Reasonable Royalty Rate Analysis: Important Factors in the Hypothetical Negotiation and the Views from the Court

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The calculation of reasonable royalties in patent damages cases has come under increasing examination in recent years by the courts. Research indicates that from 2006 to 2015, 61% of damages awards in patent infringement cases were for reasonable royalties.\(^1\) Only 21% of damage awards represented lost profits with 18% representing a combination of both lost profits and reasonable royalties.\(^2\) The Court of Appeals for the Federal Circuit (the "Federal Circuit") has judiciously reviewed a significant number of lower-court rulings, eventually vacating or remanding many of them.\(^3\) Accordingly, the application of a proper methodology to reasonable royalty analyses is paramount and heeding guidance from the courts even more so. Considering the escalating cost of patent litigation, combined with the long time period to trial, failing at the appellate level on damage methodology and application is not ideal. From 1996 to 2013, 80% of district court cases involving patent infringement went up on appeal.\(^4\) Of this amount, 53% of the cases were modified by the appeals court with 18% of the cases being reversed, vacated or remanded entirely and 35% receiving mixed decisions with some portion of the lower court findings affirmed in part and reversed, vacated or remanded in part.\(^5\)

Since the landmark Georgia-Pacific Corp. v. United States Plywood Corp. case in 1970, the hypothetical negation has been the primary methodology used to assess reasonable royalties by experts. Over the past 40 years, the view from the courts has only further enforced, and almost entirely embraced, the use of a hypothetical negotiation in determining a reasonable royalty.\(^6\) Application of the hypothetical negotiation provides that the reasonable royalty should be established by assuming a negotiation between a willing patent holder and a willing infringer, as licensee, for use of the patented invention at the time of first infringement.

\(^1\) PwC 2016 Patent Litigation Study, May 2016, p.6. During some of the years between 2006 and 2015, reasonable royalty damage awards have been as high as 80% of the cases decided.

\(^2\) Ibid.


\(^5\) Ibid, p. 20.

\(^6\) The Federal Circuit has also opined and accepted the use of an “Analytical Approach” to calculating reasonable royalties. See TWM Manufacturing Co. v. Dura Corp. 789 F. 2d 895 (Fed. Cir. 1986) and Lucent v. Gateway, 580 F.3d at 1324 (Fed. Cir. 2009)
Since *Georgia-Pacific*, the rulings from the courts have continued to refine the economic parameters and considerations involved in the hypothetical negotiation. Likewise, the court has rejected the application of so called “rules of thumb” methodologies that have historically been applied in determining a reasonable royalty.\(^7\) The court has also rejected other methodologies that have similar attributes to a rule of thumb methodology (e.g., Nash Bargaining Solution).\(^8\) Much of the criticism by the courts levied against experts regarding the application of the hypothetical negotiation falls into the assessment of the following issues:

1. Incremental benefits realized by the infringer in use of the patent at issue;
2. Selection of the date that the hypothetical negotiation takes place;
3. Comparable licenses considered and relied upon;
4. Design-around costs related to a non-infringing substitute to the patent at issue;
5. The use of *ex ante* or *ex post* information and data; and
6. Apportionment of the underlying royalty base for purposes of applying the royalty rate (i.e., Application of the Entire Market Value Rule).

This article will address these critical areas within the hypothetical negotiation process and provide an overview of the guidance from the courts.

**Overview of Available Patent Damages**

The US patent statute has provided that:

> “Upon finding for the claimant 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 . . .”\(^9\)

\(^7\) *Uniloc USA, inc. v. Microsoft Corp.* (Fed. Cir. 2011) (“This court now holds as a matter of Federal Circuit law that the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation. Evidence relying on the 25 percent rule of thumb is thus inadmissible under *Daubert* and the Federal Rules of Evidence, because it fails to tie a reasonable royalty base to the facts of the case at issue.”)

\(^8\) *VirnetX, Inc. v. Cisco Systems, Inc.* (Fed. Cir. 2014)(“In recent years, numerous district courts have confronted experts’ invocations of the Nash Bargaining Solution as a model for reasonable royalty damages, with varying results. . . [w]e agree with the courts that have rejected invocations of the Nash theorem without sufficiently establishing that the premises of the theorem actually apply to the facts of the case at hand. The use here was just such an inappropriate “rule of thumb.”")

\(^9\) See 35 U.S.C. §284
Actual damages from infringement of a patent represents the compensation to the patent holder for the direct economic losses attributable to the infringement at issue. Actual damages include the patent holder’s lost profits and/or lost established royalty payments.

**Lost Profits Damages**

Lost profits generally represent the difference between the profits the patent holder would have realized in a “but for” world, assuming there had been no infringement, compared to the actual profits the patent holder realized (or will realize) in the presence of ongoing infringement. An alternative form of lost profits known as price erosion may be available to the patent holder if it can be demonstrated that the infringement was the cause for the price constraint and the price erosion analysis takes into consideration the price elasticity of demand on the sales volume associated with the lowered actual prices.

In the seminal *Panduit Corp. v Stahlin Bros. Fibre Works, Inc.* (1978) case, the court ruled that a patent holder is entitled to a claim of lost profits on sales made by an infringer upon proving:

1. Demand existed for the patented product;
2. Acceptable, non-infringing substitute products were not available to satisfy demand;
3. The patent owner possessed the manufacturing and marketing capability to exploit demand; and
4. Lost profits can be quantified.

