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Patent Litigation: An Introduction to Patent Claims, "Limitations," Infringement, and Invalidity -- Part Six

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This is the sixth and final part of a lengthy series on patent litigation. The previous five parts are summarized at the end of this sixth part. In this part, we will discuss the following topics:

- When bringing a patent infringement case, the plaintiff needs to make factually plausible infringement contentions, based upon a reasonable pre-filing investigation into the defendant's accused products or services;
- Local Patent Rules (LPRs) in key federal districts mandate how litigations set forth their infringement and invalidity contentions and responses;
- Infringement and invalidity contentions are typically expressed as claim charts;
- The "discovery' phase of pretrial litigation, together with mandatory disclosures required under the LPRs, gives each side the ability to obtain information, including confidential information, held by the other side.

We'll also touch briefly on some issues such as summary judgment, the trial, remedies, and settlement, that we've managed to skip over, despite the lengthiness of this six-part introduction to patent litigation.

A plausible case

If a patent owner (P, or plaintiff) wants to sue someone (D, or defendant) for patent infringement, what must P do to get the case started?

It can't be sufficient for P merely to assert in a court filing that it is the owner of U.S. patent number 9,876,543 and that it is accusing D's product X (or service Y, or in-house method Z), of infringing the patent. There must be more to it than that. If any patent owner could so readily file a patent-infringement lawsuit, the patent would be a "hunting license," and there would be real urgency to public concerns -- somewhat downplayed in Part 1 of this series -- about how the patent office supposedly gives out too many of these "hunting licenses" (or in the words of Professor James Grimmelmann, "The USPTO is an armory handing out legal howitzers on the honor system"). But we will see that P's patent alone is *not* a ticket to the courthouse; P needs to couple its patent with some basis for why it thinks it will be able to prove that D infringes.

Such requirements have to do, in part, with a part of civil procedure (*i.e.*, the conduct of non-criminal lawsuits) called pleading. "Pleading" sounds like a narrow, arcane legal term, and it is in a way, but it concerns an important issue: how to balance giving those with grievances their "day in court," on the one hand, with the need to protect potential defendants (and court resources) from baseless lawsuits, on the other hand (see Professor Scott Dodson's book New Pleading in the 21st Century). There is not an infinite costless availability of days in court. Even if D ends up winning the case, it can be very time consuming and costly, especially given the "American Rule" in which even victorious defendants generally pay their own legal costs. Patent litigation is sufficiently expensive that it has been called the "Sport of Kings." Thus, there had better be a good reason for initiating such an expensive proposition.

But on the other hand, to sue D for patent infringement, surely P can't be required to start off by providing absolute proof of D's infringement. Recall from Part 1 that the standard of proof for patent infringement -- even by the very end of trial -- is merely a preponderance of the evidence. To get a case rolling, therefore, P should need far less than this. At the end of the day, P might even turn out to have been *wrong* about D's infringement, or wrong about its own patent's validity, and still within its rights to have brought the lawsuit in the first place. Determining D's infringement is generally the *outcome* of the case, not its premise: during the case, both parties gather sufficient information to determine whether D is in fact infringing, and to test (more rigorously than the patent office could) whether P's patent is valid. Such fact gathering during litigation will generally lead to a settlement. Only a small percentage of cases proceed all the way to trial; these are often "close" cases where both sides have substantial facts in their favor.

Still, even if P doesn't require anything close to absolute proof to get a patent-infringement case rolling, P needs more than the bald assertion, based on a mere suspicion, hunch, or gut-level feeling, that D infringes.

How much more? Enough, on the one hand, to justify the high cost and inconvenience to D of defending the case (including, as we'll see, providing P's attorneys with D's confidential materials, such as source code, describing the accused products), yet, on the other, not so much that D could present P with a "Catch-22" or "chicken and egg" problem, in which D says in effect, "you can't sue me for infringement because I have all the evidence you would need to make even your initial showing of infringement."

What P must have, at the outset of a patent-infringement suit against D, is a *reasonable basis* to think it would be able, by the time of trial (if the case doesn't settle before then), to show that D infringes. Emphasizing "reasonable basis" here indicates that this can't merely be the fervent wish that something will turn up; that is called a "fishing expedition" (and is frowned upon by courts). True, a surprising "smoking gun" might turn up in D's internal emails -- and that is one purpose of what is called the "discovery" phase of litigation (see below) -- but to be entitled to such discovery from D, P first needs that reasonable basis.

Until a few years ago, the minimal basis for a patent-infringement suit was very minimal indeed. The Federal Rules of Civil Procedure (FRCP) Rule 8(a)(2) states that P in any civil litigation must provide "a short and plain statement of the claim showing that the pleader is entitled to relief." Until just a few years ago, this short and plain statement, as applied to patent litigation, could be satisfied (under now-abrogated Form 18) with little more than the patent number and an assertion along the lines of "The defendant has infringed and is still infringing the Letters Patent by making, selling, and using electric motors that embody the patented invention…" -- no listing of the specific claims of the patent (much less of specific elements of each claim), no specific names of the defendant's accused products, and no explanation of how or why P believes the accused product embodies or practices the patent claims.

Now, for P to merely hand D the number of a patent that P believes applies to D's product is actually somewhat more informative than one might think: from the patent number alone, D can at least look at claim 1, and try to figure out why P might think that this claim (*i.e.*, each and every one of its limitations; see Part 2) is a reasonable description of some part of D's product.

For example, D might ask, "well, if my product X *pre*-dated P's patent, how would I point to X as prior art invalidating D's patent?" If D can see its way to that, it might not be far from how P thinks that X (which actually *post*-dates P's patent) infringes the patent. But really, should D be required at the outset to guess at P's theory of infringement?

In late 2015, this low bar for patent-infringement litigation was effectively heightened via amendments to the FRCP, in light of the U.S. Supreme Court's decision in two non-patent cases, *Iqbal v. Ashcroft* and *Bell Atlantic v. Twombly*. The *Iqbal* decision held that a Guantanamo detainee had not presented sufficient evidence of religious-discrimination intent to meet even the seemingly-low FRCP Rule 8 pleading requirement; *Twombly* involved what type of evidence was needed just to bring (not necessarily win) one type of antitrust case. While it may be difficult to see their applicability to something as mundane as patent litigation, the result of *Iqbal* and *Twombly* was to interpret Rule 8 (and hence all federal civil litigation, including patent litigation) to require that a plaintiff present "*plausible*" factual allegations. The alleged facts need not be proven up front, of course, but they must be stated with some specificity, and must be more than a "mere speculative possibility." For examples of Iqbal/Twombly applied in patent litigation, see:

- Atlas IP v. PG&E (complaint silent on several claim limitations);
- Ruby Sands v. Amer. Nat'l Bank of Texas (claim requires a device, but complaint accuses a mobile app);
- but contrast the CAFC's 2018 Disc Disease Solutions v. VGH (involving simple technology), distinguished for more complex technology in, *e.g.*, Lexington Luminance v. Service Lighting (NDTX, 2018).

Even before Iqbal/Twombly and the abrogation of Form 18, most patent-infringement complaints generally achieved a greater level of specificity, due to two other requirements.

Another part of the FRCP, Rule 11, states in part that an attorney filing a pleading, motion, or other paper, is thereby certifying, after "an inquiry reasonable under the circumstances," that each factual contention has evidentiary support (or if not, that it be specially called out as likely to gain such support "after a reasonable opportunity for further investigation or discovery:" these are typically signaled with the phrase "on information and belief").

Patent-infringement cases have in turn interpreted Rule 11 to require that P conduct a reasonable *pre-filing* investigation into D's technology. This investigation will often include "reverse engineering or its equivalent" to determine, from publicly-available materials, whether D's product can reasonably be asserted to infringe P's patent claim. See cases cited in my article "Hiding in Plain Sight: Using Reverse Engineering to Uncover (or Help Show Absence of) Software Patent Infringement."

At the very least, a reasonable pre-filing investigation before bringing a patent-infringement case would include diligently attempting to acquire and use the product or service that will be accused of patent infringement. Another indication of a reasonable investigation is diligently attempting to acquire technical information about the product, as opposed to relying solely on D's marketing materials. It is curious how often P fails to even try, simply *assuming* that limitation-level information about D's products is only available from D's confidential materials. (Though in some cases, P might want to avoid early costs, including for technical consultants such as myself. Such sunk costs might push P to over-commit to even what the early-retained consultant told them looked like an unsustainable position.)

Apart from Rule 11, the Iqbal/Twombly "plausibility" requirements largely align with the Local Patent Rules (LPRs; also called Patent Local Rules, or PLRs) adopted in most of the federal districts in which the bulk of patent litigation occurs. As discussed in more detail in the LPR section below, these rules require that both plaintiffs and defendants provide limitation-by-limitation comparisons, usually in the form of "claim charts," providing some basis for (though not necessarily proving) P's assertion that an asserted patent is embodied in D's infringing product, or D's assertion that P's claim is rendered invalid by anticipation from a piece of prior art.

