent claims. According to the [AIPLA's Report of the Economic Survey 2017](#), the average legal cost facing a defendant in a District Court patent infringement case runs between \$1 million - \$4 million when the damages risk is \$10 million, and as high as \$6 million when the risk exceeds \$25 million. This figure excludes other costs such as disruptions to the operations of the defendant's business as well as the distraction and opportunity cost of the various individuals involved in the case. In contrast, the cost of filing an IPR and the associated PTAB hearing is in the range of \$150K-\$400K, according to the same AIPLA report.

Given the popularity of utilizing the IPR process, the associated practice of law in petitioning an IPR before the PTAB has become fairly specialized. Law firms known, historically, for their prowess in general patent litigation have

developed dedicated IPR sub-practices with success rates amongst firms varying considerably. According to Unified Patents, amongst petitioning firms with over 50 decisions on the merits, there is a significant difference in success rates. The highest success rate is 86% of petitions granted institution in whole or in part, well above the industry average. At the lower end this drops to 70% among the firms with over 50 decisions on the merits.

There are a number of explanations for this variance in success from firm-to-firm. Industry focus, case selection, and, of course, legal expertise and experience from one firm to the next play key factors. Oft overlooked is the quality and methodology to obtaining the prior art which is central to any IPR argument. In this paper, based on a review of our internal database of over 17,000 invalidity prior art cases addressed since the firm was created in 1982, including many thousands in which we supported subsequently filed IPR petitions, case studies are presented that illustrate the impact of strong (and weak) prior art and the underlying methodologies used to obtain them. The learnings from these case studies can be instrumental in putting forth strong arguments for the IPR and, in turn, increase an attorney's likelihood of success.

**Case Study I:** A failed IPR- factors at play when a diligent prior art search is not conducted  
(*Valve Corporation v. Ironburg Inventions Limited* (IPR2017-00136 & IPR2017-00137))

In previously filed IPRs (IPR2016-00948 & IPR2016-00949), the Petitioner, Valve Corporation ("Valve"), had relied on a commercial prior art search (from CPA Global (Landon IP) Inc.; the "CPA Global search") that failed to uncover sufficient prior art disclosing key features of all of the challenged claims. The filed IPRs, relying on the findings of the CPA Global search, resulted in final written decisions maintaining the validity of several of the challenged claims. Believing that strong invalidating art must exist, Valve subsequently pursued several additional rounds of searching which uncovered a new and promising U.S. patent prior art reference (U.S. 6,362,813, to Worn; "Worn"), and then proceeded to challenge a number of claims as anticipated by Worn in subsequently filed IPR2017-00136 and IPR2017-00137. A central issue in these IPRs was whether a petitioner be allowed multiple bites at the apple or whether they had a responsibility to ensure a diligent search be conducted and thus were estopped from presenting future IPRs utilizing new prior art that should have been uncovered by virtue of such a diligent search.

As an expert witness retained by the Patent Owner, Ironburg Inventions Limited ("Ironburg"), Dr. Rubinger, an author of this paper, was asked whether a skilled searcher performing a diligent search should have identified this reference. To address this question our team carried out the search independently, without knowledge of the Worn reference. Performing a "diligent search" following best practice, this reference was indeed uncovered. As the PTAB concluded in its opinion, "we determine that the evidence sufficiently establishes that a skilled searcher conducting a diligent search reasonably could have been expected to discover Worn" [see Page 4, IPR2017-00137]. The PTAB goes on to describe the process used to implement a "diligent search." Based on this evidence, the Board determined that Valve was estopped under 35 U.S.C 315 (e)(1) from arguing the Worn reference in the IPR.

The coverage and implementation of a "diligent search" is highlighted in Figure 2, where it is contrasted with other common search approaches. The typical patentability search has limited coverage and relies extensively on keyword searching with limited manual review. The goal is to identify the "low hanging fruit" and the inherent likelihood of uncovering strong prior art is in the range of 5%-20%. In contrast, an Accelerated Exam search is an enhanced Patentability search covering the proscribed sources outlined [by the PTO](#). Implementation requires 5-6 days effort and the likelihood of locating strong prior art is 25%-40%. Since the success rate of a search is determined solely by the implementation process, a patentability search combined with a long report does not change its likelihood of success.

Post grant, there is the "Shallow Dive" or "Simple" invalidity search that is budget conscious and thus entails less extensive manual searching and limited coverage. The yield reflects this with, from our experience, a success rate of finding strong art of only 40% - 60%. In contrast, the extended coverage and rigorous implementation process

associated with a “Diligent” invalidity search consistently yields a 70%-90% success rate of uncovering strong references. As noted by the PTAB a “skilled searcher performing a diligent search begins with selecting one or more patent classifications and subclassifications in the US Patent Classification.” “A professional search requires more than text searching. A systematic and exhaustive search of ‘core” and peripheral subclasses is imperative to a reliable search.” Other aspects are covered in Figure 2.

