

Expert Analysis

Drafting Patent Claims In 5D

By **Kelce Wilson** June 13, 2017, 1:20 PM EDT

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5D isn't (yet) the next technology leap for video games and movies; it's a patent claim drafting plan: (1) detectability; (2) design-around resistance; (3) desirability (or high-dollar value or in-demand); (4) direct, not divided; and (5) defined. It can be said that patents are more like portraits than photographs, because it is possible to ascertain both the subject's identity and the composer's style. However, this does not mean that a patent should be the equivalent of a Picasso cubism painting.

Although wide variations in drafting style are possible, while still adequately covering an invention, this 5D plan provides criteria for evaluating relative quality among multiple candidate claim sets. The ability to rank candidate claim sets can be valuable and can be used by intellectual property owners in multiple tasks. These include deciding whether to proceed with patenting particular inventions, prioritizing limited resources among multiple potentially patentable inventions, and improving the value of any patents that are pursued. See reference [1] for a description of an IP resource allocation strategy that can be used with this 5D plan.



Kelce Wilson

This 5D plan is good for all patents, but is explained here mostly in the context of patents used for cross licensing value and licensing income. A few considerations for product differentiation patents will be noted, though. First, however, explanation is needed on how this 5D plan fits with the intended usage of a patent. See reference [2] for a detailed explanation of how companies use patents in three distinctly different ways: product differentiation, cross licensing, and licensing income.

Some patents are intended to provide a distinguishing “look and feel” for a product or else give a notable performance advantage; the owners of these patents specifically do not want the invention to be widely practiced by others. These patents are used to provide product differentiation, which permits the patent owner — or an exclusive licensee — to charge a price premium for the covered product or service. (Product inventions and service inventions should be considered as synonymous for this essay; the language from this point forward will reference product inventions). This price premium, made possible by the patent-induced shortage of alternatives in the marketplace, is what provides the value of a patent used for product differentiation. Only companies that have products to sell are able to use patents for product differentiation, and even then, only if the patents actually cover the companies' products as well as all variations that the market will accept as reasonable substitutes.

Other patents, however, derive value not by limiting competition, but instead by providing

licensing income or, alternatively, cross licensing value in a two-way licensing arrangement between companies that each have potential exposure to the other's patent portfolio. In stark contrast with product differentiation patents, patents used in licensing arrangements, either licensing for income or cross licensing value, derive their value specifically by being widely practiced by other entities different than the patent owner. Owners of these patents are thus financially incentivized to permit others to practice the claims in a way that maximizes licensing income or outgoing cross-license value. Nonpracticing entities use patents for only licensing income, rather than for product differentiation or cross licensing value.

Detectability

How will the patent owner know whether the claims are being practiced? Can the inventor provide a checklist to compare against a potentially infringing system, such that if the entire checklist is met, you can be certain that all features of at least one claim — not just most features, but all — are practiced exactly as written? And what efforts will be required to complete the checklist analysis with certainty? Will it be apparent from looking at a competitor's website or advertising, or will the patent owner need to purchase a possibly infringing system and spend a large amount of money for reverse engineering?

Note that a standard-essential patent is a special case for which detectability is effectively given. An owner of an SEP does not need to study the inner workings of a competitor's product, but rather needs only to be able to note the competitor's advertisement that the product complies with an industry standard specification and then map the patent claims to portions of the specification that are mandatory for compliant products. An example is that cellular phones from multiple different manufacturers can function with cellular tower equipment that is manufactured from multiple other manufacturers, because all of the equipment is compatible with some common cellular equipment standard, such as one of the 3GPP cellular communications specifications. However, SEPs are unique in this regard; for most other patents, detectability can be a rather important consideration.

When drafting the claims for a new patent application, preview the potential uncertainties that could arise when attempting to ascertain infringement of likely allowable claims. Reword the claims, if necessary, to recite a set of features that are relatively easy to detect — with likely allowable limitations. It does not much matter how good the claims are upon filing, if they lose value through amendments in order to obtain allowance.