Putting together the Iqbal/Twombly plausibility requirements, Rule 11, and the LPRs, we can say that a reasonable way for P to initiate a patent-infringement case against D is to assert *something* D has, or (for method claims) D does, that goes with each and every limitation of an asserted patent claim. At this stage, it needn't be authenticated evidence, but simply a limitation-specific assertion, along the lines of "the widget-connected-to-gizmo limitation of P's patent claim is embodied in the 'Framis and Gadget' component of D's accused product." The sections below on claim charts provide more examples. As noted in Part 4, it is generally useless and inadequate

to say something like, “D meets the ‘framis’ limitation of P’s patent claim, because D’s product includes a framis;” this is called “aping” or “mimicking” the claim language. (Unless, of course, D’s product or its materials also call the same thing a “framis,” in which case P still ought to show that D’s so-called “framis” is the same or at least equivalent to what P’s patent claim calls a “framis.”)

Asserting something factually specific, at the very outset of a case -- *before* P has access to D’s internal documentation for how its products work; in fact, normally as a *prerequisite* for P to acquire access to D’s internal materials -- sounds at first like a “Catch-22” or “chicken and egg problem.” However, it is a rare product or service on the market whose make-up can only be determined using internal documentation. In the case of software, for example, something can often be determined even without the vendor’s confidential source code. P runs into problems when it *assumes*, without checking, that information, at limitation-level granularity, is unavailable from any other source besides D. “Straight from the horse’s mouth” is good, but usually isn’t the only source of information about the horse.

What P must do is diligently hunt out public sources of information on D’s products it’s going to accuse. As noted above, this search often includes reverse engineering. Even a search that is unsuccessful in locating publicly-accessible information pertaining to one or more claim limitations, will -- if the search is diligently carried out and documented -- go a long way to satisfying P’s requirements. The term “exhaustion” is sometimes used to describe this search and its results: for example, while the court may later require that D provide source code so that P can be more specific in its infringement contentions, P “of course, may first be required to demonstrate that they exhausted other ways of exploring potential infringement” (NYU v. e.Piphany).

Some of what we’ve just discussed may sound stacked against patent owners, in favor of potential defendants. Indeed, it has been maintained that heightened pleading (and initial infringement contentions, which are not formally part of pleading, but which occur early in a case) can help solve the problem of plaintiffs (especially so-called “trolls”) too readily filing patent-infringement lawsuits based on the “nuisance value” of the case, making it cheaper for D to just settle rather than show non-infringement or invalidity. However, note that both Rule 11

and the LPRs apply equally to D as well as to P, and that plausibility is also required for any counter-claims D might make.

Further, requiring that P start off with a plausible case does *not* require P to somehow collect information about D's products that is within the exclusive possession or control of P. That would be the "Catch-22" noted earlier: "you can't get me for infringement because I have all the evidence you would need to show it."

Now, interesting questions do arise when P's patent claim is for something difficult to detect, such as a method used behind closed doors to *make* a product (as opposed to a method directly carried out by a product or service, available on the market). While such claims are sometimes held to be intrinsically less valuable than others, precisely for the difficulty of detecting their infringement, it has been said that Form 18 was important for their protection. Relatedly, and remarkably, one part of the U.S. patent statute (35 USC 295, for product-by-process patents) even shifts the burden of proof from P onto D for certain forms of hard-to-detect infringement, if the court in part finds "that the plaintiff has made a reasonable effort to determine the process actually used in the production of the product and was unable to so determine, … the burden of establishing that the product was not made by the process shall be on the party asserting that it was not so made." But note that even here, P must first make that "reasonable effort."

How to resolve these competing interests of D's right to be free of truly "baseless" assertions of infringement ("baseless" is of course very different from "eventually-shown-to-be wrong") vs. P's right to pursue difficult-to-detect infringement of its patent claims? We will see further along in this article that local patent rules for contentions and mandatory disclosures -- together with application of these rules *early* in the case, before costs mount -- and the civil procedure mechanism of "discovery," go some way in addressing both concerns, and therefore (as usually happens when competing interests are balanced) in making everyone unhappy.

Having said here that a patent is not a "hunting license" -- the patent owner must make out a plausible case of infringement, before filing an infringement case -- yet also having said in Part 1 that a patent's value even in non-litigation contexts is ultimately based on the ability to sue for infringement (which includes the ability to demand that the accused infringer turn over confidential materials to the accuser), what are we left with? If not a hunting license, what *is* a patent? It is a right to sue for infringement, with a starting rebuttable presumption of the patent's

validity, and with a right to go rooting around in the defendant's closets for evidence of infringement, if the patent owner can first make (from having rooted around in public sources) some plausible case of the defendant's infringement.

Local Patent Rule requirements for claim charts

The U.S. patent litigation system is fairly dispersed. While patent litigation is confined to federal rather than state courts (or to the PTAB and ITC, which are federal agencies), there are over ninety different federal district courts. Anyone reading this series up to this point likely knows this, but just in case: "EDTX" is the U.S. District Court for the Eastern District of Texas (it is a federal court located in Texas, not a Texas state court); "NDCA" is the U.S. District Court for the Northern District of California; "D.Del." is the U.S. District Court for the District of Delaware (a small state with only one federal district, but one in which many corporations are registered, and in part for that reason, an increasingly-popular site for patent litigation).

Despite this dispersal, there is a single federal patent law (35 USC, with patent infringement largely covered by 35 USC 271) applying across all district courts. All appeals from decisions in these courts go not to the circuit court in which the district court resides (such as the 9th Circuit for NDCA, or the 5th Circuit for EDTX), but rather to a single U.S. Court of Appeals for the Federal Circuit (CAFC), which largely specializes in patent law, and which was established in 1982 in part to provide uniformity to U.S. patent law. See technologist and attorney Bruce Abramson's excellent book (despite the overheated title), *The Secret Circuit: The Little-Known Court Where the Rules of the Information Age Unfold*.

The bulk of patent litigation occurs in a small number of federal districts. For reasons we mostly won't get into right now, federal venues heavily used for patent litigation have included EDTX, D.Del., and the central district of California (NDCA). A 2016 Supreme Court decision, TCHeartland v. Kraft Foods, clarified where a corporation "resides" for purposes of establishing in which venues it can be sued for patent infringement.

Most of these federal districts have adopted LPRs covering how P should assert infringement ("infringement contentions"), how D should assert invalidity ("invalidity contentions"), how the other side can respond (non-infringement and validity contentions), claim construction,

scheduling, document production ("discovery"), and other aspects of patent litigation. While the LPRs differ from one venue to the next, and while these differences can in part inspire the "forum shopping" that the TCHeartland decision has addressed, many would disagree that they constitute a "crazy quilt" (though many might also hope for replacement by "Federal Rules of Patent Procedure"). Strong similarities across the LPRs (though not always in how individual courts interpret them) can be seen at the useful localpatentrules.com website, including its cross-venue comparisons of infringement contentions and invalidity contentions.

According to a judge, now retired, involved in drafting the NDCA LPRs, which became a model for other LPRs, the section on infringement and invalidity contention requirements (*e.g.,* NDCA LPR 3-1 and 3-3) "dramatically heightens the level of specificity required … and it does so early in the case" (Ware & Davis on NDCA PLRs at 984).

In particular, most LPRs require that the plaintiff produce "A chart identifying specifically where and how each limitation of each asserted claim is found within each Accused Instrumentality…" (emphasis added; recall from Part 2 that a "limitation" is a selected scope-defining element or steps of a patent claim; "instrumentality" is the shorthand for a product, system, service, in-house method, etc. that is accused of infringement). These few words impose significant early requirements upon those suing for patent infringement:

- P must produce a chart covering not only every patent it is asserting, but every claim it is choosing to assert within each patent, and each and every limitation within each such asserted claim
- It must map each such limitation to something in each product or service it is accusing of infringement. Note that if there are many related accused products, P can chart "representative instrumentalities," so long as it can show why the charted products are indeed representative (in a way that is relevant to the patent claim) of the uncharted products;
- The chart must identify "specifically where" each limitation is found within each accused product or service -- *i.e.,* identify some location (*e.g.,* a part name) within the accused product or service;

- It must identify "how" the limitation is found within the product or service -- *i.e.*, give some explanatory basis for P's contention that D's product feature B is an instance of P's claim limitation A.

Early imposition of such requirements is important if the requirements are to weed out truly baseless, implausible cases without a large cost to D and to the court system. We will see that this also means restricting the ability to later *amend* the contentions.

The House (but not the Senate) in 2014 approved a similar requirement for the federal patent statute as §281A ("Pleading requirements for patent infringement actions") as part of Representative Bob Goodlatte (R-Va)'s bipartisan-supported Innovation Act. This would in part have P identify as part of its initial complaint (thus, even earlier than required for contentions under the LPRs) ''(A) where each element of each claim ... is found within the accused instrumentality; and (B) with detailed specificity, how each limitation of each claim … is met by the accused instrumentality." Note that the proposed statute did *not* apply similar (though necessarily post-complaint) requirements for D's invalidity contentions.