The inherent likelihood of uncovering strong prior art associated with each distinct search approach

Search	Methodology	Comments	Typical Effort	Success Rate
Patentability Search	<ul style="list-style-type: none"> <li>Heavy reliance on keyword searching, typically of U.S. patent literature only</li> <li>A very limited manual review</li> </ul>	This is a budget-conscious search intended to identify “low hanging fruit” and to furnish a minimal set of prior art to the patent office	1 – 3 days	5% - 20%
Accelerated Exam Search	<p>As prescribed by the USPTO:</p> <ul style="list-style-type: none"> <li>Manual class search of U.S. patents &amp; applications</li> <li>Augmented by a keyword search of U.S. patents covering the subject matter of the independent claims using terms recognized in the art given their broadest reasonable interpretation</li> <li>Keyword search of appropriate non-patent literature sources</li> <li>Review of foreign patents including the sources required WIPO under PCT requirements</li> </ul>	A more robust patentability search that satisfies the USPTO requirements for accelerated examination. When filing important patent applications, the scope provides confidence there no easily identified prior art AND can assist in claim scope thus reducing future expense related to prosecution and maintenance. Useful to weed out weak patent applications	5 – 6 days	25% - 40%
“Shallow Dive” Invalidity Search	<ul style="list-style-type: none"> <li>A manual search U.S. Patents of ‘core’ classes/subclasses</li> <li>Lite manual review and keyword search of ‘peripheral’ classes/subclasses</li> <li>Keyword search of appropriate non-patent literature sources OR a keyword search of select foreign patent sources, depending on the technology area</li> </ul>	This is a budget-conscious search considered outside of the context of litigation or an IPR. It may be useful for early case assessment by either plaintiff or defense and also considered as part of due diligence in a M&A or other transaction	5– 6 days	40% - 60%
“Diligent” Invalidity Search	<p>As promulgated by the PTAB:</p> <ul style="list-style-type: none"> <li>A systematic and exhaustive manual search of ‘core’ and ‘peripheral’ classes/subclasses by a skilled searcher</li> <li>Extend coverage to other relevant classes with a pertinent keyword search</li> <li>Keyword search of appropriate non-patent literature sources</li> <li>Review of key foreign patent sources</li> </ul>	<p>This approach is designed to maximize the probability of identifying strong prior art references in reviewed sources</p> <p>The success rate reflects the coverage, whether critical NPL sources are reviewed, and the searchers’ expertise.</p>	<p>8 – 10 days for review of U.S. patents and literature;</p> <p>Additional effort for ex-U.S. as necessary</p>	70% - 90%

Figure 2. Parameters to various prior art searches

Lesson: In the period after IPR review was created, a common approach was to file a petition quickly because deficiencies identified by the PTAB could be subsequently corrected with a second or third IPR. However, the PTAB has raised the bar in the above case, curbing the use of successive petitions and making it imperative to get it right the first time.

**Case Study II: A tale of two outcomes: *Kingston Technology Company, Inc. et al v. SecureWave Storage Solutions Inc.* (IPR2019-00494) vs. *Unified Patents LLC v. SecureWave Storage Solutions Inc.* (IPR2019-00501)**

This case study highlights the critical importance of a thorough, comprehensive prior art search and how a patent attorney’s hand is shaped by his/her perception of the available prior art. It contrasts the results of an IPR filed previously using prior art from a search that appeared to rely principally on keyword matching and the references uncovered by a technical expert who relied on a detailed, manual review of prior art documents. Another important aspect was the close interaction with the client since claim construction for contested limitations was a key issue and the client’s guidance on construction of the claim terms was an important prior art search focus. In addition, the obviousness to combine the uncovered references with the previously known art was contested, with the PTAB concluding the Petitioner had articulated sufficient reasoning “to support the legal conclusion that its preferred combination would have been obvious to one skilled in the art.” (see page 12 of IPR2019-00501 Final Written Decision).

U.S. Patent 7,036,020 (“the ‘020 patent”) relates to secure external storage technology and was asserted by SecureWave Storage Solutions Inc. (“SecureWave”) against Kingston Technology Company, Inc. (“Kingston”) and Micron Technology, Inc. in 2018 in the District of Delaware (1:18-cv-01398 (DDE)). The ‘020 patent was challenged by two unrelated IPRs, coincidentally filed only a week apart in late 2018. Both IPRs put forth arguments primarily

relying on U.S. patent publications for prior art evidence, however, yielding dramatically different outcomes.

