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A New 'Footprint' Paradigm For Reasonable Royalty Damages

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It is time for a simplified approach to reasonable royalty damages. One that extracts and harmonizes the core concepts from the long line of precedent. One that alleviates the anxiety of multiplying a base by a rate and wondering whether the result represents the true value of a patented feature. I propose a new "footprint" approach named after the Federal Circuit's useful analogy from the ResQNet case.

The current line of reasonable royalty cases, often fretted over by patentees and taken as comfort by accused infringers, began with former Chief Judge Randall Rader's 2009 district court opinion in Cornell v. H-P. It coined the term "smallest salable unit" and focused heavily on the proper application of the entire market value "rule." The Federal Circuit picked up Cornell's analysis and extended it with a line of cases (Lucent, ResQNet, Uniloc, LaserDynamics and VirnetX, to name a few) seemingly directed at making reasonable royalty damages proof excruciatingly difficult.

Commentators have said that this line of cases "changed" reasonable royalty damages law. Not true. Nothing changed. Instead, the cases reflect a struggle with the uncertainty in one specific methodology of computing damages: multiplying a royalty base by a royalty rate.

In Cornell,[1] the patentee multiplied a rate by a base too large. In Lucent,[2] the rate was too high based on prior licenses. The same in ResQNet.[3] In Uniloc,[4] the patentee used an unsupported rate and also was chastised for merely mentioning a large base. In LaserDynamics,[5] the base was again too large and the rate too high. These cases share a common thread: the patentee's analysis consisted of multiplying a rate by a base, and the result was too uncertain to give the Federal Circuit comfort that the result actually represented the value contributed by the patented invention.

In response to these cases, patentees have tried to articulate ways to better define the proper base or rate. These things can be done. However, they still inject uncertainty because of the general approach of calculating a base and a rate and multiplying the two.

The wide adoption of base-times-rate approach is somewhat surprising coming from trained economists and lawyers who often have scientific training. The transactions typically relied upon to model this

approach — prior licenses — almost always differ from the hypothetical negotiation by numerous variables. Few, if any, scientific approaches begin with the result of a wholly different set of variables and attempt to analogize that result to the hypothetical situation by adjusting to account for every variable. Instead, in a scientific approach, only one variable is modified to determine its impact on the result. The same can be done with reasonable royalty damages.

A New Reasonable Royalty Paradigm

The current uncertainty in reasonable royalty damages can be alleviated through a paradigm shift away from multiplying a rate by a base. What if patentees approached their reasonable royalty analysis in a different way? One that established the value of their inventions with clarity?

The seeds for a precise new approach are found in the cases discussed above and their predecessors. ResQNet, for example, articulated that "the trial court must carefully tie proof of damages to the claimed invention's footprint in the market place."[6] This statement carries on a thread beginning at least as early as Rite-Hite, in which the Federal Circuit explained that "[t]he focus of a reasonable royalty determination is on the value of the invention in the marketplace."[7]

Reasonable royalty damages can be simplified and more precisely defined with an approach that begins by defining the size of the invention's footprint and then determining its value. This "footprint" approach avoids the pitfalls of starting with a value (rate times a base) and then attempting to justify why it is tailored to the patented invention. It combines and harmonizes traditional valuation approaches including the market approach, income approach, and cost approach, as well as specific guidelines set forth by the Federal Circuit.

Beginning with first principles, the patent statute 35 U.S.C. § 284 says that the patentee shall receive damages "in no event less than a reasonable royalty for the use made of the invention by the infringer."[8] The typical "hypothetical negotiation" approach is not a required method for calculating this royalty, contrary to what many believe.[9]

Working from the words of § 284, the "invention" must be the scope of the claim at issue, and no more.[10] An appropriate definition for the "use" is the additional value the infringer obtained by incorporating the invention instead of an alternative.[11] The "reasonable royalty" is how much the infringer should have paid the patentee for that additional value.