The LPRs provide further requirements regarding "means-plus-function" claim limitations (see Part 4), equivalence (DoE; also see Part 4), and indirect infringement (see below).

P will generally have to produce infringement contentions (ICs) before D has disclosed confidential materials about how D's products or services work (see Discovery below), and some courts allow P's initial ICs to be somewhat vague. Note that D.Del.'s rules can delay P's "initial claim chart relating each accused product to the asserted claims each product allegedly infringes" until one month *after* D has disclosed to P "the core technical documents related to the accused product(s), including but not limited to operation manuals, product literature, schematics, and specifications," and so there would appear to be less pressure (one month's worth) on P to diligently mine public sources of information regarding the accused products.

There was once a separate category of "preliminary" ICs, and the term "PICs" is still frequently used, but there is not supposed to be a wide gulf between initial and final contentions. For example, what if P initially doesn't assert equivalence as well as literal infringement, but much later in the litigation decides it wants to assert DoE? An important goal of claim charts is to

"crystallize" (lock down) positions early in the infringement, and this goal is undermined if litigants can amend charts at will to add new theories of infringement or invalidity.

NDCA in 2008 updated its LPRs to eliminate "the concept of 'preliminary' contentions in favor of a single round of contentions which can only be modified for good case" (NDCA PLR advisory subcommittee report, quoted in Wade/Davis article cited above). Many litigants purport to "reserve the right" to amend their claim charts, without first asking whether there really is such a right. Some courts do allow an amendment "by right" in some circumstances, such as an unfavorable claim-construction ruling, but contention amendments generally require "good cause." According to Wade/Davis, "What constitutes good cause has proven to be the most frequently litigated issue raised by the PLRs" and (referencing O2 Micro v. Monolithic Power), "diligence is the central inquiry for determining good cause … the burden of proving diligence rests squarely on the party seeking to amend its contentions."

Here, diligence refers not only to having first proactively sought out public information (possibly even, as we saw above, "exhausted other ways of exploring potential infringement"), and then mining disclosures provided by the other side, but also diligence in seeking to request any amendments thought to be necessitated by the new information, and showing that the new information really is "new," *i.e.*, could not have been reasonably acquired earlier, even with the exercise of diligence.

The LPRs impose mandatory disclosure requirements upon D, reducing the extent to which P must explicitly request relevant documents. Some courts have closely tied these mandatory disclosures (and later allowed discovery) to what P has disclosed in its infringement contentions. For example, D often need not disclose information on products that P has not yet accused (or possibly not accused in sufficient detail). See, *e.g.*, Aavid Thermalloy v. Cooler Master, NDCA, 2018: "Perhaps Aavid is correct that it could not identify all of Cooler Master's products without purchasing every product that incorporates a vapor chamber. But Aavid could have tried to identify some of Cooler Master's products or bought some products that incorporate vapor chambers and examined them (or made other efforts to obtain and examine Cooler Master vapor chambers)."

While this all seems to be adding disproportionality to P's burden, the LPRs impose nearly identical requirements on D's invalidity contentions: "A chart identifying specifically where and

how in each alleged item of prior art each limitation of each asserted claim is found…". Note that both infringement and invalidity charts share the same "each x 3" structure: (1) for each claim, (2) for each limitation within that claim, (3) identify where (and possibly how) the limitation is found in each accused instrumentality or prior-art item.

Some LPRs also dictate how litigants are to respond to the other side's contentions, such as "For each Asserted Claim against that party, a chart stating whether the party admits that that element is present in the Accused Device or contends that it is absent from the Accused Device. If the party contends that an element is absent from the Accused Device, it shall set forth in detail the basis for that contention."

Litigants often believe that providing obligatory "notice" to the other side is the sole purpose of ICs, and consequently give perfunctory thought to such obligatory productions. (This is like the diner who orders two rotten eggs and burned toast "because I've got a tapeworm, and it's good enough for him".) However, apart from providing obligatory "notice" to the other side, some of the purposes and policies underlying the LPRs on infringement and invalidity contentions include:

- Forcing parties to take a firm (or at least semi-solid) position early in the case;
- Avoiding the "shifting sands" or "musical chairs" phenomenon that often follows a court's claim-construction ruling; and
- Avoiding the "moving target" or "Whack-A-Mole" problem, in which a litigant by careful use of phrases such as "see for example," avoids committing, until the last possible moment, to a particular theory of infringement or invalidity.

The LPR IC requirements, by forcing litigants to think through their cases on a limitation-by-limitation level, can even help the litigant to:

- Facilitate investigation and case preparation;
- Reveal claim-construction issues (teeing up the case for a Markman hearing);
- Reveal gaps, inconsistencies, and weaknesses in one's own case (leaving aside whether or how this would be reflected in the version of the ICs given to the other side);
- Narrow the case;
- Facilitate settlement; and

- Signal the degree of one's preparation (though it is doubtful this is accomplished by the common practice of using copy & paste to produce enormous claim charts, which merely signals "we know how to mindlessly jump through hoops").

The impact of these procedural rules, and the extent to which they can keep patents from turning into "hunting licenses" or mere tools of harassment, depends in part upon judicial willingness to enforce these rules. Quite naturally, judges often prefer that a case be decided "on the merits," rather than punish a litigant (up to throwing out its case) for what seems like a mere "procedural defect." Some published decisions appear to reflect annoyance with the insufficiency of P's contentions, coupled with a belief that P just needs a little push and some more time. This may in turn reflect an unwillingness to use an (early) procedural defect as a proxy for what would otherwise be a (later) finding of an inadequately-supported case, and an understandable, but possibly costly and inefficient, fear of cutting off a case too early.

Explaining and contending

The "how" requirement in most LPRs, together with cases interpreting the LPRs, means that merely juxtaposing evidence with each limitation, without some *explanation* of how the two are related, should be insufficient. An example of "mere juxtaposition" was given in Part 3 using a claim for toner. It is repeated below in two-column chart format; contrast juxtaposition without explanation:

a thiol compound having a bi- or more-functional thiol group;	See, *e.g.*, Showa Denko KarenzMT

with a portion of a chart that *explains how* the claim limitation is present in the accused product:

a thiol compound having a bi- or more-functional thiol group;	D's accused product includes a thiol compound having a bi- or more-functional thiol group, including for example (but not limited to) Showa Denko KarenzMT, which is a trade name for pentaerythritol tetrakis (3-mercaptobutylate), which in turn is of the type of thiol compound specified in P's claim 1, because claim 7 (dependent upon claim 1) indicates it is one possible thiol compound, and because the '704 spec indicates it is a preferred embodiment.

Notice that the second example also *explicitly asserts* that the accused product includes an instance of the limitation. Such explicit assertions are surprisingly often omitted from what are, after all, intended to be infringement *contentions*. P sometimes prefers vague hand-waving (such as "See, *e.g.*," in the first example above) instead of explicit contentions (as in the second example above) because P doesn't want to commit itself to a specific "theory" of infringement. Here, an infringement theory means an inter-weaving of the claim language (properly construed, of course; see Part 2), on the one hand, with the language of whatever information is available regarding the accused product, on the other hand. Above, part of P's infringement theory is that D's use of Showa Denko KarenzMT embodies the "a thiol compound…" limitation of P's claim.

P naturally wants to avoid flatly stating this, because, who knows, it might turn out that KarenzMT is only used in a part of the product which can't be tied to revenues, and during discovery a different ingredient, not known at the time this chart was produced, would better support a large court lost-profits or reasonable-royalty award. The second example above still tries to leave P some wiggle room with an "including for example (but not limited to)" formulation, while still not shying away from an explicit "D's accused product includes…" assertion. (Whether this bold assertion actually has anything under it, other than the single named example, might depend on whether that different later-discovered ingredient is sufficiently similar to the given example.)

Claim charts for analyzing infringement and invalidity

As discussed in the previous section on Local Patent Rules, many LPRs require that litigants prepare one or more claim charts as part of their infringement or invalidity contentions, *e.g.*, "A chart identifying specifically where and how each limitation of each asserted claim is found within each Accused Instrumentality." Some LPRs do not explicitly require a chart, but the required contentions are most readily expressed in chart or tabular form.

The claim chart is a standard tool in patent litigation that helps organize comparisons between patent claims on the one hand, and something outside the patent on the other hand. A claim chart takes the "business end" of a patent – its claims – and splits each claim down into its limitations, and juxtaposes each individual limitation with a corresponding element (or step in a process)

found somewhere else, usually in a product or system accused of infringing the patent or in a piece of prior art being used to try to invalidate a patent claim.

Generally, a claim chart contains two columns: the left-hand column holds the patent claim, and the right-hand column references parts of the accused product or of the prior art that are being compared or contrasted with the claim.

Just as important as the two-*column* format, each *row* in a claim chart is devoted to a separate limitation of the claim being charted. The chief benefit of the chart format is that it helps keep separate each limitation, together with the corresponding facts relating to it as found in an accused product or in the prior art. A good name therefore might be "limitations chart," but these are usually called claim charts (or "claims tables"), and "claim charts" is the name we'll use here.