The first IPR, IPR2019-00494, filed by petitioner Kingston was denied institution on the merits on all challenged claims, 1-14. A close review of the cited prior art strongly suggests a search deploying keywords and phrases as the principal search strategy was utilized.

In contrast, IPR2019-00501, filed by petitioner Unified Patents (“Unified”), prevailed in obtaining a final written decision invalidating all challenged claimed, 1-5. In this IPR, Unified relied on two key prior art references (U.S. 5,623,637 to Jones and U.S. 6,931,503 to Robb). Interestingly, these two references use different terminology than the asserted patent to describe a similar data security implementation. Only through a detailed and manual review of key subclasses germane to this technology as performed by an experienced searcher could these references have been found.

Lesson: For a prior art search to be truly comprehensive, keyword searching may be necessary but is insufficient. Manual searching of the patents within relevant subclasses by a technical specialist is also necessary in order to improve the likelihood of discovering references that may utilize terminology different from the target patent and thus missed by keywords and keyphrases. In addition, close interaction between the attorney and prior art team is essential to transferring knowledge regarding claim limitations shaping claim construction.

**Case Study III:** “We don’t have an endless budget. We can’t boil the ocean.”

*Fitbit, Inc. v. Smart Wearable Technologies Inc.* (IPR2018-00252)

Any patent searcher or patent practitioner has heard the above phrase. Our world simply has more content than one could ever review. Most IPRs rely on U.S. patents for prior art, due to the perceived difficulty of confirming the public availability of a non-patent document and because the U.S. patent corpus offers a centralized and organized concentration of written human knowledge. However, GPA’s experience is that critical prior art disclosures often lie in non-patent literature (NPL), published technology standards specifications and related working documents, or ex-U.S. patent publications, such as Japanese utility models and PCT applications. Notwithstanding concerns about accurate timestamping, opening the aperture to include these additional coverage areas, of course, comes with the possible budgetary constraint of searching an expansive set of documents. As illustrated earlier, keyword searching is grossly inferior to manual searching by a trained expert. Compound this with an expansive volume of documents and one has a challenge, unless the other key questions associated with performing a diligent search: “where to search” “what to search,” and “how to search” can be answered.

Where to Search? What to search?

Given the vast array of potential sources, in order to be cost- and time-efficient it is essential to focus a prior art search on those sources that are most likely to be useful based on the state of the technology before the priority date in various countries, the “players” developing the technology at that time, and a deep understanding of how different technologies in different regions are documented. For instance, countries operating on a First to File basis, train their engineers not to write articles but focus largely on filing patents (e.g. Japan, Europe). Technology development trends further narrow the options- when addressing semiconductor processing technology before 2000, the prior art will likely only reside in either the U.S., Japan, or in a few European countries. It is wasteful, as evident in these examples, to conduct a high level “worldwide search,” when a targeted, thoughtful search of select jurisdictions and select document types could be deployed. Knowing where and what to search, particularly 10-15 years into the past, comes from years of experience observing the incremental development of an industry and its underlying technology. Further, deep experience is required to understand where different technologies and different jurisdictions publish. Given this, GPA created GPA Expert, our internal Knowledge Management database that captures our institutional knowledge making it leverageable for all searchers, experienced and otherwise, to leverage our accumulated wisdom.

A real example of an effective NPL search is related to IPR2018-00252, involving U.S. Patent 6,997,882 to Parker et al. (“Parker”), covering wearable sensors for activity monitoring. Here, Fitbit, Inc. (“Fitbit”) was attempting to invalidate claims 8-10 asserted by the Patent Owner, Smart Wearable Technologies Inc. (“Smart”) against Fitbit and other defendants in co-pending district court cases. Despite an extensive body of cited art, there existed a key element of claim 8 of Parker not disclosed elsewhere. Parker stated that “[prior to this invention], the advantages of 6-DOF (Degrees of Freedom) accelerometry had not been extended to subject monitoring” due to “substantial technological hurdles” such as the requirement of “considerable additional computational effort” to process large amounts of information very quickly.

Based on past cases germane to wearable sensors, movement activity and health monitoring the following sources were identified as most fertile: non-patent technical publications including key journals, conference proceedings, and dissertations as well as a fresh look at U.S. patents. This effort identified several promising patents and non-patent references, one of which was a conference paper from *Computers in Cardiology*: Ng et al., “Sensing and Documentation of Body Position During Ambulatory ECG Monitoring”. While the publication was indexed by IEEE Xplore, several key teachings resided *only* in the paper’s figures; namely correlating an individual’s sensed movement with other sensed “physiological characteristics of an individual.”