Once you are certain that the wording of the claims permits unambiguous detection of infringement, consider this next question: How much time and money will it actually cost to perform an infringement analysis? “For “look and feel” patents, this question is easy. However, detecting infringement for manufacturing processes or detailed algorithms and specialized circuitry buried deeply inside integrated circuits might be prohibitively expensive. For some inventions, unfortunately, even the best allowable claim sets will not permit a cost-effective determination of whether a competitor infringes or instead has implemented an alternative solution that is outside the claim coverage.

A set of scoring tests for a detectability analysis is provided in [1], and listed again here.

Evaluate the strength of candidate claims against the scoring test. Start with the first test and, if the conditions are not satisfied for a particular claim, move on to the next test. The final score should be the earliest test that is passed, with the lower score being more preferable.

1. Infringement can be detected without possessing an accused device.
2. Infringement can be detected with typical consumer use of an accused device.
3. Infringement can be detected with common test equipment and techniques, but without significant expense.
4. Infringement can only be detected with expensive equipment or procedures.
5. Infringement cannot be independently detected with reasonable technical efforts, but instead requires documentary evidence that will not be available without litigation discovery.

Enforcement of a patent is a considerable risk of resources when the patent owner won't know for certain whether the patent is being infringed until reaching the discovery phase of litigation. Additionally, you may have challenges meeting pleading requirements or a safe threshold for the reasonable inquiry requirement of Federal Rule of Evidence 11(b) if you cannot write claims for which a reasonable inquiry is feasible and is not cost-prohibitive. See references [3] and [4] for some comments regarding a plaintiff's reasonable belief of infringement and F.R.E. 11(b). So, if you cannot find a candidate claim set that provides a sufficient level of detectability, you might consider suggesting that your client divert funds and attention to patenting a different invention. See also the section "Detectability of Patented Technologies" in reference [5].

Your client is likely to be constrained by resources, and may not have sufficient time or money to devote to monitoring and analyzing competitors' products for infringement. And in some cases — notably those inventions that could be handled as trade secrets — filing a patent application may actually be worse for the client than doing nothing.

Consider a hypothetical situation in which your client has discovered a valuable way to improve the internal functionality of its products, and this improvement will provide a significant product-differentiating performance enhancement. This will then drive increased sales or else permit raising prices, thereby possibly improving the client's profitability. The client is convinced that some of its competitors might figure out the same idea, whereas others might not for quite some time. However, you cannot find a set of claims that will be detectable within the client's anticipated budget for infringement monitoring and analysis. If the client insists on attempting to patent the invention, and you provide proper enablement in the specification, the publication of the application will teach the client's competitors how to take advantage of the new idea.

Unfortunately, even if the client notices that its competitors' products later match the performance improvement, the client cannot be certain which of its competitors use the exact claimed version of the invention, and which of them instead use something else that is different enough to avoid infringement liability. In such a case, your client is then paying you to teach its advantageous ideas to competitors, for little benefit beyond bragging rights and bumping up its patent portfolio numbers. Perhaps you should consider recommending that the invention be treated as a trade secret, if monitoring and enforcement are not practical. See reference [1] for further ideas on how to select between recommending a patent versus a trade secret for general inventions and also see reference [6] for special considerations in cybersecurity technology.

Design-Around Resistance

Is the invention “the” way to solve a problem or is it just “a” way to solve the problem? And how important is the problem really? Even if the problem that is addressed by the invention is significant, if the invention provides only one of many possible inexpensive solutions, then a “design-around” may permit competitors to avoid infringement and thus preclude their need for a license. As used here, “design-around” means an implementation of an alternative solution that accomplishes most of the same purposes of the invention, and perhaps even appears to be similar upon an initial inspection, but is not actually covered by the claims.

Basically, a design-around is a market-acceptable substitute. For patents on aesthetic features, design-around resistance may have lesser significance, with merely the need to protect consumer preferences for the most desirable versions of distinguishing features. For patents on functional, rather than aesthetic features, design-around resistance is considerably more important. Typically, patents on aesthetic features will be included among a company’s set of “look and feel” patents that are often withheld from cross licensing, although some patents on functional features can also qualify as “look and feel” patents.