Each row contains on the left side the text for a single claim limitation. For example, taking the facade-server patent (7,472,398) that has been used as a running example in this series, and as is common in patent litigation assigning a [claim/limitation] designator, we might begin charting a few limitations from claim 1 like so:

… [1d] a facade-server stored in the memory unit and executable by the CPU; and	
[1e] a program stored in the memory unit and executable by the CPU,	
[1f] wherein the program creates an interface between the facade-server and a web-browser for exchanging data associated with the application, ...	

It is important to not rely on the raw claim language, but to instead employ claim construction (see below). This is not only true when the court has handed down claim construction following a Markman hearing, but even before then; litigants must consider the claim construction they are relying upon. Thus, the left side of a claim chart may also contain claim construction (which alternatively is sometimes shown in a third column), as shown in bulleted items below. In addition to formal claim construction, it is often useful, at least while preparing a claim chart, to

call out any constraints that other limitations might impose on this one. The bulleted items below might be treated as "scaffolding," to be kicked away just before submitting to the court and to the other side. For example:

[1d] a facade-server stored in the memory unit and executable by the CPU; and ● A "facade-server" is defined as a web server that "does not use any network protocols" (see patent file wrapper). ● Per [1g], the facade-server [can/must] host an application. ● Per [1f], the facade-server [can/must] have an interface with a web-browser.	
[1e] a program stored in the memory unit and executable by the CPU, ● <Any additional attributes of the program *e.g.* from claim construction, or as further constraints set, *e.g.*, by other limitations such as [1f] below…>	
[1f] wherein the program creates an interface between the facade-server and a web-browser for exchanging data associated with the application, ● <Any additional attributes of the interface, *e.g.*, from claim construction …>	

We've just discussed the *left*-hand column. As for the *right*-hand column, each row contains:

- An assertion that the limitation is met (possibly through equivalence), or not met (for non-infringement or validity charts), in the accused product or asserted prior-art reference;
- Facts (known at the time the chart is created) supporting the assertion; and
- Some explanation of how or why the facts support the assertion that the limitation is (or is not) matched (see "Explaining and contending" above).

If the limitation is lengthy, has multiple attributes (possibly from claim construction), and/or has constraints implied by other limitations, these are sometimes shown underneath subheadings on the right side. For example:

[1d] a facade-server stored in the memory unit and executable by the CPU; and ● A "facade-server" is defined as a web server that "does not use any network protocols" (see patent file wrapper). ● Per [1g], the facade-server [can/must] host an application. ● Per [1f], the facade-server [can/must] have an interface with a web-browser.	D's accused product, Legacy2Web, embodies this limitation of P's claim, because it includes a component (filename SERVER.EXE) which acts as a web server, but does not use any network protocols. This component also hosts an application; and has an interface with a web-browser. **Web server without network protocols:** <Facts indicating that SERVER.EXE in D's product includes a web server (*e.g.*, it sends HTML pages to clients) but doesn't use any network protocols (*e.g.*, if it communicates via HTTP, it's only via local HTTP.... Possibly no need to argue here that local HTTP is not a network protocol (or, in D's non-infringement chart, to show local HTTP is still a network protocol), but litigant probably wants to indicate in some way that it has thought about, and can deal with, this issue....> **Hosts application:** <Facts indicating that SERVER.EXE in D's product hosts an app, presumably one that meets the constraints of any other app-related limitation...> **Interfaces with web browser:** <Facts indicating that SERVER.EXE in D's product interfaces with a web-browser, *e.g.*, facts indicating some form of inter-process communication (IPC), or via local HTTP…>
[1e] a program stored in the memory unit and executable by the CPU, ● Per [1f] below, the program must create an interface between [1d] above and a web-browser.	D's accused product, Legacy2Web, embodies this limitation of P's claim, because <Facts indicating presence of a program with any required special attributes…>
[1f] wherein the program creates an interface between the facade-server and a web-browser for exchanging data associated with the application,	D's accused product, Legacy2Web, embodies this limitation of P's claim, because <Facts indicating program creates an interface with the required attributes…>

Subheadings are also sometimes shown in the right-hand column when a single chart is being used for multiple closely-related products, or versions of products, or for a combination of multiple prior-art references (*e.g.*, in an obviousness analysis; see Part 5).

In the example above, rows [1e] and [1f] originated as part of a single semicolon-delimited phrase. When litigants split claims into limitations, and therefore into rows of a claim chart, they often do so based solely on semicolons located in the claim text. This is often a good first approximation to identifying the limitations, but can often result in an unwieldy claim-chart row that ends up glomming together multiple claim attributes that are better handled separately.

Claim construction may change over the course of a case; when this happens, if fresh claim charts are required, it is important to remember not only to change any explicit claim construction in the left column, but also to check that facts set forth in the right column still match the new claim construction. If new factual assertions are needed to match newly-construed claim terminology, amending the chart may require demonstrating "good cause" (see LPRs section above).

Discovery: Getting information from the other side

The claim chart noted in the previous section is intended as an example of an initial claim chart that P might produce early in a case. It is based on public information about D's product, and on inspection of the product itself. This initial chart would have been generated pre-discovery, and so does not include, *e.g.*, source code citations.

As the case proceeds, P would produce a more complete chart. For example, right now the chart at limitation [1a] points, merely "on information and belief," at D's use of the software on in-house computer systems, and at [1f] waffles on whether it's SERVER.EXE or INSTALL.EXE that is the program that creates an interface. P in this claim chart has presented a plausible case that D infringes, but unless D doesn't present a non-infringement defense, a plausible case, while necessary to start a case, is generally insufficient to show D's infringement.

As noted earlier, a surprising amount of information is often publicly accessible about products and services, at a sufficient level of granularity to determine the presence or absence of components required by patent claims. Diligent mining of publicly-accessible information may

include reverse engineering (RE) the software at issue: both static RE to examine the executable files that comprise the product (possibly disassemble the code, or for Java apps, even decompile it; or perhaps something as simple as scanning the file for signatures or patterns that suggest the use of particular algorithms); and dynamic RE (using tools such as debuggers, loggers, or network packet sniffers) to watch the software in action.

Limitation-level details for other types of products are sometimes publicly available, for example, in schematics that companies disclose to the FCC, in technical repair manuals, and for software, of course in open source, SDKs, API documentation, website JavaScript, and so on.

But few products in litigation completely reveal to inspection all the elements/steps in their makeup/manufacture/operation, such that one could take P's patent claim, D's product or service, and readily align them to unambiguously determine infringement or non-infringement. Apart perhaps from some chemical or pharmaceutical patents with a single ingredient, one generally cannot just x-ray a product to see infringement, and show it to a jury.

Thus, having exhausted public information, in order to show D's infringement, P will likely need some information closely held by D. This might include confidential proprietary source code (*i.e.*, not open source), schematics, blueprints, specifications, internal emails, test results, information on not-yet-released forthcoming products, and the like. To establish the monetary damages that might be appropriate if D is found to have infringed, P will certainly need D's internal spreadsheets or databases of sales, projected future sales, inventory, per-unit costs, and the like.

Such information may come under the mandatory disclosures required by the LPRs (see above), or be requested as part of "discovery." Discovery in civil litigation, including patent cases, is governed by FRCP Rules 26 to 37. Key discovery devices include:

- oral depositions -- taking testimony, out of court but transcribed and under oath, *e.g.*, from the other side's engineers, product managers, a representative of the organization designated under FRCP 30(b)(6), or a testifying expert retained by the other side;
- disclosure of documents -- *e.g.*, specifications, blueprints, spreadsheets, and internal emails;

- on-site inspections -- *e.g.*, of source code provided on a restricted basis at a company's law firm or escrow facility;
- interrogatories -- written questions to be answered by the other side who may, rather than directly answer the question, instead under FRCP 33(d) supply the documents it would itself use to answer the question; note that the LPR contention and claim-chart requirements were initially designed to replace previous "contention interrogatories" that each side would issue; and
- requests for admission -- *e.g.*, "admit or deny, and provide basis for any denial, that your product contains a web server, whether or not so named, which web server shall herein be defined to refer to any software which on request can send HTML web pages to a client."

At first it seems remarkable that that P can use the court system to force D (which is often a competitor) to open up its internal information -- often including trade secrets -- to an outsider. In the case of patent litigation, at first it appears that it is the mere ownership of a patent that provides this power (and in some other countries, with a "natural rights" view of patents, forced inspections of suspected infringers are an inherent right of the patentholder; see attorney Esther Seitz's excellent comparison of U.S. and French Fact-Gathering in Patent Infringement Cases).

However, we've seen above that in the U.S., it is a patent *plus* a plausible case (more than a suspicion or speculative possibility) that provides this entitlement. We've also seen that P may need to first "exhaust" public sources of information before D will be forced to provide internal information. P's initial claim charts may serve as a ticket of admission to discovery; see *e.g.*, Theranos v. Fuisz (stay D's discovery obligations in light of P's deficient infringement contentions; yes, *that* Theranos). Several LPRs condition D's disclosure of "documents or things sufficient to show the operation and construction of all aspects or elements of each Accused Instrumentality…" to those aspects/elements "...identified with specificity in the pleading or Accused Instrumentality Disclosures of the party asserting patent infringement" (see D.Utah LPRs 2.2(b)(1)). P has to provide good reason for putting D through the ordeal of discovery.