In the event the patent holder is unable to prove lost profits, the compensation due from the infringement is no less than a reasonable royalty.

**Established Royalty**

An alternative to lost profits is an established royalty. An established royalty is generally defined as a royalty payment that is sufficiently prevalent and accepted so as to provide an objective price for the use of the patent in question. In *Mobil Oil Corp. v. Amoco*

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11 See *Crystal Semiconductor Corp. v. Tritech Microelectronics International, Inc.* 246 F. 3d 1336 (Fed. Cir. 2001)
12 *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978)
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Chemicals Corp. (1984), the court ruled that the awarding of damages for an established royalty must meet the following five criteria:

(1) They must be paid or secured before the infringement began;

(2) They must be paid by a sufficient number of persons to indicate the reasonableness of the rate;

(3) They must be uniform in amount;

(4) They must not have been paid under threat of suit or in settlement of litigation; and

(5) They must be for comparable rights or activity under the patent.  

When an established royalty exists for a particular patent, the market has, in effect, objectively determined the price of practicing that patent and, more importantly, the amount that the patent holder should receive in exchange for granting access to the patent. The standard for establishing the existence of an established royalty is generally very high and seldom applicable in many infringement matters.

**Reasonable Royalty**

If the patent holder is unable to prove lost profits and/or an established royalty within the standards established by the courts in Panduit and Mobil Oil, the patent holder, as an alternative, is entitled to no less than a reasonable royalty for the use made of the invention by the infringer. As a result, the focus to estimating a reasonable royalty returns to the Georgia-Pacific factors and the application of a hypothetical negotiation between a willing patent holder and a willing infringer. The result of the hypothetical negotiation process is to determine fair compensation to the patent holder for the nature of the invention, its utility and advantages and to the extent to which the infringer has made use of it.

The factors identified by the court as being most applicable in the assessment of a reasonable royalty include:

(1) The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.

(2) The rates paid by the licensee for the use of other patents comparable to the patent in suit.

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14 Mobil Oil Corp. v. Amoco Chemicals Corp. 915 F. Supp. 133, 1342 (D. Del. 1994)
(3) The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

(4) The licensor’s established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.

(5) The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.

(6) The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.

(7) The duration of the patent and the term of the license.

(8) The established profitability of the product made under the patent; its commercial success; and its current popularity.

(9) The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.

(10) The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.

(11) The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.

(12) The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.

(13) The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

(14) The opinion testimony of qualified experts.

(15) The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee—who desired, as a business proposition, to
obtain a license to manufacture and sell a particular article embodying the patented invention—would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.\textsuperscript{16}

The application of a hypothetical negotiation, and the factors to consider during the analytical process, has proven quite challenging for experts, requiring the courts to provide continuous guidance.

**The Reasonable Royalty Rate Analysis: Important Factors in the Hypothetical Negotiation and the Views from the Court**

In the *WesternGeco L.L.C v. ION Geophysical Corp.* (S.D. Tex. 2012) matter, the court stated, “originally listed as one of many reasonable royalty factors in *Georgia-Pacific Corp. v. U.S. Plywood Corp.* . . . , the hypothetical negotiation has evolved into an umbrella over all the other factors.”\textsuperscript{17} The Federal Circuit outlined the governing principle of the hypothetical negotiation in *Fromson v. Western Litho-Plate & Supply Co.* (Fed. Cir. 1988) where the court characterized the recommended approach as follows:

“The methodology encompasses fantasy and flexibility; fantasy because it requires a court to imagine what warring parties would have agreed to as willing negotiators; flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.”\textsuperscript{18}

The Federal Circuit further stated in the *Fromson* case that:

“Lacking adequate evidence of an established royalty, the court was left with the judge-created methodology described as “hypothetical negotiations between willing licensor and willing licensee.””\textsuperscript{19}

In *Innogenetics, N.V. v. Abbott Laboratories* (W.D. Wisc. 2007), the court described the application of the hypothetical negotiation as a process whereby:

“In calculating the amount of a reasonable royalty, the jury has to pretend that the parties sat down and negotiated a reasonable royalty before the day that defendant began its infringement of the plaintiff’s patent . . . Unlike a real negotiation, this hypothetical negotiation assumes that the infringer

\begin{footnotes}
\textsuperscript{17} *WesternGeco L.L.C v. ION Geophysical Corp.* Memorandum and Order dated July 16, 2012 (S.D. Tex.)
\textsuperscript{18} *Fromson v. Western Litho-Plate & Supply Co.*, 853 F.2d 1568, 1575 (Fed. Cir. 1988)
\textsuperscript{19} Ibid.
must agree to some amount of royalty payment; it does not have the option of walking away from the table. The jury must put itself in the shoes of the parties and look at the relevant circumstances as they were at the time the negotiations would have taken place.”

As part of the hypothetical negotiation process, the willing parties are assumed to know that the patent at issue is valid, enforceable, and infringed (“VEI”) at the time of the negotiation takes place. For the Federal Circuit, the allure of a hypothetical negotiation process is based on the long-established methodology for determining the fair market value of privately held businesses, and to a certain extent, the real-world licensing negotiation process. The authoritative literature for the valuation of privately held businesses has historically used a hypothetical willing buyer and willing seller scenario were fair market value is defined as:

“the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.”

The outcome of both a hypothetical negotiation for a reasonable royalty and the hypothetical sale of a business interest is to determine the fair compensation due.