A patentee can work from this statutory requirement — and all the case law interpreting it — through four steps:

1. Identifying alternatives to the claimed invention (the scope of the "use");

2. Quantifying the additional technical benefits achieved by the invention compared to the alternatives (the technical "use");

3. Translating the invention's additional technical benefits to the infringer's additional profit (the technical "use"); and

4. Allocating additional profit between the patentee and the infringer.

Identifying Alternatives to the Claimed Invention

The first step is to define possible “alternatives” to practicing the claimed invention.[12] The basic question for identifying alternatives is: What could the infringer have done instead of practicing the claimed invention? An “alternative” is any feature that falls outside the scope of the patent claim or is authorized to practice the patent claim.[13] Alternatives may come from the prior art, from later-developed noninfringing features, from hypothetical noninfringing features that could have been developed, or from business alternatives such as discontinuing the infringing product.

Quantifying the Additional Technical Benefits Achieved by the Invention as Used by the Infringer

The second step is to determine the technical benefits achieved by using the invention instead of an alternative. Ask: What difference does the invention make compared to the alternative? Technical witnesses and experts can provide this piece of the damages proof. The technical benefits should be framed in view of the “use made of the invention by the infringer.” If the infringer uses the invention by practicing a patented manufacturing process, then the technical benefits might be the difference in yield achieved by the patented process over the alternative. If the infringer uses the invention by selling a patented component alone, like a computer chip, then the technical benefits might be the difference in speed or power consumption achieved by the patented component compared to an alternative design. If the infringer uses the invention by selling a patented component within a multifeature consumer product, then the technical benefit might be the impact on consumer-facing features like screen resolution or battery life compared to an alternative. These benefits should be quantified using sound methods so there is a numerical value to use in the remaining steps in the analysis.

As a result of the second step, the technical benefit of the patented feature versus an alternative has been isolated whether the infringing product is a single-component or multicomponent product. The “smallest salable unit” analysis no longer applies because the initial steps have ensured a focus only on “the use made of the invention” — the footprint of the claim and its resulting technical impact on the infringer’s product or system — as required by § 284.

Translating the Invention’s Additional Technical Benefits to the Infringer’s Additional Profit

The third step is to translate the technical benefits to the economic benefit enjoyed by the infringer. Ask: How much additional money did the infringer make by using the invention instead of the alternative? This can be expressed using basic accounting principles. Profit (P) equals revenue (R) minus costs (C):

$P = R – C$

The infringer’s profit achieved using the invention (PINV) equals the infringer’s revenue using the invention (RINV) minus the infringer’s costs using the invention (CINV):

$PINV = RINV – CINV$

The value we are interested in is the additional profit achieved using the invention instead of an alternative. This additional profit (ΔP) equals the profit achieved using the invention (PINV) minus the profit that could have been achieved using an alternative (PALT):

$\Delta P = PINV – PALT$

The profit that could have been achieved using an alternative uses the same formula as the profit achieved using the invention and therefore equals the revenue that could have been achieved using an alternative (RALT) minus the costs that would have been incurred using the alternative (CALT):

PALT = RALT – CALT

By substituting the revenue and costs variables for the profit variables in the equation for additional profit, ΔP, the outcome is:

ΔP = PINV – PALT

ΔP = (RINV – CINV) – (RALT – CALT)

And rearranging the variables to line up the revenue variables and costs variables:

ΔP = (RINV – RALT) + (CALT – CINV)

That is, additional profit (ΔP) equals the increased revenue achieved by the invention over the alternative (RINV – RALT) plus the decreased costs achieved by the invention over the alternative (CALT – CINV).

These variables can be calculated in a number of ways, the detail of which is a topic for a separate writing. The key for this methodology, however, is that the patentee must account for all four variables that impact ΔP. None can be ignored, and the patentee's conclusion for each must be supported by sufficient evidence. Some variables might drop out of the equation (for example, the difference in costs might be zero for an invention with low implementation costs, or the difference in revenue may be negligible for an invention that enables the same result at a lower cost[14]), but all must be discussed. Revenue achieved using the invention (RINV) is the infringer's actual revenue. Revenue achieved using an alternative (RALT) is hypothetical and can be modeled through several known techniques like regression analysis and conjoint analysis (surveys).