In addition to resisting P's discovery requests, D will likely seek restrictions covering the disclosed information. Every such case will have a court Protective Order (PO) governing how the information is to be maintained and used (see my article on source code POs). Something learned in litigation should not be used for non-litigation purposes. When litigants are

competitors, each will insist that certain "Attorney Eyes Only" (AEO) documents be accessible only to the other side's outside counsel and outside experts, not to its in-house engineers or decision-makers. If the other side actively seeks new patents, anything disclosed in the infringement litigation should (as part of a "prosecution bar") be kept away from attorneys prosecuting those patents before the USPTO.

Some of the issues involved, referring specifically to source code discovery but largely representative of patent-litigation discovery generally (as well as of non-patent software litigation), are nicely listed in a Discovery Order from the massive Apple v. Samsung case (2012):

"In a typical patent infringement case involving computer software, few tasks excite a defendant less than a requirement that it produce source code. Engineers and management howl at the notion of providing strangers, and especially a fierce competitor, access to the crown jewels. Counsel struggle to understand even exactly what code exists and exactly how it can be made available for reasonable inspection. All sorts of questions are immediately posed. Exactly who representing the plaintiff gets access — and does this list include patent prosecution counsel, undisclosed experts, and so-called 'competitive decision makers'? Must requirements and specification documents that explain the functionality implemented by the code be included? What compilation, debugging and analysis tools are required? What about the test database and user manuals? Make files? Build files? Does the code have to [be] produce[d] in a native repository such as CVS or Perforce? Must daily builds in development be produced (and if so, in real-time or batch?) or is production limited only to copies in commercial release? Put simply, source code production is disruptive, expensive, and fraught with monumental opportunities to screw up."

While the focus above has been on infringement-related information that P needs from D, there is generally also information P has, which D needs. If D is counter-suing P for infringement of D's patents, it will need the same type of information from P that P needed from D. D will also want information on P's own practice or working of P's patent: while there is no working requirement in U.S. patent law, it can be relevant in several areas including lost profits, injunctions, and importation (see "The rest of patent litigation" section below).

If P is a non-practicing entity (NPE) or so-called "troll," it by definition does not have its own products or activities that might infringe D's patents, and so P cannot be put through the same type of discovery burdens it can put D through. This asymmetry (a lack of "mutually assured

destruction") is one basis for the complaints about trolls; they upset what was the usual symmetrical arrangement of competitors suing each other for patent infringement. Note however, that "trolls" were not the start of the problem: litigants have long used the cost of litigation (including discovery) to affect case outcomes, apart from the case's likely outcome on the merits.

D will also want information from P to help make out D's invalidity case. While prior art is by definition information that was publicly accessible at a relevant time, and hence not as exclusively held as some infringement-related information, D will use discovery to try to uncover P's knowledge of prior art at the time of the PTO exam (if not disclosed to the PTO, significant known prior art can make the patent unenforceable), and to help uncover obscure prior art (see Part 5). A major reason for litigation is for each side to find facts held by the other side. Some facts a litigant otherwise has no interest in disclosing; discovery flushes out the things that D knows are more favorable to P, and vice versa.

Parties to patent-infringement litigation may also seek information from third parties, such as the maker of a component used in an accused product. While not formally part of discovery (it comes under FRCP 45 on subpoenas), securing information from third parties may be vital in some cases, *e.g.*, where the defendant has licensed an object for which it does not have detailed specifications or source code, and that object meets one of the claim limitations. Note that D need not itself make each and every component for it to infringe. Even steps in a process, carried out by a third party, can still be part of a single infringing process, if the third party is acting under D's direction or control (see Akamai v. Limelight).

When making discovery requests, litigants tend to be over-inclusive for fear of not getting something. The requests are often unfocused, almost designed to justify the other side's complaint that the request is "unduly burdensome" (discovery may be *duly* burdensome, but not "unduly so," *i.e.*, out of proportion to the requestor's needs). One way to focus discovery requests is to consult with technical and economics/accounting experts to see what they will need to produce their expert reports. An expert can often steer the attorney away from a "give us all your source code" request towards something like "disclose all the client and server source code for products X and Y, versions starting with 2.0, and including not-yet-released versions, which support the MagicButton feature shown in the screenshots below."

How does information acquired in discovery relate to what a litigant can learn from public sources (which is sometimes called "informal discovery")? In some cases, it is reinforcement. For example, perhaps P, from D's source code, can learn the details, at a filename and function-name level, of what it had gleaned from inspecting the product. After source code inspection, P can update its claim chart to include pinpoint citations to the source code. It will also be easier for P to authenticate evidence that came directly from D ("straight from the horse's mouth") rather than from P's web searches and reverse engineering. P might have opened up D's device, taken a photo of the XYZ graphics chip it's using, and put that in a claim chart, but it's also going to want D's internal document, disclosed in discovery with a Bates stamp, stating "our device uses the XYZ graphics chip."

Publicly accessed information should also help focus discovery. For example, P may have learned from reverse engineering which parts to closely inspect out of D's massive source code dump (parties sometimes over-disclose as well as under-disclose). Further, one small piece of confidential information ("our product uses vendor V's part # 622231") can be the hook needed to pull in a larger amount of public information (the data sheet for V622231).

Public documents may be marketing fluff pieces, and should not be the sole basis for infringement contentions (see *e.g.*, Finjan v. Proofpoint: "Finjan's infringement contentions are largely comprised of generic marketing literature and screenshots of the type routinely rejected by courts in this District [NDCA]. These unexplained references comprise the majority of Finjan's over 1,000 pages of claim charts. Defendants correctly note that the same handful of screenshots and website addresses are copied and pasted into hundreds of cells, often with little or no explanation for what information contained in those sources relates to the relevant claim elements").

On the other hand, confidential information disclosed as part of discovery may in some cases be *less* reliable (in an engineering if not in a legal sense) than what is available in public. Internal documents may include speculative forward-looking documents for projects that were not implemented, incorrect comments in source code, idle chit-chat in emails, and so on. An actual revenue-generating product or service put out into the market, and what can be gleaned from its inspection, is in some ways a more reliable basis than mere documents *about* the product. Using the XYZ example above, a photo of the broken-open insides of D's product purchased on the

market, showing an XYZ chip, may be better evidence (for the proposition that D's product uses an XYZ) than D's internal "straight from the horse's mouth" planning document stating "We *plan* to use the XYZ chip."

How does discovery relate to what was said earlier in the LPRs section about restricted amendment of contentions and claim charts, in order to lock-down litigants' cases? What would be the point of discovery, if each party is tied to the contentions it propounded before discovery started (indeed, tied to the contentions that helped entitle it to discovery in the first place)? As noted above, one point would be to fill in additional details, such as pinpoint source code citations in a claim chart that was originally written based only on inspection of the product without source code.

But early lock-in naturally conflicts with desired case flexibility during discovery and claim construction, both of which may impact a party's theory of the case. The LPRs "seek to balance the right to develop new information in discovery with the need for certainty as to legal theories" (see O2 Micro cited above). For example, NDCA LPR 3-6 provides three non-exhaustive examples of good cause to amend infringement or invalidity contentions: "(a) A claim construction by the Court different from that proposed by the party seeking amendment; (b) Recent discovery of material, prior art despite earlier diligent search; and (c) Recent discovery of nonpublic information about the Accused Instrumentality which was not discovered, despite diligent efforts, before the service of the Infringement Contentions."

As we've seen throughout, "diligence" is the key: when it comes to discovery in patent litigation, the court should help those who first tried to help themselves.

The rest of patent litigation

Despite the length of this six-part introduction to patent litigation, and its coverage of topics that are sometimes neglected -- such as how to show literal infringement of a patent claim -- the series has said little about some areas that one might expect to see covered in an introduction to the topic. In this section, we'll briefly touch on some of these topics.

Demand letters & declaratory judgment (DJ): A patent owner seeking to monetize patents may seek out suspected infringers, requesting they take out a license; P would prefer this happen

without litigation. But P must be careful how such requests are worded because they risk providing the suspected infringer a basis for a declaratory judgment (DJ) suit, in which the party who would normally be D initiates the case (not necessarily in a venue favorable to P), seeking a court declaration that D's product is non-infringing, and/or that P's patent is invalid. This would occur before P has had a chance to file a lawsuit. A court normally can't entertain such a request for a mere declaration in the absence of a "case or controversy" (see MedImmune v. Genentech). But certain demand letters, or presentations the patent owner makes to suspected infringers (*e.g.*, if accompanied by a limitation-by-limitation claim chart; see SanDisk v. STMicroelectronics), may create such an actual controversy, and result in the suspected infringer, rather than the patent owner, choosing the time and place of litigation.