Note that the phrase “actually covered by the claims” does not mean the claims as they are initially filed in a possibly overly optimistic application. A proper design-around analysis needs to use a reasonably pessimistic prediction of what the claim limitations are likely to cover upon allowance. How often have you seen a patent issue without any alteration to the scope of the initially-filed claims, whether by amendment, prosecution disclaimer, or both? It happens, but only in a minority of cases.

There are some common solutions to address the negative effect of design-arounds on patent value. One is to use fairly broad claims that cover multiple design variations. Another is to use a set of multiple patents, possibly continuations or divisionals, and tolerate terminal disclaimers and restriction/election requirements. Each solution has its own set of challenges.

The broad claim solution introduces the risk of invalidation over prior art or nonenablement. The prior art risk is easy to understand — broader claims are more likely to read on relatively obscure prior art that is located by a motivated litigation opponent. However, nonenablement is an additional risk. In *Automotive Technologies International Inc. v. [BMW of North America Inc.](#)*, the Federal Circuit stated that the full scope of the claims must be enabled. (ATI v. BMW, 501 F.3d 1274 (Fed. Cir. 2007) (invalidating all of ATI’s patent claims over nonenablement, except one that was unasserted).

One question to ask the inventor is: “How many different solutions are sufficiently feasible and cost-effective that the market will treat them as fungible?” It may not be necessary to patent every conceivable alternative solution, if implementation expenses or other constraints effectively foreclose some of the alternatives.

Once you have ascertained the likely number of patents required for reasonably effective coverage, you should ascertain whether your client can afford to prosecute applications through

to allowance for all of the patentably distinct variations. Even with the potential for efficiency when a single prosecutor handles multiple applications in front of the same patent office examiner, costs could still rapidly escalate beyond the client's budget. If the client decides to proceed with patenting, you then must select among drafting a large initial application that enables all feasible embodiments in a common specification, or drafting multiple smaller applications that each enables only a single embodiment, or some hybrid approach.

Keep in mind that, if you attempt to cover too many alternatives by claiming more broadly than you can enable within a single specification, you risk losing the patent under the ATI precedent if the patent is ever litigated against a determined opponent. It is important to note that the affected claims of a patent that are lost under such circumstances are gone entirely — not merely curtailed to the scope that the court deems is enabled. All future licensing opportunities for those claims will then be forever lost. Be careful with the claim scope you draft, so that you don't tempt future assertion litigators to overreach beyond proper enablement. Upon drafting an application, you have no idea who may be asserting the resulting patent, many years later.

If it isn't practical to file applications covering all feasible patentably distinct variations, and inexpensive design-around options are readily available, you might suggest that your client invest limited resources in patenting a different invention, instead. Also suggest that your client consider publishing an academic article as an inexpensive way to obtain industry recognition for having conceived of the invention. However, before abandoning all hope for the invention, consider performing a joint analysis of design-around with the third D: desirability (or high dollar value or in-demand).

Desirability (or High-Dollar Value or In-Demand)

Will your client's competitors desire to put the same feature in their own products, because the market will demand it, or is the invention merely someone's idea of a "neat feature" that the rest of the industry will ignore? This question can be answered by estimating the incremental profitability (i.e., the dollar value) that is expected by anyone who practices exactly the invention as claimed in a future issued patent.

If the dollar value to the industry is not sufficiently high for practicing the invention — exactly as claimed — other manufacturers will either avoid the invention or implement a design-around. For patents intended to be used for licensing income or cross licensing, this might destroy value.

However, just because a design-around is possible does not mean that your client's competitors will necessarily implement one. The competitors might still choose to practice the invention as claimed, and license the patent — but only if the stacked royalties are sufficiently low to render the lowest cost acceptable design-around into a less attractive option for them. See references [7] and [8] for more detail on how noninfringing alternatives can affect infringement damages calculations. Note that in some writings, the term "lowest cost noninfringing alternative" is used to indicate a cost-effective design-around.

