

# Convergence: A Common Framework for Lost Profits and Reasonable Royalty Damages Using the Footprint Approach

BY AARON R. FAHRENKROG OF ROBINS KAPLAN LLP

Aaron Fahrenkrog is a partner in Robins Kaplan's Minneapolis office.

The patent litigation bench and bar view lost profits and reasonable royalties as two entirely separate forms of damages with separate bodies of law. But both arise from the same statute (§ 284) and its early interpretation by the U.S. Supreme Court. The economic underpinnings of the two are the same. The dramatic fork the two approaches have taken has unnecessarily increased the complexity and transaction cost of patent negotiations and litigation, imposing heavy burdens on both the parties and the courts. The “footprint” approach set forth previously in the context of reasonable royalty damages<sup>1</sup> provides a framework for returning to convergence between lost profits and reasonable royalty measures of patent damages.

For patent infringement, “damages should be awarded where necessary to afford the plaintiff full compensation for the infringement.”<sup>2</sup> That is, the patentee should be made whole for the harm.<sup>3</sup> In basic tort terms, this requires estimating how much more money the patentee would have made if infringement had not occurred (actual, but-for causation) and what portion of that amount is a “reasonably foreseeable” result of the infringement (legal, proximate cause).<sup>4</sup> The result is the damages amount properly attributable to the infringement harm.

In patent cases, these basic principles have been converted into multi-factor “tests” introducing unnecessary complexity into the damages analysis. For lost profits, we have the (relatively modest) four *Panduit* factors;<sup>5</sup> for reasonable royalties, we have remained loyal to the buffet of fifteen *Georgia-Pacific* factors.<sup>6</sup> Precedent has drawn a sharp and definite line between lost profits and reasonable royalty forms of

compensatory damages as recently as April 2015.<sup>7</sup>

This separation—and resulting complexity—is burdensome and unnecessary. The “footprint” analysis can eliminate the current complex contrast between lost profits and reasonable royalty damages by applying the same economic principles to both. The basic question for both analyses, as articulated by the Supreme Court, is:

## HOW MUCH MORE MONEY WOULD THE PATENTEE HAVE MADE IF THE INFRINGER HAD NOT INFRINGED?<sup>8</sup>

There is one difference between the lost profits analysis and reasonable royalty analysis when addressing this question. For lost profits, the “more money” is the infringer’s detrimental impact on the patentee’s own revenues and costs. For a reasonable royalty, the “more money” is the amount the infringer should have paid to take a license before practicing the invention.

This difference between lost profits and reasonable royalty measures arises from the meaning of “not infringed” in each context. For lost profits, “not infringed” means the hypothetical world in which the infringer did not use the technology at all in competition with the patentee.<sup>9</sup> For a reasonable royalty, “not infringed” means the hypothetical world in which the infringer took a license and paid the patentee adequate consideration for the value of the technology.<sup>10</sup>

The footprint approach, which determines the additional profit attributable to the invention by applying a basic profit equation, provides a straightforward framework for evaluating both lost profits and reasonable royalty damages. As described below, using this approach there are only two primary differences in the analyses for lost profits and reasonable royalty damages. Applying a common underlying framework of economic and tort principles to all damages determinations under § 284 will promote certainty in patent damages, leading

to more efficient resolution of patent cases and other transactions involving patent valuation.

## Basics of the Footprint Analysis for Reasonable Royalty Damages

The author previously has outlined the use of the footprint approach for establishing reasonable royalty damages.<sup>11</sup> In short, the approach provides an alternative to the uncertainty of the “hypothetical negotiation” evaluated using the *Georgia-Pacific* factors.

The footprint approach evaluates damages through the lens of the determination of profit (**P**) by subtracting costs (**C**) from revenue (**R**):

$$P = R - C$$

A critical factor in determining patent damages is the *additional* profit generated by the use of the invention, which we label  $\Delta P$ . The additional profit is estimated by determining the actual revenues obtained and costs incurred using the invention ( $R_{INV}$  and  $C_{INV}$ , respectively) and comparing those to the hypothetical revenues and costs that would have arisen using some non-infringing alternative to the invention ( $R_{ALT}$  and  $C_{ALT}$ ).