With respect to a real-world license negotiation process, the courts to a certain extent have relied upon what is commonly referred to as the “Book of Wisdom,” whereby relevant factors occurring after the date of infringement may be considered in the estimation of a reasonable royalty between a willing patent holder and willing licensee/infringer. However, the real-world license negotiation process has also been rejected by the courts for consideration of factors that existed after the date of original infringement.

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22 AICPA Statement on Standards for Valuation Services No. 1: Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset. Also see Uniform Standards of Professional Appraisal Practice.
24 See LaserDynamics v. Quanta Computer, Inc., 694 F.3d 51, 75, 2012 BL 222195, 104 U.S.P.Q.2d 1573 (Fed. Cir. 2012) (“reasonable royalty determination must relate to the time infringement occurred and “not be an after-the-fact assessment”); Powell v. Home Depot U.S.A., Inc., 663 F.3d 1221, 1238, 100 U.S.P.Q.2d 1742 (Fed. Cir. 2011) (same); see also Fromson v. Western Litho Plate & Supply Co., 853 F.2d 1568, 1575, 7 U.S.P.Q.2d 1606 (Fed. Cir. 1988) (hypothetical negotiation analysis “requires a court to imagine what warring parties would have agreed to as willing negotiators,” and in some cases allows the “court to look at events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators” in order to “bring out and expose to light the elements of value that were there from the beginning,” but “not to charge the offender with elements of value non-existent at the time of his offense.”)
Although, it may seem acceptable to assume that the estimation of a reasonable royalty from a hypothetical license would mirror those of a real-world negotiation, the Federal Circuit has rejected this methodology. By applying a real-world licensing negotiation, the outcome frames the problem of patent infringement as a contracting problem. This is not the case. Reasonable royalty damages, by their nature, are a form of general damages intended to compensate for the tort of patent infringement. They are not, and were not intended to be, a form of contract damages, retroactive or otherwise.

Furthermore, many of the issues and incentives that drive the real-world licensing negotiation process do not exist in a hypothetical negotiation. As the court stated in Panduit:

“The setting of a reasonable royalty after infringement cannot be treated, as it was here, as the equivalent of ordinary royalty negotiations among truly willing patent holders and licensees.”

The court explained:

“Determination of a reasonable royalty . . . rests on a legal fiction. Created in an effort to compensate when profits are not provable, the reasonable royalty device conjures a ‘willing’ licensor and licensee, who like Ghosts of Christmas Past, are dimly seen as negotiating a license. There is, of course, no actual willingness on either side, and no license to do anything . . .”

**Application of the Hypothetical Negotiation in Practice**

There are disagreements within cases and across cases about what the ultimate goal of the hypothetical negotiation is intended to achieve. Under one scenario, many experts and courts believe that the goal of the hypothetical negotiation is to determine what the litigating parties would have agreed to under a hypothetical negotiation. The goal under a second scenario is to determine what the parties should have agreed to if they had been acting within the bounds of economic rationality during the hypothetical negotiation. Under the first scenario, the hypothetical negotiation process forces the litigating parties into a mandatory bargaining situation and dictates that the parties reach an agreement. U.S. Plywood suggested such an approach in *Georgia-Pacific* and many

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26 Ibid.
28 *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978)
29 Ibid. Also see: *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109-10 (Fed. Cir. 1996); *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 (Fed. Cir. 1995)
other experts and courts have followed suit.\textsuperscript{30} In \textit{Lucent Technologies, Inc. v. Gateway, Inc.} (Fed. Cir. 2009), the court reiterated this approach, stating that, “we must decide whether substantial evidence supports the jury’s implicit finding [as to what the infringer] \textbf{would} have agreed to, at the time of the hypothetical negotiation.”\textsuperscript{31} [Emphasis Added]

Other experts and courts, however, have suggested that the goal of a hypothetical negotiation is to calculate what the parties should have agreed to, whereby, the reasonable royalty payment negotiated would be acceptable for a similarly-situated willing licensor and willing licensee “but for” the infringement. The court stated in \textit{Georgia-Pacific}:

“In fixing damages on a royalty basis against an infringer, the sum allowed should be reasonable and that which would be accepted by a prudent licensee who wished to obtain a license but was not so compelled and a prudent patentee, who wished to grant a license but was not so compelled.”\textsuperscript{32}

As an economic matter, the amount that the infringer should be willing to pay in the form of a reasonable royalty is up to the incremental benefits realized from the use of the patent at issue or as an alternative the cost the infringer would have inured for the next best non-infringing alternative. However, the Federal Circuit has ruled in some cases where the reasonable royalty damages awards exceed the benefits attributable to the infringed patent. In \textit{Monsanto Company v. Kem L. Ralph} (Fed. Cir. 2004), the Federal Circuit stated:

“. . . although an infringer’s anticipated profit from use of the patented invention is “[a]mong the factors to be considered in determining” a reasonable royalty, see \textit{Georgia-Pacific}, 318 F. Supp. at 1120, the law does not require that an infringer be permitted to make a profit. And, where, as here, a patentee is unwilling to grant an unlimited license, the hypothetical negotiation process has its limits. As we explained in \textit{Del Mar Avionics, Inc. v. Quinton Instrument Co.}, 836 F.2d 1320 (Fed. Cir. 1987), the “imposition on a patent owner who would not have licensed his invention for [a given] royalty is a form of compulsory license, against the will and interest of the person wronged, in favor of the wrongdoer.” Id. at 1328; see also \textit{Rite-Hite Corp. v. Kelley Co.}, 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1995) (“The hypothetical


