Final Report of the Berkeley Center for Law & Technology Patent Damages Workshop

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The determination of patent damages lies at the heart of patent law and policy, yet it remains one of the most contentious topics in this field, particularly as regards the calculation of a reasonable royalty.[1] The Patent Act provides that "[u]pon 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, together with interest and costs as fixed by the court."[2]

The reasonable royalty floor of awards in patent damages plays a central role in cases brought by non-practicing entities, who are not in a position to make lost-profit claims. In the information and communications technology fields, the reasonable royalty determination often plays out in the context of a patent that was not known by the alleged infringer when it brought its technology to market[3] and covers but one feature of a multi-component product that builds upon a large number of technologies, many of which are also patented. Determining a reasonable royalty in these circumstances often strains both remedial principles and economic analysis.

The controversy over the determination of a reasonable royalty has taken on greater importance as courts have tightened the standards for injunctive relief. The principal legal framework for determining a reasonable royalty—the *Georgia-Pacific* list of fifteen factors[4] including a hypothetical negotiation test—has been widely criticized as ambiguous, unworkable,

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[1] *See* THE SEDONA CONFERENCE WORKING GRP., COMMENTARY ON PATENT DAMAGES AND REMEDIES 23 (2014), available at https://thesedonaconference.org/download-pub/3827; U.S. FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION (2011) (hereinafter cited as "MARKETPLACE REPORT"); NAT'L RESEARCH COUNCIL, NAT'L ACADS. OF SCI., A PATENT SYSTEM FOR THE 21ST CENTURY (Stephen A. Merrill, Richard C. Levin & Mark B. Myers eds., 2004); U.S. FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003).

[2] 35 U.S.C. § 284.

[3] *See* Peter S. Menell & Michael J. Meurer, *Notice Failure and Notice Externalities*, J. LEGAL ANALYSIS 1 (2013) (explaining the strategic aspects of patent notice). Standard-essential patents (SEPs) raise their own specific issues relating to notice, patent holdup, and licensing commitments. The workshop generally steered clear of issues associated specifically with SEPs.

[4] *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1119-20 (S.D.N.Y. 1970), *modified and aff'd*, 446 F.2d 295 (2d Cir. 1971).

inherently contradictory, and circular.[5] To date, the *Georgia-Pacific* list has been the main framework used by U.S. courts for reasonable royalty analysis, although that may now be changing with the Federal Circuit Bar Association's January 2016 Model Jury Instructions (discussed below).[6]

Because the effects of patent damages law on patent assertion strategy, research and development, licensing activity, preemptive patent acquisition, and settlement negotiations are not directly observable, we convened a group of leading "insiders" to clarify areas of consensus and disagreement regarding the treatment of patent damages. The assembly consisted of in-house counsel, litigators (from both the assertion and defense sides), patent licensing professionals, testifying expert witnesses, and academics (both law professors and economists). We sought to explore the state of play in the shadow of patent damages law and ways to improve the process and substance of patent damages law, patent case management, and patent valuation methodology, especially in the information and communications technology sectors.

We began planning the event in August 2015 with funding from Intel Corporation and administrative support from the Berkeley Center for Law & Technology (BCLT). We made it clear to our funders that we would retain complete academic independence in planning and conducting the workshop and would seek to include a broadly representative group of professionals. After identifying the most experienced professionals in the patent damages and licensing fields, we invited approximately three-dozen people for a workshop held on March 3, 2016 in Berkeley, California. We included leading authorities and a wide range of perspectives so as to ensure balance and reasonable opportunity for a wide-ranging exchange of ideas.

We established the following ground rules to promote candid discussion: (1) Participants would be free to use the information received, but neither the identity nor the affiliation of the speaker(s) could be revealed; (2) We would prepare a report describing the results of the workshop—and that report would not attribute statements or views to individuals; and (3) The report would list the participants and be made available to the public through BCLT. Appendix A contains the Workshop Schedule. Appendix B contains the list of participants. This document constitutes that report.

Part I contains a lightly edited version of the background document that we circulated to participants beforehand to frame the discussion. Part II contains a lightly edited version of the summary of patent damages law drafted by Professors Thomas Cotter and John Golden that was used to kick off the workshop. Part III contains our synthesis of the workshop discussion. Part IV sketches case management ramifications of the workshop discussion.

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[5] *See, e.g.*, William Lee and A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385 (2016); Jorge L. Contreras & Richard J. Gilbert, *A Unified Framework for RAND and Other Reasonable Royalties*, 30 BERKELEY TECH. L.J. 1451, 1479-82 (2015); David O. Taylor, *Using Reasonable Royalties to Value Patented Technology*, 49 GA. L. REV. 79 (2014); John C. Jarosz & Michael J. Chapman, *The Hypothetical Negotiation and Reasonable Royalty Damages: The Tail Wagging the Dog*, 16 STAN. TECH. L. REV. 769, 823 (2013); Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 BYU L. REV. 1661, 1704 (2010); Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 628-31 (2010); Mark Schankerman & Suzanne Scotchmer, *Damages and Injunctions in Protecting Intellectual Property*, 32 RAND J. ECON. 199 (2001).

[6] *See* Federal Circuit Bar Association, Model Jury Instructions (Jan. 2016) [hereinafter cited as "Instructions"].

I. Background Memo

The goal of the workshop is for the participants to learn from each other by sharing their perspectives on the performance, good and bad, of the U.S. patent damages system. Participants should come prepared to share their experiences and views, to teach, to listen, and to learn.

The workshop will focus on damages that are based on reasonable royalties, with particular focus on the information and communications technology sector. One of the workshop goals is to identify areas of consensus – even narrow ones – regarding the determination of patent damages. Another goal is to develop a better understanding of how the evolving law and economics of patent damages is influencing patent licensing negotiations, and hopefully vice versa.

The workshop will consist of four sessions, each based around an important perspective: (1) patent law, (2) patent litigation and enforcement, (3) the economics of patent damages; and (4) the business of patent licensing, patent valuation, and patent transactions. In contrast, these reading materials list specific issues that the organizers believe will be of interest to all participants.

A. Choosing and Using "Comparable" Patent Licenses as Benchmarks

In practice, U.S. courts usually determine reasonable royalties based on "comparable" patent licenses, with suitable adjustments made to these comparable licenses to determine reasonable royalties for the patents-in-suit. Indeed, some might say that no other method of determining reasonable royalties has found favor with the Federal Circuit.