Venue & forum shopping: Some federal district courts are perceived as more favorable to P, who may desire a particular venue for reasons having little to do with where infringement occurred, or where evidence or witnesses are located; this is called "forum shopping." For multiple reasons, EDTX has been an overwhelming favorite for patent litigation. To sue D in EDTX, even if the case was otherwise unrelated to EDTX, P could point to D's "regular and established place of business" located there. For example, an Apple store located in Plano, TX would meet this requirement. (Apple recently decided to close two stores in EDTX, in favor of a new store in the Dallas Galleria mall, which happens to be located in NDTX.) The *TCHeartland* decision, noted earlier, affects where P can bring its case: generally, it will be where D's *headquarters* are located (hence a move towards D.Del., where many corporations are registered), not merely any place where D conducts business.

Settlement & monetary valuation of a patent case: As noted earlier, most cases settle before trial. The high cost of litigation alone may help create room for settlement (see attorney John Schlicher's Settlement of Patent Litigation and Disputes and scholar and attorney Robert Bone's The Economics of Civil Procedure). Much of patent litigation turns out to be jockeying for position in settlement. Pretrial litigation, including discovery, may enable the parties to agree on the monetary value of the case (predicting whether P will win and if so, what damages it would likely be awarded), and to some extent the monetary value of the underlying patent. The litigation value of a patent should be considered not in isolation, but in relation to the *next-best* alternative (see non-infringing alternatives below).

Technical & economics experts: Each side in patent litigation will almost always need experts to provide opinions regarding infringement, invalidity, and monetary damages for infringement. Expert witnesses will provide these opinions, and the factual bases and reasoning behind them, in expert reports, rebuttal reports, deposition testimony, and (should things go so far) in trial testimony.

Technical experts use schematics, source code, technical manuals, and the like, as the basis for infringement or non-infringement opinions; they use their knowledge of the field to opine on prior art and enablement (see Part 5). Parties sometimes retain separate infringement and invalidity experts, to avoid a single expert having to "thread the needle" too finely (see Part 2 on navigating a claim's scope between infringement and invalidity); but this can result in multiple experts taking inconsistent positions.

Economics or accounting experts often pore over spreadsheets and databases, counting accused devices, or customers or revenues associated with these devices or subscriber services, and deliver opinions on lost profits and reasonable royalties. Technical experts may need to provide some input to economics/accounting experts, so that the latter has a sufficient basis for which items it counts, and for the technical aspects of lost-profits or reasonable-royalty rates (see below).

In addition to testifying experts, who are often engineering and economics professors, parties may also employ non-testifying consulting experts (who might for example do the bulk of a source code examination, saving the testifying expert's time to focus on key source code files identified by the consultant). As noted earlier, parties try to avoid sunk costs from early retention of experts, but it can be important to hire a consulting technical expert as early as the pre-filing investigation, so that P does not unnecessarily take untenable positions that it later tries to foist on the testifying expert, and so that discovery requests address what experts will need, and so on.

Markman claim-construction hearing: Claim construction -- interpreting the meaning of terminology appearing in patent claims -- has been discussed throughout this series. Claim construction is an enormous topic in its own right; there are sets of rules or "canons" of claim construction, and numerous treatises devoted solely to claim construction, such as attorney Edward Manzo et al.'s annual *Patent Claim Construction in the Federal Circuit*.

Parties in patent litigation will usually have a preferred claim construction, one that, *e.g.*, allows P to map a construed claim limitation onto a feature of D's product, or a different construction that allows D to deny that the feature matches the limitation. A core principle of patent law is that one does claim construction *before* comparing the claim to an accused product or to prior art. However, the litigants' favored constructions will be directed at how P wants a limitation to be met in D's product, how D wants it *not* to be met, how P wants the limitation to *not* be met in the prior-art reference that D has selected, and so on. Thus, factual investigations, and infringement and invalidity contentions (including claim charts) help tee up the case for claim-construction disputes; preliminary infringement and invalidity analysis steers the parties to the case's key claim-construction issues.

The parties will agree on a limited set of claim terms requiring construction: not agree on what the terms mean, but merely agree on which terms are worth fighting over. The court will conduct a so-called "Markman hearing" to determine claim construction (the name comes from Markman v. Westview Instruments, in which the U.S. Supreme Court held that claim construction is a legal matter to be decided by a judge, rather than a factual matter for a jury). The court's Markman ruling may be dispositive of the case, leading to settlement or to summary judgment (SJ; see below). As noted earlier, the parties may try to amend their infringement or invalidity contentions in light of an unfavorable or unexpected Markman ruling.

Summary judgment (SJ) and "failure of proof": A court can resolve a case, or part of a case, without trial, if the court finds that there are no genuine issues of fact to be decided. Unlike earlier motions, which may ask that a case be thrown out even before discovery, summary judgment (SJ) often occurs after discovery. For example, D may request SJ on the basis, following discovery and expert depositions, that there is no factual dispute over how D's product operates, and that determining infringement is therefore a purely legal matter of applying the construed claim.

An important type of SJ is "failure of proof" (see Celotex v. Catrett and FRCP 56(e)), in which a litigant (typically D) shows that the other side has failed to support one or more essential elements of its case; in a patent-infringement case, such a missing element would likely be a claim limitation (see, *e.g.*, HSBC v. Decisioning.com: failure to show a "remote interface" claim limitation).

Trial & the role of judge and jury: Almost everything discussed in this series has occurred *pretrial*. Since most cases settle before trial, pretrial is the focus of patent litigation. However, nearly everything pretrial occurs in the "shadow" of possible trial (similar to how a patent, even in non-litigation contexts, ultimately derives its power from the potential for litigation). If both parties behave reasonably (not always true), a case with lopsided facts (clearly favoring P or D) should settle. "Close" cases tend to go to trial; juries perform an important role in deciding close cases. As noted above regarding Markman, the judge will decide legal issues: the relevant patent law and claim construction. The jury will decide factual issues, typically including infringement or non-infringement, invalidity or validity, and monetary damages.

Appeals & the CAFC: An unhappy litigant can appeal a legal decision. Because the jury is intended as a "black box," a jury's decision generally cannot be appealed, except on the basis that it was manifestly against the weight of the evidence, and that no reasonable jury could have so decided. This effectively means that an appeal must be based on an erroneous court ruling, or instruction to the jury, including, *e.g.*, the court's claim construction. As noted earlier, all patent appeals are made to the Court of Appeals for the Federal Circuit (CAFC), which attempts to craft uniform patent law across all districts. When it tries to craft a bright-line easy-to-follow rule for the district courts, the CAFC may be slapped down by the Supreme Court, which tends to require more subtlety (see, *e.g.*, Bilski v. Kappos: "The Court of Appeals incorrectly concluded that this Court has endorsed the machine-or-transformation test as the exclusive test"). The CAFC may remand a case back to the lower court, with direction on how to re-decide the case based on the rule (held in the CAFC decision) that the lower court should have followed. See attorney Joseph Root's treatise *Rules of Patent Drafting: Guidelines from Federal Circuit Case Law* for a useful attempt to distill CAFC case law into a set of rules that can be applied as early as the drafting of patent applications.

Remedies: injunction and monetary damages (lost profits & reasonable royalties): This series has focused on patent infringement, but has paid little attention to what happens to D once it is found to have infringed P's patent claim, in other words, to the "remedies" patent law provides to P for infringement of its patent. This of course is what the litigants most care about. While we have mostly passed over this, as the expected readership for this series has been those focused on the technical rather than economic aspects of patent cases, nonetheless technical

consultants and experts should have a basic understanding of how their slice of a patent case fits into the larger whole. An excellent introduction to this enormous topic is attorney Richard Cauley's *Winning the Patent Damages Case: A Litigator's Guide to Economic Models and Other Damage Strategies*.

One remedy is an injunction, *i.e.*, an order to D to stop making, using, selling, offering for sale, and/or importing the product or service that was found to infringe P's claim. If D violates an injunction, this can constitute criminal contempt of court. A preliminary injunction or TRO (temporary restraining order) can be a powerful incentive to force D into negotiations. Injunctions were once seen as a default remedy for patent infringement, similar to how trespass on P's land might be treated (D can't opt to squat on P's land merely by paying rent). Traditionally, injunctions were reserved for situations of "irreparable harm" where P could not be "made whole" entirely through monetary damages. It was presumed that patent infringement inherently caused such irreparable harm. However, following eBay v. MercExchange, courts may find that the harm to P would be sufficiently remedied by monetary damages, for example, if P is a non-practicing entity whose entire business is collecting royalties or legal damages. To show entitlement to an injunction (which might effectively shut down a competitor's product line), P therefore may wish to show that it practices or works the patented invention. As noted in Part 1, working or practicing the invention is not a requirement for owning or asserting a patent (hence the phenomenon of the non-practicing entity or "troll"), but as just noted here, it may be important for certain patent remedies; see also "lost profits" and "domestic industry" below.