The infringer’s additional profit attributable to the invention ( $\Delta P_{INF}$ ; we use the subscript “INF” to designate the infringer’s profit) equals the profit achieved using the invention ( $P_{INV}$ ) minus the profit that could have been achieved using a non-infringing alternative ( $P_{ALT}$ ):

$$\Delta P_{INF} = P_{INV} - P_{ALT}$$

Substituting the profit equations for  $P_{INV}$  and  $P_{ALT}$  results in:

$$\Delta P_{INF} = (R_{INV} - C_{INV}) - (R_{ALT} - C_{ALT})$$

And rearranging the variables to line up revenue and cost variables results in:

$$\Delta P_{INF} = (R_{INV} - R_{ALT}) + (C_{ALT} - C_{INV})$$

(Reasonable Royalty Footprint Equation)

In determining reasonable royalty damages, the additional profit at issue from using the invention is the infringer’s ( $\Delta P_{INF}$ ). The harm to the patentee is the royalty the infringer should have paid in order to realize that additional profit. Every revenue and cost variable in the equation is calculated from the infringer’s perspective. For example,  $R_{INV}$  is the revenue the infringer achieved using the invention, and  $R_{ALT}$  is the revenue

the infringer would have achieved using a non-infringing alternative.

### Translating the Footprint Approach from Reasonable Royalties to Lost Profits

The same formula can be used to determine lost profits damages. The difference in application is that we now care about the *patentee's* profits ( $\Delta P_{PAT}$ ), not the *infringer's*. The use of the invention versus a non-infringing alternative, however, is still the *infringer's* use. The four variables therefore have different definitions in the lost profits context:

- $R_{INV}$  The revenue obtained by the *patentee* while the infringer used the invention instead of a non-infringing alternative.
- $R_{ALT}$  The revenue the *patentee* could have obtained had the infringer used a non-infringing alternative instead of the invention.
- $C_{INV}$  The costs the *patentee* incurred while the infringer used the invention instead of a non-infringing alternative.
- $C_{ALT}$  The costs the *patentee* could have incurred had the infringer used a non-infringing alternative instead of the invention.

One other change to the equation is required for the lost profits evaluation. In the reasonable royalty context set forth above, it is assumed that the infringer's profits from using the invention ( $P_{INV}$ ) would exceed its profits using a non-infringing alternative ( $P_{ALT}$ ). If not, the infringer would not agree to pay the patentee a royalty to use the invention. Lost profits damages assume that the patentee's profits would have increased had the infringer used a non-infringing alternative instead of the invention—that is,  $P_{ALT}$  is greater than  $P_{INV}$ . Thus, from the patentee's perspective, the additional lost profits at issue ( $\Delta P_{PAT}$ ) are:

$$\Delta P_{PAT} = P_{ALT} - P_{INV}$$

Inserting the revenue and cost variable results in:

$$\Delta P_{PAT} = (R_{ALT} - R_{INV}) + (C_{INV} - C_{ALT})$$

*(Lost Profits Footprint Equation)*

This is the footprint equation for lost profits damages. It represents the required “sound economic proof of the nature of the market and likely outcomes with infringement factored out of the economic picture.”<sup>12</sup> But how does it relate to the

prevailing framework for lost profits determinations, the *Panduit* factors?

### Retaining the Goals of the Panduit Factors While Reducing Uncertainty

The four *Panduit* factors for determining causation of lost profits are:

- (1) Demand for the patented product;
- (2) Absence of acceptable non-infringing alternatives;
- (3) Capacity to exploit the demand; and
- (4) The amount of profit the patentee would have made.<sup>13</sup>

A quick examination of these prompts some immediate questions. Are lost profits precluded if any non-infringing alternative exists, even if it would have generated less demand than the patented product? Or does that assumption mean that such an alternative is not “acceptable?” Is the last factor not just the ultimate measure of damages? How is the amount at issue part of the causation inquiry? Must the patentee submit evidence addressing all four factors to establish lost profits caused by the infringement?

The *Panduit* factors for determining causation of lost profits are, admittedly, more straightforward in application than the “hypothetical negotiation” approach and *Georgia-Pacific* factors for determining reasonable royalty damages. However, consideration of the footprint equation can further improve certainty for lost profits determinations.

One of the advantages of using the footprint approach for lost profits calculations is that it allows for a continuous spectrum of economic impact of non-infringing alternatives instead of binary “acceptability” and “availability” standards.<sup>14</sup> Instead of trying to define legally what constitutes an “acceptable” or “available” alternative, the footprint equation converts the quality and