\textsuperscript{32} \textit{Georgia-Pacific} 1970, 318 F. Supp. at 1121
negotiation is often referred to as a ‘willing licensor/willing licensee’ negotiation. However, this is an inaccurate, and even absurd, characterization when, as here, the patentee does not wish to grant a license.”).\(^{33}\)

The Federal Circuit reiterated this position in *Mars, Inc. v. Coin Acceptors, Inc.* (Fed. Cir. 2008) by making reference to the *Monsanto Company v. Kem L. Ralph* decision and by further emphasizing that:

“To the contrary, an infringer may be liable for damages, including reasonable royalty damages, that exceed the amount that the infringer could have paid to avoid infringement.”\(^{34}\)

In contradiction to *Georgia-Pacific*, whereby the court stated that a reasonable royalty “must be fixed so as to leave the infringer, or suppositious licensee, a reasonable profit,”\(^{35}\) the Federal Circuit has required that the hypothetical negotiation take into account the bargaining power of the patent holder and its policy of strictly not licensing.

As for what should the patent holder be willing to accept in the terms of a reasonable royalty, the minimum is the profit, which would have been made if the patent holder sold the item at issue itself. Although this position may sound reasonable, the patent holder must prove that it could have made the sale “but for” the infringement for consideration of its profit in determining a reasonable royalty. In the case where the patent holder could not have made the sale, the determination of a reasonable royalty on those sales may not take into consideration the amount of profit that could have been made but rather the measurement of the incremental benefits that the infringer realized as a result of the infringement that are specifically attributable to the patent. In this scenario, the incremental benefit realized by the infringer is the compensation due the patent holder for the use of the patent at issue. Because reasonable royalty damages are almost always available, the courts have historically allowed litigating parties a substantial amount of flexibility regarding both the type and quality of evidence that may be used to support a reasonable royalty damages analysis. The specific facts of the case drive the underlying analysis and qualitative considerations to identify the incremental benefit.

**Considerations for the Date of the Hypothetical Negotiation**

As implied and defined by the courts, the date of the hypothetical negotiation should be the point of the first infringing sale. Although this guidance seems simple and straightforward, specific case facts may indicate that for purposes of selecting the time period for the hypothetical negotiation, the date of the first infringing sale may not be the proper starting point in the analytical process of determining a reasonable royalty. Most courts and experts use the point of the first infringing sale as the hypothetical

\(^{33}\) *Monsanto Company v. Kem L. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004)

\(^{34}\) *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1373 (Fed. Cir. 2008)

The application of the hypothetical negotiation; however, must take into consideration that patent infringement covers the “unauthorized manufacture, use, offer for sale, and/or sale of products.” Accordingly, some courts have set the date of hypothetical negotiation earlier than the date of the first infringing sale.

In *Oracle America, Inc. v. Google, Inc.* (N.D. Cal. 2011), the court set the date of the hypothetical negotiation at the point of first use, stating:

“The Oracle argues that ‘the date of the hypothetical negotiation is the date that the infringing product was first offered for sale in the United States’ . . . This is not the law. . . . The hypothetical negotiation must be scheduled as of the time infringement began. *Uniloc*, 632 F.3d at 1312. Yes, in some cases, such as where a foreign defendant expands its sales of an accused product into the United States market, the date the product is first offered for sale in the United States may in fact be the date infringement began. Where an accused product is developed and tested here in the United States, however, "use" and therefore infringement will almost always begin well before the first sale." [Emphasis Added]

In *Georgia-Pacific*, the court adopted the date of first manufacture as the date of the hypothetical negotiation. In *Medtronic Sofamor Danek USA, Inc. v. Globus Medical, Inc.* (E.D. Penn. 2009), the court set the hypothetical negotiation at the point at which the infringing products were first “available for use and sale.”

Applying a strict view of the date of the hypothetical negotiation would indicate the requirement that a new hypothetical negotiation take place at the point of first infringement for each infringed patent at issue in a single litigation. This was the view of the court in *Dataquill Ltd. v. High Tech Computer Corp.* (S.D. Cal. 2011) where the court stated:

“Here, because there are three different effective dates for the asserted claims, there are three different dates when DataQuill asserts that infringement began: September 2008, October 27, 2009, and April 13, 2010. Therefore, there should be three different hypothetical negotiations. In addition, DataQuill contends that the asserted claims that were added during the reexamination proceedings cover additional features of the accused products that were not covered by the original claims in the ‘304 Patent.

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36 See *Applied Medical Resources Corp. v. U.S. Surgical Corp.*, 435 F.3d 1356, 1361 (Fed. Cir. 2006)
37 See 35 U.S.C. § 271
38 *Oracle America, Inc. v. Google, Inc.* 798 F. Supp. 2d 1111, 1116 (N.D. Cal. 2011)
40 *Medtronic Sofamor Danek USA, Inc. v. Globus Medical, Inc.*, 637 F. Supp. 2d 290, 310 n.26 (E.D. Penn. 2009)
Therefore, [plaintiff’s expert] may apply different royalty rates to the different infringements that occurred at the three different times.\textsuperscript{41}

Conversely, in other cases involving multiple patents, the reasonable royalty analysis related to the various asserted patents have been combined into a single hypothetical negotiation. The assumption in this instance is that the parties to the hypothetical negotiation would have been aware of the later issued and infringed patents at the time of the hypothetical negotiation, thereby, including this knowledge into their negotiations.\textsuperscript{42} The Federal Circuit further outlined in \textit{LaserDynamics, Inc. v. Quanta Computer, Inc.} (Fed. Cir. 2012) that:

“[i]t . . . makes sense that in each case there should be only a single hypothetical negotiation date, not separate dates for separate acts of infringement . . . .”\textsuperscript{43}

The determination of the date of a hypothetical negotiation eventually is based on the specific case facts to properly identify and to take into consideration if a single negotiation date or multiple negotiation dates is more appropriate.