Whether or not P wants to shut down a competitor's infringing product line, it almost always wants money. It might have preferred that D try to take out a license, without the time and expense of a lawsuit. Now that infringement has been found in the case of P v. D, P should be put in as good a position as it would have been, had D taken out a license; and D should probably be put in a somewhat *worse* position, so that infringement does not become a costless business decision; however, P should generally not receive such a windfall from litigation that it is discouraged from policing the market for potential licensees, and instead hopes only for litigation targets.

There are two basic monetary remedies for patent infringement: lost profits and reasonable royalties.

Lost profits are likely P's preferred remedy, but can be difficult to prove: P (likely through its economics expert) would need to show that, *but for* D's infringement (*i.e.*, sales that D made, due to its use of P's patented invention), P would have profited from increased sale of its own products; this is a causation issue. There are four factors, from Panduit v. Stahlin Bros.: (1) demand for the patented product; (2) absence of acceptable non-infringing alternatives (see NIA below); (3) P's technical and economic ability to exploit the demand (which may include showing P's own working or practicing of the patent); and (4) the amount of profits P would have made.

Reasonable royalties are the default patent-infringement remedy: 35 USC 284 states that upon a finding of infringement, "the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer…". The standard test for determining a reasonable royalty, from Georgia-Pacific v. U.S. Plywood, imagines licensing negotiations between P and D, at the time D began to infringe, in which P's and D's negotiators would have considered no fewer than fifteen factors, including what royalties P has received from licensing the patent to others besides D; royalties that D has paid for licensing comparable patents; the share of D's product and profits reliant on D's use of P's patented invention, any significant features or additions added by D; and so on. The last two factors noted above pertain to D's actual infringement, so the idea of them informing a *pre*-infringement negotiation is a bit fictional.

For technical consultants and experts (who have been the expected audience for this series), a key damages issue is how the embodiment of P's patent claim inside D's product or service, on the one hand, relates to D's revenue-generating product or service as a whole. If the infringement does not cover the entire product, but only a component, and if the economists have found that this component does not drive sales of the entire product (the "entire market value" rule, or EMV), there will likely be partially-technical questions of how the patented component relates to the entire product (see *e.g.*, Lucent v. Gateway regarding the value of a date-picker feature in Microsoft Outlook), of how a claim's more novel limitations (such as "facade-server") relate to its conventional limitations (such as "web-browser"), and so on. Companies that tout the "tightly integrated" nature of their products, including the integral nature of what seem like separable

components (*e.g.*, Microsoft's one-time claims regarding the role of Internet Explorer in Windows) may be setting themselves up for application of EMV.

In focusing on the reasonable royalty *rate*, insufficient attention is sometimes paid to the royalty *base*. If D's revenues from an infringing product are sufficiently large (think Microsoft or Apple), P may care far more about getting almost *any* share of the action, and its economists can sound super-reasonable when they ask for only a tiny percentage of a huge base.

We have barely skimmed the surface of even the technical aspects of patent infringement damages. Other topics, such as FRAND (fair, reasonable, and non-discriminatory) royalties for standards-essential patents (SEP); and the smallest-scalable patent-practicing unit (SSPPU; see, *e.g.*, VirnetX v. Cisco) will be taken up in future articles. The issue of willful infringement (possibly resulting in treble damages) was briefly discussed in Part 5 on "the ostrich position."

Design-around and non-infringing alternatives (NIA): These are two important technical issues affecting damages. "Design around" is the process of explicitly taking a patent claim as one's starting point and seeing if a non-infringing product or component or service can be designed, for example, by dropping a limitation or creating a non-equivalent substitute for it. The ease or difficulty of design-around can affect damages; a patented invention that is easy to design around should be worth less (with a lower royalty rate) than one that is difficult to avoid. It is of course best for P to implement a known design-around *before* litigation. If done *during* litigation, it can look like an acknowledgement of pre-litigation infringement, and if known yet not implemented during litigation, it can look willful (see treble damages above).

Non-infringing alternatives (NIA) are a factor in lost profits (see the Panduit "absence of acceptable non-infringing substitutes" factor noted above) and reasonable royalties (availability of an alternative would have affected licensing negotiations; see TQP v. Merrill Lynch). For example, in calculating lost profits, D's gains from infringement only categorically constitute P's lost profits if there is no alternative substitute product. If third parties had competing products (or if it is feasible that they could have, and even if D itself could have), and had D not infringed, some of D's sales would presumably have gone to the third parties, rather than to P. Whether a product is an NIA is partly a matter of consumer expectations, and so only partly a technical issue of whether the NIA avoids embodying the patent claim while still providing the same consumer-visible benefits.

Both design-around and NIAs are illustrations of the general point that the value of a patent claim should be measured in relation to the next-best alternative: subtract the prior art from the claim; focus on the uniquely new portions of the claim rather than the conventional limitations; look at available alternatives. On the other hand, remember that a patent may validly claim a novel, non-obvious *combination* of previously-known elements or steps, so the subtraction of non-infringing alternatives cannot be done in a rote manner.

Importation, the ITC, and "domestic industry": One infringes a patent claim by making, using, selling, offering for sale, *or importing*, a product, method, or service which embodies or practices the claimed invention. We have noted that patent law is largely territorial: a U.S. patent is not infringed by something that happens entirely within Germany. But importing a German-made good into the U.S. may infringe. Litigation of infringement via importing is generally handled at the International Trade Commission (ITC), which despite its name is not an international body, but a U.S. agency, originally known as the U.S. Tariff Commission. The ITC's roots are protectionist, including the Smoot-Hawley Tariff Act of 1930, whose Section 337 ("Unfair practices in foreign trade") largely governs ITC actions relating to imported goods containing U.S. IP.

The ITC does not award damages. Its jurisdiction is over goods sitting on U.S. docks. The ITC can issue an exclusion order for goods that infringe U.S. IP (including patent-infringing goods as well as counterfeits infringing U.S. copyrights). An interesting question has been whether the ITC's jurisdiction extends to signals transmitted ("imported") into the U.S., or to method claims; see, *e.g.*, ClearConnect v. ITC and AlignTech.

Not surprising for an agency whose roots are protectionist, the ITC will not intervene to block goods unless some "domestic industry" is at stake: U.S. jobs or investments. "Domestic industry" has both technical and economic prongs. P petitioning the ITC can, for example, show that it currently practices or works the invention in the U.S. (or has concrete tangible plans to do so). However, P can also show domestic licensing, including involuntary licenses stemming from previous litigation; thus, previously successful non-practicing entities are not necessarily excluded.

P must show that D's goods both infringe *and* are imported (*i.e.*, all limitations are put together abroad, and then brought to the U.S. In addition to Section 337, the ITC also has procedural

rules, including, *e.g.*, ITC Rule 210.12(a)(9) which calls for charts applying claims to at least one representative accused product, and (to show domestic industry) to P's own product or method; and (not surprising given that an ITC order will result in physical seizure of goods on a dock) drawings or photos of the accused goods, linked if possible to the claim chart (*e.g.*, this arrow points to this part of D's imported good implementing limitation [1d] of P's patent claim).

Design patents: In this series, when we've referred to "patents," we've actually been referring only to the predominant type: utility patents. There are also design patents and plant patents. Design patents have become important in litigation over mobile devices (see, *e.g.*, Apple v. Samsung). They cover the ornamental (not functional) design of an item, such as the rounded edges of a device, or a black screen with colorful icons. A design patent does not have claims, and instead features one or more drawings. The test for infringement of a design patent covers the design as a whole (its visual impression to an ordinary observer, giving such attention as a purchaser usually gives; see Egyptian Goddess v. Swisa), rather than focusing as we have with utility patent claims on individual elements. A chart comparing an accused product with a design patent will likely show the product from every angle or perspective that was also originally shown in the asserted patent.

On-sale & public use bars: We've mentioned the on-sale and public-use bars earlier in this series, but without much explanation. To be valid, a patent must of course be novel and non-obvious over prior invention by others. However, the patent also cannot have been preceded for too long by the patent owner's or inventor's *own* activities. This restriction encourages inventors to quickly apply for patents, rather than practicing and profiting from the invention in secret, and only later deciding to patent. The U.S. provides a one-year "grace period" in which the inventor can sell, offer for sale, or publicly use the invention, but if more than one-year elapses between such use of the invention and the application for a patent, one of these bars is triggered. The inventor's pre-grace period activities also constitute prior art, and in this case the prior art need not have disclosed how to make or use the invention (see lack of enablement in Netscape v. Konrad: on-sale bar didn't require public source code); it's the inventor's excessively-long benefit period before filing that counts. Questions naturally arise whether what P sold or publicly used is really the same thing as what was patented (see Pfaff v. Wells, in which an inventor's description at deposition of the "boom-boom" process he takes from drawing to hard tooling

provided important evidence that the drawing was "ready for patenting"). Public use of the invention need not be visible (see the classic corset case, Egbert v. Lippmann).