Ultimately, Fitbit prevailed in obtaining a final written decision from the PTAB in rendering all claims 8-10 unpatentable over Ng in combination with other references. It is worth noting that previous IPRs were dismissed prematurely as the parties settled prior to final written decision. One of those IPRs, filed by TomTom, Inc. (See IPR2017-01826), settled after the PTAB instituted a review of claim 8, the only claim challenged.

Lesson: In this case a broad keyword search would identify a large number of documents from likely non-relevant sources and yet miss this reference where the key claim limitation was recited only in an exhibit. As one can see, aligning the ‘How’ (manual searching by a technical expert) with the ‘Where’ and the ‘What’ (conference papers in the medical domain) delivered killer prior art without having to boil the ocean.

#### **Case Study IV: *Isometrics Inc. v. General Transervice Inc.* (IPR2019-00801)**

In this case, the re-issued patent U.S. RE46,607 (“the ‘607 patent”) was asserted by patent owner General Transervice Inc. (“Transervice”) against Isometrics, Inc. (“Isometrics”), in the Middle District of North Carolina (1:18-cv-00213). The underlying ‘607 patent “relates to a fuel delivery vehicle equipped with a system for delivering fuel to an aircraft, and a method for delivering fuel to an aircraft.” Of particular interest was claim 13 which describes a fueling control system including a “pressure transducer for sensing back pressure in a fluid path to a fuel tank of an aircraft,” and a digital controller “for receiving the back pressure in the fluid path and controlling the rate of fuel flow generated by the pump based on the data representing the back pressure.”

Our search focused on Claim 13 and prioritized patent art in the U.S., Europe, and Japan, along with US NPL. The most promising finding was uncovered by the Japanese patent search which identified (JP63-075808A) published back on April 6, 1988 that contained the critical details required. The published patent application was successfully used as an anticipatory (102) reference in the IPR petition. This eventually led to the patent owner abandoning Claim 13 in January 2020. This top reference was filed by the Japanese company Showa Aircraft Ind. a producer of Fuel Delivery trucks for the Japanese aircraft market. The Japanese published application lacks an English-language counterpart so an English-language keyword search, or a keyword search of machine translated English abstracts would fail to uncover it, as evidenced by the previous search efforts. The term used in the claim, “back pressure” is not commonly used and therefore employing a Japanese language search relying on keywords would not have yielded the key reference either.

Lesson: A diligent search for strong prior art required a manual review of full text native language Japanese patents

and Utility Models in key IPC Classes, carried out by a technical expert fluent in Japanese. Close to 2,000 patent documents were screened to identify a key feature described in the text and exhibits which could not be flagged using keywords.

### **Conclusions:**

The cases illustrate that many attorneys filing IPRs are undermined by prior art that fails to cover key features, even though strong prior art does exist in such widely available sources as U.S. patents, NPL and foreign patents. The end result of weak prior art is that the defendant's arguments are potentially compromised, increasing the probability of an unsuccessful IPR and the needless expense of a second or third IPR filing. In contrast, attorneys who achieve successful IPRs believe it important to get it right the first time. Rather than have a weak hand, they insist on having a diligent search carried out by a skilled searcher, with whom they've interacted regularly throughout the searching process.

**Diligent search:** A diligent search is implemented in a manner that uncovers important references within the sources reviewed by following the steps outlined by the PTAB in Case Study I. The implementation process and precision of the three common search approaches is illustrated in Figure 2. The typical patentability search has limited coverage (i.e. 1-3 days) and the likelihood of uncovering strong prior art is in the range of 5%-20%. In contrast, an Accelerated Exam search is an enhanced Patentability search which covers the proscribed sources outlined by the PTO. The implementation requires 5-6 days and achieves a 25%-40% likelihood of locating strong prior art. In contrast, the extended coverage and rigorous implementation process associated with a "Diligent Search" as described by the PTAB consistently yields a 70%-90% success rate uncovering strong references.

**Close interaction between legal team and search team:** While the strength of the prior art presented in an IPR petition is paramount and its importance clear, a success factor that is underestimated is the quality (and quantity) of interaction between the attorneys and the prior art search team and how it impacts overall success of the case.

The studies highlight how an interactive approach between the attorneys and the search team has a significant impact and should be pursued during all stages of the preparation and drafting of an IPR petition. The search team should not be viewed as an external black box, disconnected and inaccessible but an extension of the legal team: with a two-way knowledge transfer that is transparent and integrated.

**Where to search? What to search?:** The common perception that an IPR search should focus solely on U.S. patents, due to the ease of proving public availability, significantly reduces the likelihood of uncovering strong prior art. The case studies highlight the key role played by non-patent literature, foreign patents, etc. in successful IPRs. Rather than being compromised by not pursuing these fertile sources due to budgetary concerns, a diligent search of these documents can be efficiently approached by leveraging the experience of an expert search team to know Where, What, and How to search.