The work necessary to determine and prove additional profit (ΔP) should not be underestimated. It is difficult and time-consuming, and it requires both creativity and economic discipline. Once it is accomplished, the patentee is a long way toward proving damages, but not finished.

Allocating Additional Profit Between the Patentee and the Infringer

The fourth step is to allocate the additional profit (ΔP) between the patentee and the infringer to determine the patentee's reasonable royalty damages. This is where the patentee's damages proof tripped up in the VirnetX case. The patentee there calculated additional profit, but then applied the Nash bargaining solution — effectively just a 50/50 split — to allocate that additional amount. The Federal Circuit held that the expert had not adequately supported the use of the Nash solution to allocate additional profit; instead, the expert had applied it as a shortcut rule of thumb.

The allocation of additional profit is the first place the "hypothetical negotiation" construct comes into play in this model, and this step incorporates the ex ante perspective referenced by the Federal Circuit.[15] The basic, underlying question is: How much would the infringer have been willing to invest to generate the additional money it made? This too can be calculated and proved in several ways, as long as a credible methodology is used and supported by sufficient evidence. A potential solution is to

look at the infringer's expected return on investment (ROI) in various areas (for example, patent licenses, technology licenses or other capital investments) and use that expected ROI to calculate the amount of money the infringer would have been willing to pay to achieve the additional profit (ΔP) it obtained by using the invention.

Four steps to a simplified "footprint" reasonable royalty paradigm:

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	Step in the Footprint Analysis	Simplified Question
1	Defining alternatives to the claimed feature	What could the infringer have done instead of practicing the claimed invention?
2	Determining the technical benefits of the invention compared to alternatives	What technical difference does the invention make?
3	Translating the additional technical benefits to the additional profit made by the infringer	How much additional money did the infringer make by using the invention instead of the alternative?
4	Allocating the additional profit between the patentee and infringer	How much would the infringer have been willing to invest to generate the additional money it made?

After these four steps, the patentee has proven the amount the infringer should have paid to enjoy the technical and resulting economic benefits of the invention instead of an alternative. This is effectively the amount the patentee should be compensated as "a reasonable royalty for the use made of the invention by the infringer" under § 284. Adjustments can be made to this baseline amount in order to account for other facts, whether using the Georgia-Pacific factors or some other approach. For example, prior licenses might be considered to determine whether the parties would have agreed to a lump-sum payment or to a running royalty, and whether the difference between those would result in an adjustment to the damages number. Evidence might indicate that the patentee would have demanded a higher allocation of the additional profit and would have had the negotiating power to push its damages higher. Any of these scenarios can be applied, as long as they are supported by evidence.

This approach is not the same as the standard "analytical method," which focuses on allocating between patentee and infringer the infringer's projected actual profits for the patented item.[16] Instead, it borrows aspects from both the analytical method and the hypothetical negotiation approach and expands upon them to address the various concerns developed in the Federal Circuit's precedent on reasonable royalty damages.

The Defendant's Perspective

The "footprint" methodology described here works equally well for a defendant as a roadmap for challenging the patentee's damages proof. As discussed above, the key to the patentee's success is introducing sufficient evidence to carry its conclusion on each step and each variable. If the patentee misses or takes a shortcut on any piece, the defendant has an opportunity to argue that the patentee did not carry its burden or to present contradictory evidence challenging the patentee's ultimate conclusion.

Initial Conclusions — To Be Continued

The results of this approach? First, a model supported by sound but basic economic principles that can withstand Daubert and post-trial challenges. Second, a model that a jury can understand through simplification: What could the infringer have done instead? What difference does the invention make? How much more money did the infringer make? How much would the infringer have been willing to invest to make that money? Third, minimization or elimination of the "smallest salable unit" analysis, the "apportionment" analysis, and the arcane entire market value "rule" as an impediment and unjustified defense — the model focuses narrowly on the infringing feature and demands proof of all economic value attributable to that feature to ensure that the damages match the infringement — "apportionment" is built in. Fourth, a model supported by facts that eliminates shortcuts like the "25 percent rule" or selecting a royalty rate from a license with markedly different economic characteristics.