Indirect infringement: We have focused on direct infringement in patent litigation, in which P sues D for D's own infringement of a patent claim. P can also sue D for *someone else*'s direct infringement, if D induced or contributed to that other's infringement. P will often bring an indirect infringement suit against D for method claims, where the method is not carried out until D's customer uses D's product. D's customers here are the direct infringers, but P would rather pursue a single deep-pockets D, rather than many individual consumers. D, by telling its customers how to install, configure, and use the product, will have thereby induced them to infringe. D, by selling customers the product, will have contributed to their infringement -- *if* the product does not also have substantial non-infringing potential uses; see 35 USC 271(c). This parallels a similar rule in copyright law from the Sony-Betamax case in 1984.

Both inducement and contribution require D's knowledge of the infringement, in contrast to the strict-liability rule (discussed in Part 1) under which D can infringe a patent claim even if it's never heard of the patent, much less considered its applicability to D's own products (at the same, note that since In re Seagate in 2007, D -- to avoid willful infringement -- has no affirmative duty of due care to seek out such information).

What have we learned?

In this series, we've seen that patents are not self-enforcing, and that a patent is largely a right to initiate patent litigation, *i.e.*, to sue for infringement of the patent. A patent is infringed when someone without license makes, uses, sells, offers for sale, or imports the patented invention. See Part 1.

The operable parts of a patent (the parts that might be infringed, and that can be used as the basis for litigation) are its "claims." Patent claims in turn contain "limitations," which are selected elements of a patented device (or steps of a patented method), selected both to distinguish the claim from the "prior art" (such as, but not limited to, previously-issued patents), on the one hand, and to adequately describe what infringement looks like on the other. Patent claims act as

devices to test for infringement, and also to test for the claim's own possible invalidity (due for example to lack of novelty, *i.e.*, anticipation by the prior art). See Parts 1 and 2 of this series.

Rather than the raw claim language, one must use "claim construction" to properly interpret the meaning of terminology in the claim, and to correctly apply the claim to an accused product or piece of prior art. Other parts of the patent besides the claims, including its title and drawings, and all its non-claims text (the specification) primarily serve to help interpret the claims, and also to act as prior art for future patent applications. See Part 3 of this series.

Infringement is found when each and every limitation of a claim can be identified in a product or service. A patent claim limitation may be present in an accused product (or in the prior art), even if the corresponding product feature or component has a completely different name from that used in the limitation. A defendant can rebut the assertion of infringement by showing the absence of one or more limitations. Conversely, though oversimplifying the issue somewhat, invalidity can be established if each and every limitation is found in a piece of prior art; the patent owner can rebut this assertion by showing the absence of one or more limitations from that prior-art reference (the patent may still be invalid due to obviousness, which typically combines multiple pieces of prior art). See Part 3 of this series.

From the requirement of each and every limitation to show infringement or invalidity, and the ability to show non-infringement or validity by pointing to the absence of even a single limitation, it follows that there is generally an *inverse* relation between the size of a patent claim and its scope. More limitations generally give the claim a *narrower* (not broader) scope of infringement. Patent owners often must add limitations to a claim during its examination by the patent office in order to make the claim valid over the prior art; a lengthier claim is more likely to be valid. All things being equal, a shorter patent claim is more likely to be infringed, and hence potentially more valuable; a shorter claim is also more likely to already be present in the prior art, and hence invalid. See Parts 2 and 3 of this series.

Testing a product for infringement requires performing a limitation-by-limitation comparison of the product with a patent claim. The comparison of each limitation with a corresponding feature of a product often must be structured in some way, because limitations often contain multiple features or sub-limitations, or have multiple attributes reflecting claim construction. The need to structure limitation comparisons is especially clear when working with "means for" claim

limitations (or other functional claiming), as well as when the doctrine of equivalents (DoE) has been asserted: a structured function/way/result test is often used when a claim limitation is compared with its purported equivalent in an accused product. See Part 4 of this series.

Patent claims are not only found to be invalid at the time they are examined at the patent office. An already-granted patent can at any time be found invalid, and being accused of patent infringement gives a defendant a strong motivation to try to invalidate the asserted patent. A patent does come with a presumption of validity, and showing invalidity requires a high standard of proof ("clear and convincing evidence"), but the presumption can be rebutted, and all it might take is a single piece of prior art. The prior art must have been publicly accessible at the relevant time (generally when the patent was applied for), but it may have been obscure and only stumbled upon years later. Prior art is not limited to previous patents, and can include material from anywhere in the world, in any language, so long as it sufficiently disclosed what was later claimed to be a novel invention. Invalidity can be shown in several additional ways, besides lack of novelty (anticipation), including obviousness, lack of enablement, and unpatentable subject matter. See Part 5 of this series.

We saw here in Part 6 that bringing a patent infringement suit requires more than just a patent and a suspicion of infringement. The plaintiff should conduct a reasonable pre-filing investigation into the accused product, and should make a "plausible" assertion of infringement. Assertions of both infringement and invalidity, and the non-infringement and validity responses to them, are covered by Local Patent Rules adopted in key federal districts. These rules often require a "claims chart," which is a limitation-by-limitation comparison of a claim with an accused product or prior-art reference. Litigants are generally expected to produce such contentions/charts even before they have received confidential information from the other side as part of discovery, and even before a definitive claim-construction ruling in the case. Contentions are revised as more detailed information becomes available, and perhaps in light of new claim construction, but infringement and invalidity contentions should not be a "moving target."

Having said here earlier in Part 6 a patent is not a "hunting license" -- the patent owner must make out a plausible case of infringement before filing an infringement case -- yet also having said in Part 1 that a patent's value, even in non-litigation contexts, is ultimately based on the ability to sue for infringement (which includes the ability to demand that the accused infringer

turn over confidential materials to the accuser), what are we left with? If not a hunting license, what is a patent? It is a right to sue for infringement, with a starting rebuttable presumption of the patent's validity, and with a right to go rooting around in the defendant's closets for evidence of infringement, *if* the patent owner can first make out (from having rooted around in public sources) some plausible case of the defendant's infringement.

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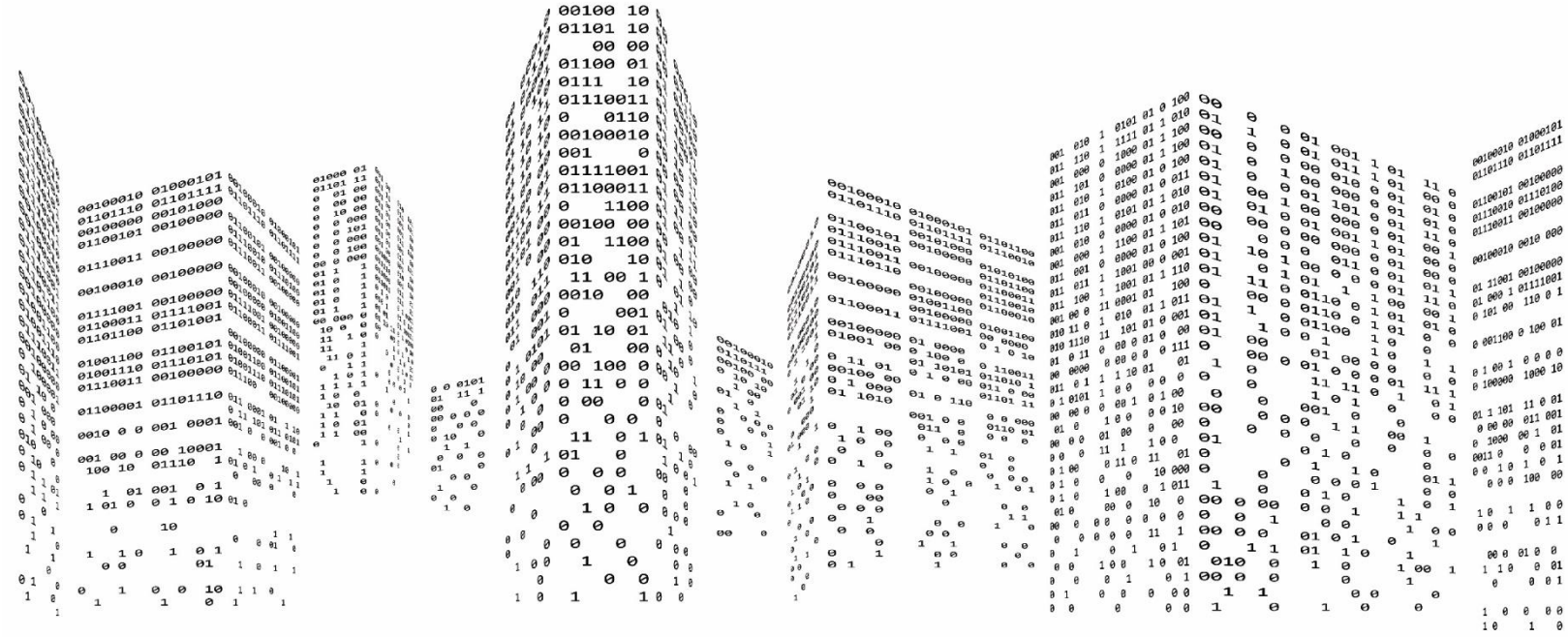

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