\textbf{Considerations of Ex Ante v. Ex Post Information in the Hypothetical Negotiation}

As previously stated, the courts have adopted a “Book of Wisdom” with regard to the consideration and inclusion of certain information obtained after the date of the hypothetical negotiation. The consideration of \textit{ex ante} and \textit{ex post} information is a common area of dispute within the hypothetical negotiation process. Many courts and experts have adopted the constraints of a real-world license negotiation by considering only \textit{ex ante} information.\textsuperscript{44} The Federal Circuit stated in \textit{Lucent Technologies, Inc. v. Gateway, Inc.} (Fed. Cir. 2009):

\begin{itemize}
\item \textsuperscript{42} See, e.g., \textit{Medtronic Sofamor Danek USA, Inc. v. Globus Medical, Inc.}, 637 F. Supp. 2d 290, 310 (E.D. Penn. 2009)
\item \textsuperscript{43} \textit{LaserDynamics, Inc. v. Quanta Computer, Inc.}, 694 F.3d 51, 76 (Fed. Cir. 2012)
\item \textsuperscript{44} See, e.g., \textit{Applied Medical Resources Corp. v. U.S. Surgical Corp.}, 435 F.3d 1356, 1363-64 (Fed. Cir. 2006); \textit{Integra Lifesciences, Ltd. v. Merck KGaA}, 331 F.3d 860, 870-71 (Fed. Cir. 2003); \textit{Riles v. Shell Exploration & Production Co.}, 298 F.3d 1302, 1313 (Fed. Cir. 2002); \textit{Interactive Pictures Corp. v. Infinite Pictures, Inc.}, 274 F.3d 1371, 1385 (Fed. Cir. 2001); \textit{Unisys, S.A. v. American Electric Sign Co.}, 69 F.3d 512, 518 (Fed. Cir. 1995); \textit{Hanson v. Alpine Valley Ski Area, Inc.}, 718 F.2d 1075, 1081 (Fed. Cir. 1983); \textit{Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.}, 575 F.2d 1152, 1164 (6th Cir. 1978); \textit{Avocent Huntsville Corp. v. Clearcube Technologies, Inc.}, No. CV-03-S-2875-NE, 2006 U.S. Dist. LEXIS 55307, at *33, *82-83 (N.D. Ala. July 28, 2006)
\end{itemize}
“The hypothetical negotiation tries, as best as possible, to recreate the *ex ante* licensing negotiation scenario and to describe the resulting agreement. In other words, if infringement had not occurred, willing parties would have executed a license agreement specifying a certain royalty payment scheme.”

Accordingly, in establishing a reasonable royalty rate, considerations such as the infringer’s expected profit and available non-infringing alternatives are to be determined not on the basis of a hindsight of what actually occurred, but rather, on the basis of what the parties to the hypothetical license negotiations would have considered at the time of the negotiations. This approach results in the patent holder and the infringer striking a bargain based on the incomplete information available at the time of the hypothetical negotiation regardless of whether such expected benefits are consistent with subsequent reality. This approach is not without its problems. For example, consider the situation where at the date of the hypothetical negotiation, the patent at issue for a new cancer drug was expected to generate profits of $50 million; however in reality the patent resulted in zero profits. The consideration of an *ex ante* only information for determining a reasonable royalty would result in a reasonable royalty damages award that is inconsistent with and far in excess of an amount that is adequate to compensate the patent holder for infringement for the use made of the invention by the infringer. The same scenario could also be reversed whereby the expected profits relying upon only *ex ante* information resulted in the cancer drug being forecasted to be only moderately profitable, but subsequent events resulted in the product being highly profitable. In these circumstances, the sole reliance on *ex ante* information to determine reasonable royalty damages may not lead to a fair or economically outcome. In actual practice, *ex post* facts are considered despite claims that only information available at the point of hypothetical negotiation is to be considered.

The proper balancing of *ex ante* and *ex post* information is similar to the process applied in the valuation of an ownership interest in a business enterprise. Under the professional standards that guide the appraisal of a business, the appraiser would only consider *ex ante* information that was “known or knowable” as of the valuation date of the ownership interest in estimating its value. For business valuation purposes, data