In general, does reliance on "comparable" licenses work well, or poorly? How and why?

When a patent license is negotiated, one or both parties may anticipate that the license will be used as a "comparable" in a subsequent patent litigation. Is it common for this prospect to influence significantly the negotiations? In what circumstances is this effect most pronounced?

A circularity can arise when patent damages are determined based on "comparable" licenses. Licenses are negotiated in the shadow of litigation, along with the prospect of patent damages, while those damages are based on the terms of those and similar licenses. This circularity means that license fees and damages awards can become "stuck" at an incorrect level, either too high or too low. Are there ways to avoid this circularity? To the extent this circularity cannot be avoided, does it tend to inflate damage awards or depress them? Does it have other effects, for better or worse?

Most licenses are confidential, so the set of available "comparable" licenses is typically limited to agreements brought forward by the litigating parties. Does this fact create an opportunity to manipulate those benchmarks? Can plaintiffs or defendants strategically create a special category of "comparables" to use in litigation? Are there any practical solutions to these problems that would yield more reliable outcomes while properly respecting the confidential nature of most licenses?

Some "comparable" licenses were negotiated in circumstances where the patent holder had obtained, or was likely to obtain, an injunction against the licensee. A mirror situation may occur if a negotiation proceeds under circumstances where the accused infringer had some significant bargaining advantage. Can such licenses be used as benchmarks? If they are used, is some downward (or upward) adjustment necessary?

Now that more and more patents are bought and sold, can information on the transaction prices for patents usefully inform the determination of reasonable royalties? If so, how? From a practical standpoint, is there a realistic way to utilize the information about reasonable royalties that such transactions provide?[7]

B. Uncertainty and Information in the Hypothetical Negotiation

Licenses are invariably negotiated in the presence of uncertainty about patent validity and infringement. In contrast, for the purpose of determining reasonable royalties, the patent is assumed to be valid and infringed. Do these facts imply that the royalty rates found in the "comparable" licenses must be adjusted upward, at least in principle?

Some courts have been wary of using "comparable" licenses that resulted in settlement of patent litigation. Is this wariness justified, given that all patent licenses are negotiated in the shadow of litigation, whether or not litigation is initiated? More generally, should licenses resulting from the settlement of litigation be treated differently from other licenses? If so, how?

What should courts assume about the information available to parties in the *ex ante* hypothetical negotiation? Should the court adopt a strict *ex ante* approach and assume that the parties only have information that was available at the time of that negotiation? Alternatively, should the court allow certain ex post information to enter into these hypothetical negotiations, along the lines of Justice Cardozo's "Book of Wisdom" doctrine,[8] which allowed the discovery of information post-dating a breach of contract to be used in calculating damages? If some ex post information is used, what limits should the courts place on such information or its use?[9]

C. The Reasonable Range, Bargaining Power, and Rules of Thumb

Under the standard "hypothetical negotiation" framework, the range for reasonable royalties is bounded above by what the defendant/licensee would be willing to pay for a license and below by what a plaintiff/licensor would be willing to accept.

In practice, can the reasonable range sometimes be reliably identified even if a single rate cannot? If so, are certain circumstances especially conducive to identifying such a range? What types of evidence can be used to determine the reasonable range? If an economic expert identifies the reasonable range, what types of evidence are relevant to determining what point within that range to select as the reasonable royalty? Is it appropriate to split the gains from trade evenly, as implied by symmetric Nash bargaining theory?[10] Courts have become increasingly hostile to rules of thumb and to approaches based on Nash bargaining theory. Is this hostility justified?

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[7] For a detailed discussion of the use of "comparable" licenses, see Jonathan Masur, *The Use and Misuse of Patent Licenses*, 110 NORTHWESTERN UNIV. L. REV. 1115 (2015). For a discussion of the circularity between patent licenses and patent damages, *see* William Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385 (2016).

[8] *See Sinclair Refining Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689 (1933).

[9] For a discussion of the information to be used in the hypothetical negotiations along with a proposal to use a "contingent *ex ante*" framework, *see* Norman Siebrasse & Thomas Cotter, *A New Framework for Determining Reasonable Royalties in Patent Litigation*, FLA. L. REV. (forthcoming 2016).

[10] For an explanation of the Nash bargaining solution, *see* John Nash, *The Bargaining Problem*, 18 ECONOMETRICA 155 (1950) and its progeny. For an explanation of its use in patent suits, *see infra* note 11.

One method for establishing an upper bound on the reasonable range is to calculate the total costs of "designing around" the patent or switching to a non-infringing substitute technology. What are the practical difficulties associated with discovering and presenting evidence on the economic costs of a design-around or non-infringing substitute? What should courts assume about the strength of competition between a patented technology and non-infringing substitutes? Should it depend on the number of alternatives and whether or not they are patented?

What should the court do if the defendant's willingness to pay is less than the plaintiff's willingness to accept, so the reasonable range is empty? Does this imply that the appropriate remedy is lost profits rather than reasonable royalties?[11]

D. Apportionment

Patent law regarding apportionment has been evolving in recent years, as reflected in changing doctrines relating to the Entire Market Value Rule, the Smallest Saleable Patent Practicing Unit, and "causal nexus." Have these changes in patent law influenced patent licensing negotiations? More specifically, have they influenced the selection of licensing and litigation targets, or the choice between lump-sum royalties, running royalties based on a percentage of revenues, and running royalties based on a fixed price per unit? Have these changes influenced what patents companies seek to acquire, or even the types of inventions companies patent in the first place? Have they affected the types of R&D projects companies pursue?

Is there any consensus regarding reliable methods for apportionment? How does apportionment interact with the determination of a reasonable range? Does conjoint analysis provide a useful methodology for apportioning value?[12] Are more conventional survey methods useful for determining the value of patented components of larger systems? Are there other economic or statistical methods in use, or on the horizon, that may offer more robust outcomes?