Finally, this model harmonizes and adheres to every patent damages ruling out of the Federal Circuit or from its judges sitting by designation in district court. If followed, it is possible to shift the damages paradigm to one in which the patentee accurately traces the invention's "footprint in the market place" and brings new clarity to this area of law. This will reduce uncertainty in patent litigation and have an effect of reducing uncertainty in the broader market of patent valuation and dealmaking.

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[1] Cornell Univ. v. Hewlett-Packard Co., 609 F. Supp. 2d 279, 282-292 (N.D.N.Y. 2009).

[2] Lucent Techs. Inc. v. Gateway Inc., 580 F.3d 1301, 1323-1339 (Fed. Cir. 2009).

[3] ResQNet.com Inc. v. Lansa Inc., 594 F.3d 860, 868-873 (Fed. Cir. 2010).

[4] Uniloc USA Inc. v. Microsoft Corp., 632 F.3d 1292, 1311-1321 (Fed. Cir. 2011).

[5] LaserDynamics Inc. v. Quanta Computer Inc., 694 F.3d 51, 66-70, 78-81 (Fed. Cir. 2012).

[6] ResQNet.com Inc., 594 F.3d at 869.

[7] Rite-Hite Co. v. Kelley Co. Inc., 56 F.3d 1538, 1576 (Fed. Cir. 1995).

[8] 35 U.S.C. § 284.

[9] VirnetX Inc. v. Cisco Sys. Inc., 767 F.3d 1308, 1326 (Fed. Cir. 2014) (acknowledging that other approaches may be used by explaining that the hypothetical negotiation approach is "most common"); Apple Inc. v. Motorola Inc., 757 F.3d 1286, 1315 (Fed. Cir. 2014) (describing alternative methods for calculating a reasonable royalty).

[10] See Garretson v. Clark, 111 U.S. 120, 121 (1884) (explaining that value must be apportioned

between patented and unpatented features). Although Garretson issued long before § 284 or even reasonable royalties existed as a measure of damages, the Federal Circuit now relies on the opinion heavily as a basis for requiring damages to tie closely to the patented features, isolated from unpatented features. See, e.g., Lucent, 580 F.3d at 1336-37.

[11] See VirnetX, 767 F.3d at 1333-34 (commending the approach of isolating "incremental profits earned from the infringer for the use of the asserted patents"). Although the Federal Circuit has used the term "incremental" profits, that carries a negative connotation of a minor ("incremental") change. "Additional" profits is a more neutral and objective term.

[12] See Apple Inc., 757 F.3d at 1315 (explaining that a reasonable royalty may be calculated by "estimat[ing] the value of the benefit provided by the infringed features by a [sic] comparing the accused product to noninfringing alternatives"); Riles v. Shell Exploration & Prod. Co., 298 F.3d 1302, 1312 (Fed. Cir. 2002) (describing noninfringing alternatives in the context of offshore oil rigs and explaining that "[t]he economic relationship between the patented method and non-infringing alternative methods, of necessity, would limit the hypothetical negotiation").

[13] Grain Processing Corp. v. Am. Maize-Prods. Co., 185 F.3d 1341, 1350-55 (Fed. Cir. 1999) (analyzing evidence needed to establish non-infringing alternatives).

[14] See Powell v. Home Depot U.S.A. Inc., 663 F.3d 1221, 1239-40 (Fed. Cir. 2011) (relying on evidence of cost savings to model reasonable royalty damages).

[15] See Lucent, 580 F.3d at 1325 (explaining that the hypothetical negotiation approach "attempts to recreate the ex ante licensing negotiation scenario").

[16] See Lucent, 580 F.3d at 1324 (describing the analytical method as an alternative to the hypothetical negotiation approach).