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45 Lucent Technologies, Inc. v. Gateway, Inc., 580 F.3d 1301, 1325 (Fed. Cir. 2009)
46 See, e.g., TWM Mfg. Co. v. Dura Corp., 789 F.2d 895, 899 (Fed. Cir. 1986) ("[E]vidence of actual profits is generally admissible."); Third Wave Technologies, Inc. v. Stratagene, Corp., 405 F. Supp. 2d 991, 1011-12 (W.D. Wisc. 2005) (approving of the patent holder’s expert undertaking an pure ex ante evaluation, yet also approving of consideration of ex post facts); Alpex Computer Corp. v. Nintendo Co., No. 86 Civ. 1749, 1994 U.S. Dist. LEXIS 17515, at *133 (S.D.N.Y. Dec. 2, 1994) (approving of a “flexible hypothetical negotiation analysis” which is “anchor[ed] . . . with facts at the time of infringement”); American Intellectual Property Law Association, Model Patent Jury Instructions § 11.18 (2012) (“Although the relevant date for the hypothetical license negotiation is just before the infringement began, you may consider any actual profits made by [the defendant] due to its infringement and any commercial success of the patented invention or the infringing products after that date. You may only consider this information, however, if those sales and profits were foreseeable just before the infringement began.”)
subsequent to the valuation date is only considered when such data provides confirmation of a trend that would reasonably be expected to continue as of the valuation date or such subsequent data was reasonably foreseeable as of the valuation date.\textsuperscript{47} With respect to the development of a reasonable royalty, the dilemma of what \textit{ex post} information to consider is the same. In \textit{SmithKline Diagnostics, Inc. v. Helena Laboratories, Inc.} (Fed. Cir. 1991), the Federal Circuit affirmed a 25\% damages royalty based on evidence of the commercial success of the invention; however, no such information pre-dated the infringement. Factor 11 of \textit{Georgia-Pacific} specifically states that for purposes of determining a reasonable royalty that to “the extent to which the infringer has made use of the invention; and any evidence probative of the value of that use” should be considered in the hypothetical negotiation. To the extent the infringer has made use of the invention and the value of that use can only occur after the hypothetical negotiation, which is set at the instant the infringement begins.

However, not all future events are considered relevant. In \textit{Hanson v. Alpine Valley Ski Area, Inc.} (Fed. Cir. 1983), the Federal Circuit stated:

“The issue of the infringer’s profit is to be determined not on the basis of a hindsight evaluation of what actually happened, but on the basis of what the parties to the hypothetical license negotiations would have considered at the time of the negotiations. Whether, as events unfurled thereafter, [Alpine Valley] would have made an actual profit, while paying the royalty determined as of [1972], is irrelevant.”\textsuperscript{48}

A pure \textit{ex ante} model is rarely witnessed. In \textit{ResQNet.com, Inc. v. Lansa, Inc.} (Fed. Cir. 2010), the court stated that a royalty analysis:

“may also consider the panoply of ‘events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.”\textsuperscript{49}

In practice, the consideration of \textit{ex post} information is best restricted to the infringer’s use and the value of that use within the landscape of the foreseeability of that use and value within the parameters of the hypothetical negotiation.

\textbf{The Incremental Benefits Realized by the Infringer from the Use of Patented Invention & Requirement to Apportion the Royalty Rate Base}

Within the context of a hypothetical negotiation, the infringer’s use and the value of that use of the patented invention raises the prospect of measuring the incremental benefits realized by the infringer in determining a reasonable royalty. The measurement of the incremental benefit is comparing the benefits (or cost savings) of using the patented

\textsuperscript{47} See Uniformed Standard of Professional Appraisal Practice Advisory Opinion 34.
\textsuperscript{48} \textit{Hanson v. Alpine Valley Ski Area, Inc.}, 718 F.2d 1075,1081 (Fed. Cir. 1983)
\textsuperscript{49} \textit{ResQNet.com, Inc. v. Lansa, Inc.}, 594 F.3d 860, 872 (Fed. Cir. 2010)
invention compared to the benefits or cost of the next best non-infringing alternative. Georgia-Pacific factors 11 and 13 specifically point to the consideration of the incremental benefit from the use by the infringer of the patented item. In TWM Manufacturing Co. v. Dura Corp. (Fed. Cir. 1986), the Federal Circuit held:

“that a reasonable royalty can be determined by assessing the difference between the expected returns for a product incorporating a patent and a patent holder’s normal returns.”

The normal returns of the infringer would be based on some non-infringing substitute. Incremental patent benefits can be measured in several ways: (1) the patent may have allowed the infringer to charge a higher sales prices, (2) the patent may have allowed the infringer to sell a higher volume of units and (3) the patent may have allowed the infringer to reduce the cost to manufacture or sale. By identifying the incremental benefit associated with the use of the patent, the value to the infringer can be separated from the infringer’s normal profit associated with the next best non-infringing alternative.

Now this approach may sound straight forward; however, it becomes quite complicated in those cases where the patent at issue is a component of a more complex apparatus such as an iPhone, laptop computer or suite of software applications. Despite this difficulty, the analysis must identify the benefit associated with infringement and exclude any compensation for non-patented features of the broader product. This gets into the long-debated issue of the Entire Market Value Rule and the requirement to apportion a reasonable royalty to the use of the specific patented invention. The Federal Circuit in its most recent opinions have made it clear that the reasonable royalty must be tied as closely as possible to the specific advantages of the infringed patent at issue. The Federal Circuit stated in ResQNet.com, Inc. v. Lansa, Inc. (Fed. Cir. 2010):

“the trial court must carefully tie proof of damages to the claimed invention’s footprint in the marketplace . . . Any evidence unrelated to the claimed invention does not support compensation for infringement but punishes beyond the reach of the statute.”

In Cornell University v. Hewlett-Packard Co (N.Y.D.C. 2009), the court stated that the royalty base selected for application of a reasonable royalty:

“. . . exceeded again this court’s direction and proceeded to attempt to show economic entitlement to damages based on technology beyond the scope of the claimed invention. The entire market value rule indeed permits damages on technology beyond the scope of the claimed invention, but only upon proof that damages on the unpatented components or technology is necessary to fully compensate for infringement of the patented invention.