How are the courts accounting for situations in which many patents read on the same product? Are there realistic and workable approaches the courts can take in such situations? How should evidence regarding the licensing practices of patent pools be used?[13]

E. Portfolio Licensing

Narrowing a trial to some small set of patents-in-suit may be a practical necessity. However, patent negotiations and patent licenses often encompass a broad portfolio of patents and technologies. How does the need to assert a relatively small set of patents feed back into real-world portfolio negotiations, if at all? How can the courts ascertain patent damages based on

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[11] For a short blog post on the division of the bargaining surplus, *see* Michael J. Chapman & John C. Jarosz, *Rebuttal: It's Not an Inappropriate Reasonable Royalty Rule*, LAW360 (Aug. 21, 2015) (responding to William Rooklidge and Andrew Brown, *The Latest Inappropriate Reasonable Royalty Rule of Thumb*, LAW360 (Jul. 28, 2015)), http://www.law360.com/articles/694171/rebuttal-it-s-not-an-inappropriate-reasonableroyalty-rule. For a longer discussion of patent damages and Nash bargaining theory, *see* Lance Wyatt, *Keeping Up with the Game: The Use of the Nash Bargaining Solution in Patent Infringement Cases*, 31 SANTA CLARA HIGH TECH. L.J. 427 (2015).

[12] Conjoint analysis is a statistical technique used to rank or rate the trade-offs consumers make when evaluating different product attributes. *See generally* J. Gregory Sidak & Jeremy O. Skog, *Using Conjoint Analysis to Apportion Patent Damages*, 25 FED. CIR. BAR J. 581 (2016).

[13] *See* Elizabeth M. Bailey, Gregory K. Leonard & Mario A. Lopez, *Making Sense of "Apportionment" in Patent Damages*, 12 COLUM. SCI. & TECH. L. REV. 255 (2011).

"comparable" licenses if the most directly comparable licenses are portfolio licenses covering many more patents than are in suit?

F. General Background

All participants are highly experienced in the patent field. But in case you would like to brush up, here are some further reading materials that are relevant to the issues we will be discussing. The Federal Trade Commission published a lengthy report in 2011, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION.[14] In 2011, Daralyn Durie and Mark Lemley suggested ways to structure and simplify the Georgia-Pacific analysis in "A Structured Approach to Calculating Reasonable Royalties." The Sedona Conference has an ongoing project to look at patent damages.[15]

II. Patent Damages Law Primer[16]

The following is our effort to develop a concise outline of the key statutory, doctrinal, jurisprudential, and case management issues bearing on the determination of patent damages. Our principal focus is on reasonable royalties (including, but not limited to, issues relating to ongoing royalties and FRAND (fair reasonable and non-discriminatory) royalties) and not on lost profits, enhanced damages, fees, or the disgorgement of defendant's profits for design patent infringement.

There is a general (albeit not universal) consensus, both in the law and the commentary, that reasonable royalties should reflect the terms of a hypothetical *ex ante* bargain between the patent owner and the infringer. There are some important theoretical questions concerning exactly what this means, however, and some difficult practical questions about how to turn the framework into an operational legal standard. Below we have listed the ones we think are most important; note, however, that there often is no clear dividing line between what is theoretical and what is merely practical.

A. Theoretical Issues

The hypothetical bargain. A fundamental question is whether a hypothetical bargain framework (whatever its precise details may be, as discussed below) really *is* the correct approach for achieving the goals of the patent system. Are there any flaws in this approach, or any better alternatives?

Timing of hypothetical bargain. The mainstream view is that the hypothetical bargain occurs just prior to the date on which the infringement began. A good theoretical rationale for this time frame is that it helps avoid basing the royalty on holdup value: the amount the owner could extract ex post based on the user's sunk costs. If so, however, should the timing ever be moved back even earlier, i.e., to the date before the defendant incurred any sunk costs? This probably

[14] MARKETPLACE REPORT, *supra* note 1.

[15] *See* Sedona Conference, PATENT DAMAGES AND REMEDIES (June 2014 Public Comment Version), available at https://thesedonaconference.org/download-pub/4489.

[16] This section was drafted by Professors Thomas Cotter and John Golden with input from the workshop organizers.

would be impractical in many instances but there is (arguably) an emerging consensus that in FRAND cases the time frame should be the date before the standard is adopted. Is this correct?

Information set. The mainstream view is that the hypothetical bargain should be based only on information that is available to the parties *ex ante*, and that ex post information is relevant only as indirect evidence of what the parties would have expected *ex ante* (the "book of wisdom" approach). Nevertheless, there are at least two standard departures from this model: courts assume the parties bargained knowing the patent was valid and infringed (otherwise there is a double discounting problem), and the royalty base often comprises ex post revenue. Siebrasse & Cotter argue that the hypothetical bargain should be recast as the bargain the parties would have struck *ex ante* had they been aware of all information that is available ex post; this adjustment would result in royalties that could be higher or lower than anticipated *ex ante*.[17] The Sedona Conference and a few commentators also argue for the expanded use of ex post information, but would this be advisable?

Non-infringing alternatives. The economic value of the patent to the user is the (actual or expected) profit or cost saving it derives from the use of the patent over the next-best available non-infringing alternative. If the next-best available alternative is another patented technology, however, how should this affect the damages calculation?

Comparable licenses. Unlike hypothetical licenses, actual licenses are likely to be negotiated against a probabilistic assessment of validity and infringement. When comparable licenses are used as indirect evidence of the *ex ante* bargain, should the rate set forth in supposedly comparable licenses be adjusted accordingly, and if so, how?

Entire market value rule and smallest saleable unit. The CAFC has held that experts should not use the "entire market value" as the royalty base unless the patent in suit drives the demand for the patented product.[18] Does this rule make sense as a theoretical matter? If it is only necessary to avoid misleading the jury, should it be applicable only in jury cases? To what extent should reasonable royalties reflect the price of the smallest saleable patent-practicing unit?

FRAND cases. Should courts take into account, and juries be instructed about, the need to avoid patent holdup and royalty stacking? Should courts exclude any value attributable to the inclusion of the patent in the standard, and if so, what exactly does this mean?

Ongoing royalties. Should the rate of an ongoing royalty awarded in lieu of an injunction exceed the prejudgment rate? If so, why, when, and by how much?