Remember that manufacturers are in business for the purpose of making their own money, and will sensibly take whichever intellectual property rights route maximizes profits while

intelligently managing risk. Manufacturers are likely to prefer a freedom-to-operate situation over short term renewable licensing when the IP right relates to improvements in a stable product line. For entirely new products, though, some manufacturers may prefer to start out with less of a commitment.

Ownership of IP rights provides a manufacturer with advantageous autonomy, reducing uncertainty about future licensing costs. A sensible manufacturer may thus prefer owning the IP used within its products, or else using public domain technology, over taking a short term patent license when the total costs are similar. This situation creates some of the motivation for manufacturers to implement design-arounds.

Anyone who wishes to remain in business requires a minimum expected return on investment (ROI) in order to proceed with a new product or improve an existing one. If a manufacturer agrees to a higher aggregated royalty rate burden on incremental profit than it already pays on the underlying product, its total ROI will decrease. This is an undesirable situation for many business owners. Additionally, because a patent license does not grant an absolute right to build the invention (but instead merely grants the right to not be sued over the particular patents), a rational manufacturer must necessarily plan for royalty stacking in complex products. Royalty stacking is the result of multiple independent patent owners presenting overlapping infringement assertions, with each patent owner seeking to maximize its own licensing revenue.

Direct, Not Divided

Don't write divided claims, which are claims that recite limitations requiring specific cooperation by distinct systems that might not be under common ownership or control — unless the client provides a compelling reason for doing so. For example, claiming a set of separate nodes of a network as a single system or claiming methods in which different steps are performed by different independent parties might limit patent enforceability. See *BMC Resources Inc. v. Paymentech LP*, 498 F.3d 1373 (Fed. Cir. 2007) and the long string of related later cases, including [Limelight Networks Inc. v. Akamai Technologies Inc.](#), 12-786 (2014) and [Eli Lilly v. Teva](#) 845 F.3d 1357 (Fed. Cir. 2017). The law on this subject is rapidly changing, so it is a good idea to stay as far away from the uncertainty as practical. If you cannot find sufficient patentable novelty to put into the claims without making them divided, ask your client whether it has the extra money to spend on a patent that might soon become effectively unenforceable.

Defined

Your claims should be sufficiently clear and well-defined to survive whatever clarity test will be ultimately implemented as a result of the relatively recent unanimous [U.S. Supreme Court](#) decision in *Nautilus v. Biosig Instruments Inc.*, No. 13-369 (2014). Although the *Nautilus* ruling might not have unambiguously specified a new test to replace the “insolubly ambiguous” test that the Federal Circuit had been using, the days of prosecutors drafting intentionally vague claims just might be coming to an end [9]. Additionally, the [U.S. Patent and Trademark Office](#) has completed a pilot program to study the effects of a glossary on patent examination and has studied the results. If this effort produces changes in future filing requirements, it could affect the prosecution experience for a larger number of applications.

Both of these developments point in the same direction: In the future, patent claims will likely require greater clarity than has historically been the norm. Additionally, there is a possibility of the introduction to patent law of “a principle analogous to the contract doctrine of *contra proferentem*” — the idea that claims should be construed against the drafter. See J. Plager’s concurrence in [3M Innovative Properties Co.](#), v. [Tredegar Corp.](#), 725 F.3d 1315 (Fed. Cir. 2013) and also page 695 of [9]. So unless your client is willing to accept a patent with a possibly shortened life span, you should carefully consider how much prosecution wiggle room you should really be putting into the claims.

Conclusion

By integrating a design-around analysis with a desirability analysis, combining those results with the detectability analysis, and ensuring that the claims are sufficiently defined and not divided, the proposed 5D plan can assist with drafting high-quality claim sets and thereby maximizing potential patent value.

[Kelce S. Wilson](#), Ph.D., is the data privacy compliance and intellectual property counsel for Tenet3, a cybersecurity consulting firm serving both military contractors and civilian companies. Prior to beginning his legal career, he worked as a security penetration tester for the U.S. military. His patent work includes prosecution, litigation and license negotiation.

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