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Thus, . . . the royalty base without credible and economic proof that damages on the unpatented portions of this technology was necessary to compensate for the infringement.”

The Federal Circuit further expressed its views on apportionment in *LaserDynamics, Inc. v. Quanta Computer, Inc.* (Fed. Cir. 2012) whereby it stated:

“it is generally required that royalties be based not on the entire product, but instead on the "smallest salable patent-practicing unit. . . . The entire market value rule is a narrow exception to this general rule. If it can be shown that the patented feature drives the demand for an entire multi-component product, a patentee may be awarded damages as a percentage of revenues or profits attributable to the entire product.”

The Federal Circuit went further in its view of apportionment beyond the smallest saleable patent-practice unit (“SSPPU”) in *VirnetX, Inc. v. Cisco Systems, Inc.* (Fed. Cir. 2014) whereby the court stated:

“To be sure, we have previously permitted patentees to base royalties on the “smallest salable patent-practicing unit. . . However, the [jury] instruction mistakenly suggests that when the smallest salable unit is used as the royalty base, there is necessarily no further constraint on the selection of the base. That is wrong. For one thing, the fundamental concern about skewing the damages horizon—of using a base that misleadingly suggests an inappropriate range—does not disappear simply because the smallest salable unit is used.

Moreover, the smallest salable unit approach was intended to produce a royalty base much more closely tied to the claimed invention than the entire market value of the accused products. Indeed, that language first arose in the Cornell case, where the district court noted that, rather than pursuing a ‘royalty base claim encompassing a product with significant non-infringing components,” the patentee should have based its damages on “the smallest salable infringing unit with close relation to the claimed invention.” . . .(emphasis added). In other words, the requirement that a patentee identify damages associated with the smallest salable patent-practicing unit is simply a step toward meeting the requirement of apportionment. Where the smallest salable unit is, in fact, a multi-component product containing several non-infringing features with no relation to the patented feature (as VirnetX claims it was here), the patentee must do more to estimate what portion of the value of that product is attributable to the patented technology. To hold otherwise would permit the entire market value exception to swallow the rule of apportionment.

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53 *LaserDynamics, Inc. v. Quanta Computer, Inc.* 694 F.3d 51 (Fed. Cir. 2012)
In reaching this conclusion, we are cognizant of the difficulty that patentees may face in assigning value to a feature that may not have ever been individually sold. However, we note that we have never required absolute precision in this task; on the contrary, it is well-understood that this process may involve some degree of approximation and uncertainty.\textsuperscript{54}

As a result, the hypothetical negotiation process must identify and estimate the incremental value specifically attributed to the patented invention as the value received by the infringer for purposes of adequately compensating the patent holder.

**Consideration of Design Around Costs in the Hypothetical Negotiation**

Similar to assessing the incremental benefit that the infringer received by use of the patent issue, any hypothetical negotiation would also take into consideration the cost of avoiding infringement by adopting the non-infringing, next best alternative. One of the difficulties in performing a Design-Around Cost analysis is to identify all of the relevant costs and what cost accounting methodology should be applicable for considering fixed costs for manufacturing, research, development and other overhead costs.\textsuperscript{55} The ultimate goal being the estimation of the cost to develop and commercialize the non-infringing, next best alternative.

Design-Around Cost issues are not specifically addressed in the Georgia-Pacific; however, several Federal Circuit cases related to determining lost profits such as Rite-Hite Corp. v. Kelley Co\textsuperscript{56} have referenced the consideration of the infringer’s design-around alternatives, whether or not they have come to commercial fruition. The most significant of cases addressing Design-Around Costs is Grain Processing Corp. v. American Maize-Products Co. (Fed. Cir. 1999) where the court stated:

> “a fair and accurate reconstruction of the “but for” market also must take into account, where relevant, alternative actions the infringer foreseeably would have undertaken had he not infringed. Without the infringing product, a rational would-be infringer is likely to offer an acceptable non-infringing alternative, if available, to compete with the patent owner rather than leave the market altogether. The competitor in the “but for” marketplace is hardly likely to surrender its complete market share when faced with a patent, if it can compete in some other lawful manner. Moreover, only by comparing

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\textsuperscript{54} VirnetX, Inc. v. Cisco Systems, Inc. 767 F.3d 1308 (Fed. Cir. 2014)

\textsuperscript{55} See, e.g., Apple, Inc. v. Motorola, Inc., No. 1:11-cv-08540, 2012 (identifying invent-around software development costs and the costs of lost customer goodwill); Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 BYU L. REV. 1661 (2010), supra note 5, at 1667 ("[A] rational accused infringer would pay only the amount that it would cost to obtain (or internally develop) and implement the substitute technology, as well as any lost profits or other costs incurred due to the substitute’s adoption)

\textsuperscript{56} Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1544-49 (Fed. Cir. 1995).
the patented invention to its next-best available alternative(s) - regardless of whether the alternative(s) were actually produced and sold during the infringement - can the court discern the market value of the patent owner's exclusive right, and therefore his expected profit or reward, had the infringer's activities not prevented him from taking full economic advantage of this right.\textsuperscript{57}

Recently, several lower courts have commented that non-infringing alternative technologies must be considered as part of a reasonable royalty analysis and the hypothetical negotiation.\textsuperscript{58} In \textit{Brandeis University et al. v. Keebler Co. et al} (N.D. Ill. 2013) the court stated that the patent holder:

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"would not have paid a royalty higher than the cost to it of switching to a non-infringing substitute for the plaintiffs' margarine in its cookies or otherwise reworking its manufacturing process to avoid making the infringing margarine."\textsuperscript{59}
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The courts have clearly identified that under certain circumstances where competitors compete in the same market have the option of looking at plausible alternatives to infringing. This economical rationalization assesses the cost of adopting a non-infringing alternative substitute as the highest price to incur in a hypothetical negotiation of a reasonable royalty.