B. Practical Issues

Factors and evidence. What sort of practical evidence is best suited to shed light on the terms of the hypothetical bargain? How should courts evaluate whether comparable licenses really are comparable? Should the *Georgia-Pacific* factors be recast to focus on a smaller number of

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[17] *See* Siebrasse & Cotter, *supra* note 9.
[18] *See LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F. 3[d] 51 (Fed. Cir. 2012).

economically relevant issues and evidence (such as comparables, the benefits of the invention over non-infringing alternatives, the extent to which the defendant has used the invention, and the value that users derive from the invention)?

Methodologies and presumptions. There is a broad consensus among economists that there was little evidentiary support for the now-discarded 25% Rule of Thumb as it appears to have been commonly applied in the United States. But was the CAFC also right to cast doubt on the use of the Nash bargaining framework?[19] Do experts and triers of fact need to make some (rebuttable) presumption about how the parties would have divided up the surplus from the use of the invention? What about other novel methods for estimating damages, such as conjoint analysis? Relatedly, what should courts do when there are no closely comparable licenses? Are there any industry-wide standard rates that could be used or developed?

Failures of proof and reasons for flexing standards of proof. As a legal matter, are courts obligated to award a reasonable royalty even when neither party offers competent proof as to the amount of damages? If so, how? Should the intensity of demands for proof of damages respond to context-dependent factors such as the magnitude of the award sought, the nature of reasonably available evidence, and the relative blameworthiness of the parties?

More generally, since no one can ever be entirely certain what the state of the world would have been but for the infringement, which party—the patent owner or the infringer—should bear the risk of imprecision? Is there an optimal tradeoff between accuracy in calculation and expediency in adjudication?

FRAND cases. In FRAND cases, should courts assume there is an aggregate royalty cap, and if so based on what evidence? Should courts weight all patents equally or award a higher royalty to the more important SEPs—and if the latter, what proportion of aggregate royalties should flow to the important patents? Should courts assume that some percentage of declared SEPs are not, in fact, essential, and if so based on what evidence? Are pool rates ever comparable?

Timing of damages procedure. How and when should discovery on damages questions proceed? When should courts address questions about the existence or magnitude of provable damages? Should courts bifurcate liability and damages more frequently than they currently do?

Experts. Should courts make more use of neutral experts? Should courts be more skeptical about experts who derive their facts from the party that hires them? More generally, what does the *Daubert* requirement of relevance and reliability demand with respect to expert testimony on reasonable royalties?[20]

Juries. Should juries be required to provide more information, through the use of special interrogatories, about how they calculate damages? How should juries be instructed on the computation of reasonable royalties?

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[19] *See VirnetX, Inc. v. Cisco Systems, Inc.,* 767 F. 3[d] 1308 (Fed. Cir. 2014).
[20] *See Daubert v. Merrell Dow Pharmaceuticals, Inc.,* 509 U.S. 579 (1993).

III. Workshop Discussion: The State of Play and Areas of Agreement and Disagreement

The workshop was divided into four sessions: (1) Major Current Issues in Patent Damages Law; (2) Patent Litigation: Reports from the Front Lines; (3) Expert Economic Testimony: How Can We Narrow the Gap?; and (4) Patent Damages and Business Reality–Connected or Not? Each session ran for about an hour. We finished the day with an hour of general discussion. The moderators briefly summarized key issues (as reflected in the background memo (Part I) and patent damages primer (Part II)) after which open discussion following a queue unfolded.

As noted above, we focused discussion on a particular subset of patent damages: the determination of a reasonable royalty in cases involving products or services featuring multiple technologies and patents. We chose to avoid delving into FRAND/SEP (standard-essential patents) cases, although some of the participants argued that the same damages methodologies ought to be applied to standard setting and non-standard setting contexts.[21]

The discussion crossed session lines over the course of the workshop, although we sought to ensure that those with particular session-specific expertise were front and center in the most appropriate sessions—i.e., legal scholars in Session 1, litigators and in-house counsel in Session 2, economists and testifying experts in Session 3, and in-house counsel and licensing professionals in Session 4.

Where we report "consensus" in this report, it reflects the authors' collective sense that a substantial majority of workshop participants agreed with the statement in question. Reports of consensus should not be interpreted as indicating unanimity. While we made efforts to include a variety of perspectives among the participants, we make no claim that "consensus" at the workshop necessarily indicates consensus among some broader set of interested parties.

A. The Overarching Legal Framework

1. Framing the Reasonable Royalty Calculation

The *Georgia-Pacific* fifteen-factor framework for determining a reasonable royalty reflects an amalgam of damages principles: (1) tort—compensation for invasion or loss of a property right; (2) promoting progress in the useful arts; and (3) a market-based measure of an idealized *ex ante* negotiation. All participants agreed that the framework was so broad and open-ended as to permit a wide range of reasonable royalty results. The discussion quickly moved to practical application.

2. Incremental Value

There was general agreement that the patent holder is entitled to a royalty based on the value contributed by the patented invention and that this will generally be less than the entire value of multi-component/feature devices or services. Most participants agreed that a reasonable royalty must fall between the threat points established by parties' best feasible alternative options. Giving primacy to the incremental value of the patented technology as an upper bound of reasonable royalties could go a long way toward simplifying and prioritizing the *Georgia-Pacific*

[21] *See* Contreras & Gilbert, *supra* note 5.

laundry list of fifteen factors. Where within the bargaining range the reasonable royalty should fall is difficult to determine, but Nash bargaining theory can be used for this purpose.

Incremental value can focus on cost-saving or demand-enhancing innovation. Estimating damages is often far easier for cost-saving inventions, where an expert can map engineering estimates of technical performance onto some measure of cost savings.[22] By contrast, calculating damages for consumer-facing inventions that shift out the demand curve for a complex product tends to be more conceptually and methodologically difficult. Participants generally agreed that it is unrealistic for courts to "yearn for certainty" in considering such valuation methods. Nonetheless, it would be very helpful to identify more reliable ways to value patents and to estimate incremental value.

Estimating reasonable royalties for a demand-enhancing invention often involves econometric techniques such as demand estimation, hedonic regression, or conjoint analysis techniques, which turn critically on assumptions, quality and quantity of data, significance of the patented technology, nature of the marketplace, attributes of the products/services, and trade-offs.[23] Hedonic regression and conjoint analysis were developed for other fields (such as measuring environmental harms and real estate value) and hence are still in a relatively primitive stage of development and not commonly used in patent valuation. These methods may work relatively well for particular types of valuation, such as real-estate transactions, where there are rich, publicly accessible data sources and decades of experience. However, the applicability of these methods and availability of data for patent valuation is highly context-dependent. Since much of the data relevant to patent valuation is proprietary, there is far less development of these techniques within the academic literature.