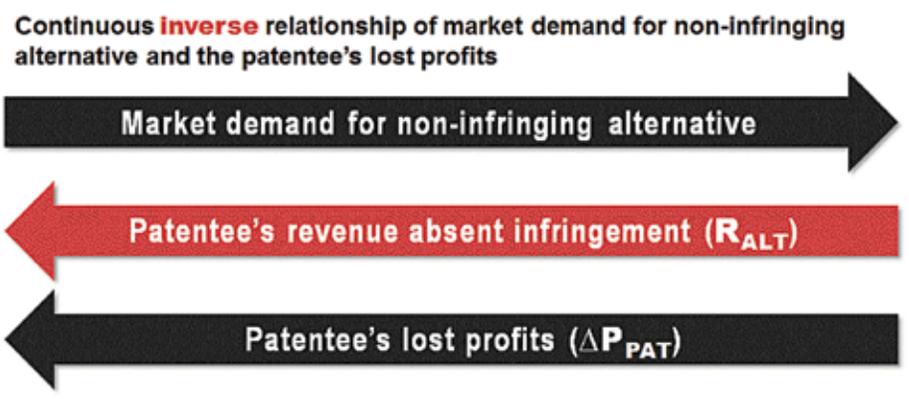
market capacity of the alternative directly into dollars. That is, the closer the alternative to generating the demand generated by the invention, the lower the lost profits will be. This occurs because the footprint subtracts  $R_{INV}$  (revenue the patentee generated while the infringer used the invention) from  $R_{ALT}$  (revenue the patentee would have generated if the infringer had used the alternative instead). As the quality of the alternative increases,  $R_{ALT}$  decreases, the corresponding difference between  $R_{ALT}$  and  $R_{INV}$  decreases, and the patentee's lost profits ( $\Delta P_{PAT}$ ) decrease (See Figure 1).

Similarly, the footprint equation accounts for continuous spectra for the other *Panduit* factors: the demand for the patented product and the patentee's capacity to exploit the demand. These again factor into  $R_{ALT}$ , as they impact the reconstruction of the hypothetical market in which the infringer used an alternative instead of the invention. For example, if the patentee does not introduce evidence that it could have made more units had the infringer not made the infringing sales, then it will not have established that those units are properly present in the calculation of  $R_{ALT}$ .

Consideration of the cost variables also is appropriate. For example if, absent infringement, the patentee would have achieved the same revenue but halved the marketing expenditures it incurred from competing with the infringing product, then it is the cost side of the question ( $C_{INV} - C_{ALT}$ ) that impacts the lost profits.

Instead of trying to assign limited factual inquiries to the damages analysis, the footprint equation provides the economic causation foundation and requires the patentee to carry its burden to prove, with reasonable certainty, that it would have made more money had the infringer not infringed.

**FIGURE 1**



## **Conclusion: A Common Framework for Lost Profits and Reasonable Royalties**

The footprint analysis accurately captures what has been done in the lost profits context, but without giving legal priority to some facts over others in the economic analysis. The footprint brings commonality, convergence, and harmonization to the lost profits and reasonable royalty analyses. It brings clarity to both forms of damages and eliminates the tension that arises from dramatically different approaches to two forms of relief provided by the same statute, 35 U.S.C. § 284. It incorporates the basic economic and tort principles underlying the patentee's right to be made whole and compensated for the infringement.

By employing this unified approach, practitioners, litigants, and courts can reduce costs in patent transactions and litigation, making the system more efficient and improving the market for rights in patent assets.

*The opinions expressed are those of the authors and do not necessarily reflect the views of the firm or its clients. This article is for general information purposes and is not intended to be and should not be taken as legal advice.*

## **ENDNOTES**

1. A. Fahrenkrog, *A New 'Footprint' Paradigm for Reasonable Royalty Damages*, LAW360 (Mar. 11, 2015).
2. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1547 (Fed. Cir. 1995).
3. *Id.*
4. *Id.* at 1546. "Patent infringement is a tort." *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1365 (Fed. Cir. 2008) (citation omitted).
5. *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978); *see also Rite-Hite*, 56 F.3d at 1545 (describing utility of *Panduit* factors for establishing causation of lost profits); *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1264 (Fed. Cir. 2013) (same).
6. *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); *see also* nearly all reasonable royalty opinions from the Federal Circuit.
7. *AstraZeneca AB v. Apotex Corp.*, No. 2014-1221, Slip Op. at 12-14 (Fed. Cir. Apr. 7, 2015).
8. *Aro Mfg. Co., Inc. v. Convertible Top Replacement Co., Inc.*, 377 U.S. 476, 507 (1964).
9. *See Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350 (Fed. Cir. 1999) (quoting *Aro*, 377 U.S. at 507).
10. *See Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009) (tying the *Aro* quote "had the infringer not infringed, what would the patent holder have made" to the reasonable royalty analysis and identifying the hypothetical negotiation model).
11. A. Fahrenkrog, *A New 'Footprint' Paradigm for Reasonable Royalty Damages*, LAW360 (Mar. 11, 2015).
12. *Grain Processing*, 185 F.3d at 1350.
13. *Versata*, 717 F.3d at 1263-64 (quoting *Panduit*, 575 F.2d at 1156).
14. *See Grain Processing*, 185 F.3d at 1350-53 (describing applications of non-infringing alternatives as eliminating lost profits damages entirely on the bases of acceptability and availability).