\textbf{Consideration of Comparable Licenses in the Hypothetical Negotiation}

\textit{Georgia-Pacific} factors 1 and 2 address the consideration of comparable licenses in establishing a reasonable royalty. By looking at comparable licenses, the amount of a reasonable royalty that should be paid for infringement can be determined from the amount of compensation paid in similar circumstances and similar patents. In a perfect world, the comparable licenses used are based on real-world licenses that are identical to the hypothetical license and based on the specific patented invention.

Although this approach and \textit{Georgia-Pacific} factors seems straight forward, the courts have taken a sharp focus on the use and on the reliance of comparable licenses, the timing of when those licenses took place and the scope of the licenses in deriving a reasonable royalty. In most infringement cases, there is no perfectly comparable real-

\textsuperscript{57} \textit{Grain Processing Corp. v. American Maize-Products Co.}, 185 F.3d 1341 (Fed. Cir. 1999)


world license that existed at the date of infringement to provide guidance in a hypothetical negotiation. To the extent that there is, it may be indicia of an established royalty if sufficient licenses exist to meet the standard set by Mobil Oil. Like any analysis, where a yardstick or benchmark methodology is being applied, the expert must make a careful analysis of the similarities and differences in the comparable licenses and make modifications to take into account such differences.

The Federal Circuit and various district courts have issued several important opinions related to comparable license analysis and the importance to sufficiently address the degree of comparability. In Lucent Technologies, Inc. v. Gateway (Fed. Cir. 2009), the court cited:

“When we examine these license agreements, along with the relevant testimony, we are left with two strong conclusions. First, some of the license agreements are radically different from the hypothetical agreement under consideration for the Day patent. Second, with the other agreements, we are simply unable to ascertain from the evidence presented the subject matter of the agreements, and we therefore cannot understand how the jury could have adequately evaluated the probative value of those agreements. . . . Lucent candidly admits in its brief that ‘none of the real world licenses introduced at trial arose from circumstances identical to those presumed to prevail in the hypothetical royalty negotiation.’”

The Federal Circuit further expanded in ResQNet.com, Inc. v. Lansa, Inc., (Fed. Cir. 2010) that:

“this court just recently rejected a patentee’s reliance on licenses because ‘some of the license agreements [were] radically different from the hypothetical agreement under consideration’ and the court was ‘unable to ascertain from the evidence presented the subject matter of the agreements.’ . . . This court has long required district courts performing reasonable royalty calculations to exercise vigilance when considering past licenses to technologies other than the patent in suit. . . . The majority of the licenses on which ResQNet relied in this case are problematic for the same reasons that doomed the damage award in Lucent.”

The guidance by the courts requires the hypothetical negotiation to take into consideration the comparability of the license agreement on multiple levels, including not just the comparability of the license to the patented invention, the time period the licenses was entered into, but also terms of the license. The courts have traditionally excluded settlement licenses from consideration in the hypothetical negotiation process due to probative value. Recent court decisions have modified that position. In ResQNet, the Federal Circuit noted that there were licenses that had been negotiated in the context of litigation that were related to the patented technology that were arguably

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60 Lucent Technologies, Inc. v. Gateway, 580 F.3d 1301, 1327-28 (Fed. Cir. 2009)
61 ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860, 872 (Fed. Cir. 2010)
more relevant to the licenses proffered by the patent holder. Although the court did not explicitly hold that the settlement licenses were admissible, various district courts have cited the Federal Circuit’s language in *ResQNet* to support the proposition that settlement licenses are admissible and probative to allow discovery on the underlying negotiations surrounding the licenses themselves.\(^\text{62}\)

**Summary**

The application of the hypothetical negotiation process requires a broad assessment of the various factors that that willing parties would have reasonably considered in reaching a fair compensation to the patent holder. The process is not straightforward. In all instances, the outcome must be measured by what the courts have established as economic rationalization and case specific factors. The courts have left the litigation landscape littered with excluded experts in the application of the hypothetical negotiation process. The hypothetical negotiation process must be viewed from an analytical distance to assess not just economic fairness to the patent holder but economic fairness to the infringer who may have had the ability to design around the infringement altogether. *Georgia-Pacific* is a starting point of the process, but as recent court decisions have clarified, the overall goal is measuring the value of the use by the infringer.

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**Scott A. Barnes, CPA, CFF, CGMA:** Mr. Barnes is professionally licensed as a Certified Public Accountant, Certified in Financial Forensic and a Chartered Global Management Accountant. During the past 25 years, he has assisted corporations, investors and attorneys in assessing the financial issues surrounding complex and sophisticated accounting issues, merger and acquisition transactions, business valuation and industry and competitor analyses. He has extensive experience providing sophisticated commercial damage analyses and expert testimony for clients in a diverse range of industries, especially with respect to intellectual property infringement, antitrust, lost profits, business interruption, contract disputes, business valuation, fraud, accounting, accounting malpractice and other complex commercial damage issues. He has written extensively on intellectual property infringement matters.