Judges may lack a sound understanding of whether sophisticated empirical techniques are likely to work well for a particular patent case and how they can be misused by expert witnesses. Yet such estimation techniques may be the most appropriate method in some cases. Several participants expressed the concern that conservative courts tend to favor "comparable" licenses – even when those sources suffer more profound limitations – because the methodology is easier to comprehend. Establishing best practices to make relatively sophisticated quantitative valuation techniques more reliable in practice would be a valuable step forward. The use of court-appointed experts could help in this respect.

The discussion did not delve deeply into issues of timing, but there was general agreement that the hypothetical negotiation should be timed so as to avert patent holdup. The timing issue is often critically important in high value cases.

Several participants also pointed out that methods based on apportionment, and emerging legal principles such as the Entire Market Value Rule (EMVR) and the Smallest Saleable Patent Practicing Unit (SSPPU) can create a false impression that it is appropriate to conduct separate

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[22] Of course it is not possible to completely escape "demand side" considerations, even when considering a cost-reducing technology, since firms generally alter prices in response to a change in costs.

[23] Broadly speaking, hedonic regression attempts to isolate the value attributable to a patented invention by comparing prices from market transactions involving products that do and do not incorporate the technology. Conjoint analysis makes the same comparison, but relies on data obtained from asking consumers to evaluate hypothetical decision scenarios. Both of these methods typically measure the consumer's willingness to pay for the patented feature, which need not equal the would-be licensee's willingness to pay.

inquiries into the royalty rate and the royalty base. In practice, these numbers are simultaneously determined, and ultimately they are best analyzed together.

3. Comparable Licenses

With the demise of the 25% rule and other non-specific apportionment methods,[24] much of the discussion focused on the use of comparable licenses to establish the value of particular patents within a device or service. It was widely agreed that truly comparable licenses are rarely available to resolve the types of disputes that reach advanced litigation stages. A threshold question is whether one patent is truly "comparable" to another as regards the reasonable royalty.

The context of such litigated disputes typically is far from that of the idealized licensing scenario in which parties negotiate an *ex ante* license for a comparable patent. In many real-world cases, the alleged infringer was unaware of the patent at issue at the time it developed and launched its product or service. Furthermore, such products and services often incorporate multiple technologies. Another complication arises when a purported "comparable" license involves the licensing of a larger patent portfolio, not merely the patent(s) in suit.

Participants expressed concerns about the courts' heavy reliance on "comparable" licenses, citing the following considerations:

- Absence of a clear method for determining comparability.
- Comparability is often not a binary (comparable/non-comparable) issue but rather a matter of degree.
- Licenses used as comparables may involve the transfer of other value, such as know-how.
- Where clear "rules" exist, they are often inappropriate, such as automatically excluding licenses that emerge from settlement negotiations.
- In cases involving only one or a few individual patents, employing portfolio comparables to set prices is seldom appropriate.
- Comparables can be "polluted" by successful attempts at hold-up or strategic negotiating with an eye on future litigation.
- Strategic disclosure of licenses for purposes of skewing patent valuation deserves notice and attention.
- Circularity and/or simultaneity can arise when licenses are negotiated in the shadow of litigation, which itself looks to "comparable" licenses to establish a reasonable royalty.
- Real-world licenses are negotiated with unresolved uncertainty about patent validity and infringement, but the hypothetical negotiation assumes certainty about both. This assumption generally calls for a higher rate than that provided in the comparables, but there is no adequate method for determining the correct "markup."

Several participants discussed efforts to develop licensing databases as a possible solution to the dearth of resources for assessing patent valuation. Some experienced litigators expressed skepticism that such databases would be of much use in revealing case-specific patent value due to the confidential nature of many licenses and the particularities of patents and alleged

[24] *See Uniloc USA, Inc. v. Microsoft Corp.,* 632 F. 3^{d} 1292 (Fed. Cir. 2011).

infringing activities. Nonetheless, a consensus emerged that having a better understanding of licensing activity might well provide more useful benchmarks and reasonable ranges for patent damages, thereby reducing unreasonable "lottery" outcomes.

Interestingly in light of judicial resistance to using a product's entire market value as a royalty base, licensing professionals, in-house counsel, and litigators noted that many licenses are based on the entire market value of products, even when a patented technology is a relatively small component of the overall system. They explained that such deal elements reflect pragmatism over precision, a point to which we will return in discussing potential ramifications.

B. Expert Testimony

Participants generally agreed that the Federal Circuit's recent patent damages jurisprudence is inconsistent, by providing fodder for district judges both to play a robust gatekeeping role and to allow many aspects of expert testimony to be admissible. The contradictory character of these Federal Circuit rulings is causing consternation for litigants, experts, and companies.

Participants also recognized that many trial judges consider experts testifying about patent damages to lack credibility, to say the least. One experienced litigator, referring to these experts, described their main attribute as "a diminished sense of embarrassment." The economic experts conceded that the "lower end" of the expert pool contains some testifying experts who provide little insight, and suggested that courts can justifiably exclude "ipse dixit" expert reports describing vast amounts of background evidence but providing only scant analysis (a paragraph or two) for the proposed royalty rate and base. At the same time, the experts argued that courts should not be seeking to exclude expert opinion simply because the two sides produce widely disparate damage estimates.

Opposing experts may reach very different opinions as to the reasonable royalty amount due to: (a) reliance on different (yet potentially valid) methodologies; (b) clients' provision of different facts; and/or (c) instructions from counsel to make different assumptions.

There was broad agreement around the idea that the root cause of differences in expert opinion are often obscured, particularly in a jury trial. A number of suggestions were floated for encouraging greater transparency into the data, methods, and assumptions behind expert testimony, as an alternative or complement to *Daubert* practice. For example, court-appointed experts could help identify the underlying causes of sharply differing expert opinions; we discuss the use of court-appointed experts below. Similarly, a "hot tub" approach such as that used in the U.K. and Australia, by forcing the opposing experts to engage directly with each other, could expose the root causes of their differing opinions. There was also consensus that generally accepted expert "codes of conduct" would tend to allow experts to stand by results that they arrived at credibly, and to generate more consistent testimony for courts (see below).

C. The Licensing Marketplace

1. Patents versus Portfolios

There was a consensus that in the information technology sector portfolio licenses are common, creating a large gap between the business reality of portfolio licensing and the patent-by-patent nature of patent litigation and patent damages. This gap creates evidentiary problems and exacerbates disagreements between licensees and licensors when negotiating over information technologies.

Some licensors conceded that large corporate licensees faced a difficult problem in estimating the total royalty burden for a particular product given the high patent grant rate, the trend towards fragmented ownership of patents, and the difficulty of pre-clearing rights. However, the same licensors suggested that large corporate licensees may engage in "rational infringement" after comparing expected benefits to costs, based on what licensors perceive to be low overall royalty burdens, the difficulty of many patent holders (notably NPEs) in obtaining injunctive relief, and recent changes considered defendant friendly (notably post-grant review in the USPTO and the Supreme Court's *Alice*[25] decision).[26]

Licensees argued that intellectual property is one of the least predictable costs for their products, and if they are reluctant to take a license, that reluctance reflects the risk that a host of additional patent owners will emerge from the thicket as soon as a license is signed. This problem is exacerbated by heavy reliance in litigation on comparables, since any license will tend to establish a focal price for damages involving similar patents or products.

Participants generally agreed that patent valuation by courts ought to reflect the broader licensing environment. The existence of many patented substitutes offering functional equivalence to a given patented technology is relevant for assessing design-around costs and can provide a sense of the overall thicket. Moreover, if there are complementary patents covering a single product but left unenforced by other owners, the damages calculation should not automatically re-assign the value of those complements to a litigant patentee by default. More generally, the legal rules governing patent damages should not allow the most aggressive licensors to capture a disproportionate share of the value associated with the entire bundle of technologies, particularly when – as is often the case in IT – substantial value resides in the complements. At the same time, the owner of a large patent portfolio may face substantially more risk on questions of invalidity and infringement in a lawsuit focused on one or a handful of patents than in a negotiation to license a much larger set of patents.

Several participants remarked that issues relating to royalty stacking are difficult to address properly when calculating reasonable royalties, even in cases where royalty stacking is economically important. This obstacle was said to arise in part because of difficulties in developing reliable evidence concerning royalties that the defendant is paying on other patents. Developing reliable evidence was said to be even more difficult concerning what additional royalties the defendant will likely be paying in the future. Licensees expressed strong concerns about royalty stacking, while licensors were skeptical that royalty stacking was a significant issue in most cases.

Evidence from patent pools can be informative regarding reasonable royalties for individual patents in situations where the infringing products or services practice a large number of patents. However, care must be taken to identify possible systematic differences between the patents licensed through a pool and the patents in suit, especially since patent holders normally can choose whether or not to contribute their patents to a pool.

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[25] *See Alice Corp. v. CLS Bank International*, 573 U.S. __, 134 S. Ct. 2347 (2014).

[26] Companies that attempt to evade paying reasonable royalties for patents they are infringing will be more likely to be subject to enhanced damages following the Supreme Court's recent decision. *See Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 136 S.Ct. 1923 (2016). (This decision was pending at the time of the workshop).

More generally, courts should avoid over-rewarding a licensor holding only a handful of patents from a fragmented and largely undifferentiated set. If portfolio licenses are highly nonlinear, with the price of the marginal patent declining quickly as the number of patents in the deal increases, then awarding several patentees the price on the first few patents in a portfolio will produce stacking problems. That outcome may create incentives among patentees to disaggregate large portfolios in a manner that will increase transaction costs and create economic inefficiency.

2. Licensing versus Litigation

Opinions differed on how the "shadow" of court-awarded damages influences license negotiations. Licensees indicated that they pay close attention to large damage awards. Licensors argued that while enforcement ultimately matters, a variety of other issues tend to exert more influence in practice. Some licensors viewed long-term infringement and "patent hold-out" as significant problems for patent enforcement, based in part on concerns that patent damage awards do not fully compensate patent holders for such extended periods of infringement.

Licensors indicated that the AIA/PTAB review processes[27] and the *Alice* and *eBay*[28] decisions have had a substantial downward impact on negotiated royalty rates by increasing the risk of an invalidity finding and reducing the availability of injunctive relief. It is worth noting, however, that the *eBay* decision increases the importance of the damages calculation since it will also affect the ongoing royalty rate. In contrast, increasing invalidation rates due to AIA and *Alice* tend to support higher discounting of the anticipated results of any damages calculation during any pre-suit negotiations. Others pointed out that "downward pressure" may be appropriate if, prior to the changes, the totality of the rules tended to produce patentee overcompensation.

D. Pragmatism versus Precision

A substantial portion of the discussion in Sessions 2, 3, and 4 revolved around the inherent tension between pragmatism and precision in determining a reasonable royalty. Several experienced litigators, licensing professionals, and economists emphasized the inherent imprecision of patent valuation for systems technologies. Businesses do not typically value patents as part of their ongoing operations. Thus, the reasonable royalty calculation is a legal construct that can turn on a wide range of information, much of which is qualitative. This situation produces litigation and trials that focus more on the imprecision and impressions of economic valuation methodologies as well as the charisma of witnesses than on the types of information that businesses tend to rely on in making decisions.

These participants noted that damages experts are often drawn to "data" rather than more pertinent internal documents. The observation is reminiscent of the joke about the economist looking for car keys under the lamppost.[29] By contrast, qualitative internal documents and survey data drawn directly from the alleged infringer's decisionmaking about the product design,

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[27] Referring to the American Invents Act, Pub. L. 112- 29, 125 Stat. 284-341 (2011), and the USPTO's Patent Trial and Appeal Board.

[28] *See eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006).

[29] After helping the economist scour the ground for several minutes, the good Samaritan asks why the economist is looking on the opposite side of the street from where the car is parked, to which the economist responds "because the light is much better under the lamppost."

engineering, testing, and marketing can be especially helpful, but might not fall within the testifying expert's empirical methods. On the other hand, internal documents can be self-serving.

As one litigator noted, early Supreme Court cases establishing apportionment principles relied upon qualitative evidence—documents and percipient witnesses—to assess the nature of the patented invention, its utility, and its extent of use. The modern doctrine elevates empirical methods, resulting in battles of the experts and *Daubert* challenges, over more direct forms of evidence. As a result, courts often must evaluate complex quantitative analysis that might have only a tenuous relationship to the particular case. This pushes the litigation toward flaws in the methodological tools as opposed to evaluation of business decisions.

Other participants, however, emphasized that failure to provide a full understanding of valuation for system technologies risks lottery-type awards for individual patents that may add little if any incremental value. Tight trial time limits and evidentiary limits on presenting the full range of factors affecting system value exacerbate these concerns. Over-valuing individual patents infringed by complex technologies can also contribute to stacking problems by creating incentives for patentees to monetize more patents through both sales and enforcement.

IV. Case Management Ramifications

The following points reflect the workshop discussion as well as ramifications that we draw from those comments.

A. Early Vetting of Methodologies

Some courts have begun to consider patent damages issues early in patent cases in efforts to encourage alternative dispute resolution, anticipate *Daubert* concerns, and plan case management.[30] Parties in most cases do not focus the same energy on damages that they do on liability issues, in part because districts that require comprehensive liability disclosures do not require them for damages. District courts have struggled to resolve disputes about whether the methodology used by a damages expert to reach his or her conclusions is both legally viable and reliable, or whether he or she applied that methodology reliably to the facts of the case before trial. Although courts have the tools to resolve such disputes early, they are rarely raised before the pretrial stage. As a result, a court that believes a damages expert's opinions may not be reliable usually faces imperfect options: (1) excluding the expert and leaving the party with no expert testimony regarding damages at trial; (2) continuing the trial date and providing the party proffering the expert a do-over; or (3) allowing the testimony, despite its reservations, with the hope that the jury will see the weakness in the opinions and with the intent that, if not, the court will correct the outcome through remittitur, JMOL, or a motion for new trial.[31]

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[30] *See* PETER S. MENELL, ET AL., PATENT CASE MANAGEMENT JUDICIAL GUIDE §§ 2.1.4.5, 2.6.6 (3rd ed. 2016); S.D. Ind. Patent Case Management Plan III(E) (requires that plaintiffs serve a "statement of damages" within 30 days after a *Markman* order); S.D. Tex. P.R. 3-2(a)(4) (requiring production of "license agreements for the patents-in-suit").

[31] *See, e.g., Intellectual Ventures I LLC v. Xilinx, Inc.*, 2014 U.S. Dist. LEXIS 54900, 2014 WL 1573542 (D. Del. Apr. 21, 2014) (refusing to allow patentee's expert to revise his report after determining the report was unreliable, forcing the patentee to rely on the defendant's expert testimony instead); *Golden Bridge Tech. Inc. v. Apple, Inc.*, 2014 U.S. Dist. LEXIS 67238, 2014 WL 1928977 (N.D. Cal. May 14, 2014) (striking damages expert's report but permitting a do-over on the eve of trial); *Golden Bridge Tech. Inc. v. Apple, Inc.*, 2014 U.S. Dist. LEXIS

Under Federal Rule of Civil Procedure 26(a)(1)(3), a party claiming damages must provide as part of its initial disclosures "a computation of each category of damages claimed" and produce the documents and materials on which each computation is based. However, courts have not used this provision to compel a meaningful, early disclosure of the amount of damages claimed or the method by which they are computed in patent cases, apparently believing that claim construction and some damages discovery is necessary before a meaningful disclosure can fairly be compelled.[32] The parties usually exchange infringement and invalidity contentions during fact discovery, either in accordance with local rules or through interrogatory responses, which ensures that both parties are aware of the theories of infringement and invalidity in the early to middle stages of the case. By contrast, the parties' first disclosure of damages theories typically comes through the exchange of expert reports served after the close of fact discovery and concurrently with expert reports regarding infringement and invalidity. This creates two problems. First, because parties have not yet taken positions about damages, they cannot raise with the court in the early or middle portions of a case potential legal flaws or other issues that may render an expert opinion unreliable, as is commonly done with respect to disputes about infringement and invalidity theories. Second, *Daubert* challenges are necessarily relegated to the end of the case.

These problems reflect fundamental differences between the nature of infringement/invalidity contentions and expert damages contentions. Infringement and invalidity contentions are grounded in physical, documentary facts, and reasonable inferences—the scope of the claimed invention, the characteristics of the accused device/process/composition, and prior art references. The parties are able to develop their infringement/invalidity contentions based upon relatively tangible forms of evidence. The main uncertainty, which the infringement/validity contentions help to crystallize, relates to claim construction. By contrast, expert damages contentions depend on a broad range of factors and evidentiary sources as well as claim construction. Expert witnesses often cannot come up with reliable numerical estimates until they get all the evidence in hand and have time to conduct their analysis. Nonetheless, it may be reasonable and advantageous in at least some classes of cases to ask parties to identify the damages estimation models/theories/approaches and the range or order of magnitude that these methods are likely to produce earlier than has been common in the case management timeline. Recognizing these systemic problems, courts have begun experimenting with various mechanisms to encourage proper vetting of damages positions and opinions earlier in the case schedule. Here are several options:

1. Damages Contentions

In jurisdictions that presently require parties to exchange infringement and invalidity contentions, the patentee could be required to provide damages contentions that (1) identify the type of damages sought (lost profits, reasonable royalty, or both); (2) provide an explanation of the specific theories and methodologies the patentee intends to use to value the infringement for which damages are sought; and (3) identify a range within which its ultimate damages number for each accused instrumentality is expected to fall. To enable the patentee to provide this information reliably, the accused infringer could be required to produce, along with its invalidity

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76339, 2014 WL 4057187 (N.D. Cal. June 1, 2014) (striking damages expert's do-over report and denying a second do-over, as trial had begun).

[32] *See* MENELL, *supra* note 30, at § 4.2.2 (3rd ed. 2016).

contentions, financial documents related to the accused instrumentalities (just as it is presently required to produce technical documentation concerning the accused instrumentalities). The patentee's deadline for serving such damages contentions could be set at a reasonable time (e.g., forty-five days) after the accused infringer's document disclosure. Although not specifically directed to expert testimony, these disclosures would require the patentee to identify its theories early in the case, would enable the accused infringer to disclose rebuttal damages theories in response to a contention interrogatory served during fact discovery, and would put parties in a position to challenge each other's legal and factual bases for damages positions earlier in the case.[33]

2. Accelerated Discovery Schedule for Damages

The court could elect to set an accelerated schedule for fact and expert discovery related to damages. For example, the court could require all damages-related discovery to be completed within two to three months before the fact-discovery deadline for other issues, and then require expert reports regarding damages to be served within a reasonable time thereafter (e.g., by applying the same gap between the close of damages discovery and service of the opening damages report as is set between the close of liability discovery and service of opening liability reports). Because it would allow the court to set a damages-related *Daubert* schedule that starts two to three months before summary judgment, this approach would provide sufficient time for the court to allow a one-time opportunity for a party whose proffered damages opinions are excluded to correct the deficiencies, if that opportunity is warranted, without moving the trial date. One notable example of an accelerated schedule for damages discovery is the so-called Track B in the Eastern District of Texas. The Track B Initial Patent Case Management Order was designed to complement the existing patent-case-management scheme (Track A).[34] Under Track B, the parties are required to submit a "good faith damages estimate" early in the case and are afforded significantly less discovery than under Track A. Track B, however, implements a much tighter schedule than Track A, presumably to facilitate early disclosure of infringement and invalidity contentions. Both parties can consent, or the court can order the case to be put on Track B.

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[33] *See e.g.*, Patent Scheduling Order, § 1(c)(2) (Judge Sue Robinson, Feb. 15, 2015) (requiring the plaintiff to identify its damages model and accused products as part of its initial disclosures); Case Management Order, In re West View Research, LLC Patent Cases (Apr. 25, 2015) (Judge Cathy Ann Bencivengo) (requiring the plaintiff to serve on each defendant a preliminary damages disclosure identifying the period for which it contends that defendant is liable for damages and the nature of the damages it will seek, lost profits and/or reasonable royalty; if plaintiff is seeking a reasonable royalty, in whole or as part of its damages, plaintiff will identify the royalty base to which it contends a reasonable royalty may apply and whether any apportionment would be appropriate; and all license agreements it has entered into covering the patents at issue, whether entered into before or after the start of a litigation (i.e., licenses arising from settlement of litigation); *Eon Corp IP Holding LLC v. Sensus USA Inc.*, 2013 U.S. Dist. LEXIS 32632, 2013 WL 3982994, *2–3 (N.D. Cal. Mar. 8, 2013) (explaining that although early damages disclosure was ideal in theory, the many variables (type of defendant, product, availability of information that courts and plaintiffs must consider in such disclosures makes their practice "challenging"; but, nonetheless, that "an early estimate of the order of magnitude of damages at issue (e.g., less than $10 million; $25 million; more than $100 million) is important to the application of the principle of proportionality set forth in Federal Rule of Civil Procedure 26(b)(2)(C)(iii) to ascertain the burden and expense of discovery that is warranted").

[34] *See* General Order 14 – 03 General Order Regarding Track B Initial Patent Case Management Order (E.D. Tex. Feb. 25, 2014).

3. Early Consideration of *Daubert* Challenges and/or Damages Theories

Courts could set an early schedule for consideration of *Daubert* challenges in appropriate cases. Alternatively, the court could vet the core damages theories early, leaving opportunity for narrower challenges after discovery and completion of the final expert report.

Judge Alsup's experience with early submission of an expert damages report in *Oracle America, Inc. v. Google Inc.*,[35] however, was not regarded as a complete success. Although the vetting process did not meet with his expectations, he was able to set some parameters on acceptable damages theories (foreshadowing the Federal Circuit's decision in *VirnetX, Inc. v. Cisco Sys., Inc.*[36]) and warn the parties of the risks of questionable methodologies.

A problem with moving the *Daubert* challenges earlier in case management is that it can front-load some of the most complex, time-intensive, and expensive discovery. This discovery might not be necessary in those cases where claim construction might result in summary judgment for the defense or where settlement could occur. It also adds another complex pre-trial phase beyond claim construction. Thus, it can exacerbate the already high overhead of patent cases.

B. Appointing Independent Experts

Participants varied in views about the desirability of court-appointed damages experts. Such an approach can reduce the polarization that often ensues. Court-appointed experts pose various pragmatic issues, such as cost and ensuring their access to the most pertinent data. Yet experts working with one side might not have much access to the full range of data either. The hope is that the adversarial process will surface those issues in such a way that the judge and/or jury can determine the pertinent evidence.

There is also concern that a court-appointed expert will be seen as having the judge's imprimatur. Jurors often (and appropriately) develop great respect for the trial judge. Having a court-appointed expert thus can have the effect of putting a thumb on the side of the scale where that expert comes out. Views differ on whether this is beneficial or detrimental to reasoned and balanced jury decision-making, but judges need to manage the use of court-appointed experts carefully to define the expert's role and suitably limit the expert's impact on the jury.

Having a court-appointed expert raises a variety of practical issues, such as the selection process for the expert, how communication between the judge and the expert occurs (i.e., must the parties always be present, should the communication be transcribed, when may the parties see the transcripts), access to information for the expert's analysis/report, and representation of the expert during depositions.

C. Judicial Guide to Patent Valuation Methodologies

The lack of a systematic reference guide written for federal judges on the applicable econometric techniques, including hedonic regression and conjoint analysis, contributes to the confusion about patent valuation methodologies. The Federal Judicial Center provides various

[35] 798 F. Supp. 2d 1111, 1121–22 (N.D. Cal. 2011).

[36] *See* 767 F.3d 1308, 1332–34 (Fed. Cir. 2014) (questioning the Nash bargaining solution as an apportionment theory).

such guides in its REFERENCE MANUAL ON SCIENTIFIC EVIDENCE.[37] This volume, prepared in conjunction with the National Research Council of the National Academies of Science and Engineering, provides authoritative treatment of forensic analysis, DNA identification evidence, statistics, multiple regression, survey research, economic damages, exposure science, epidemiology, toxicology, medical testimony, neuroscience, and mental health evidence. The chapters on statistics, multiple regression, survey research, and economic damages provide useful models for developing a guide on patent valuation methodologies.

D. Expert Witness Code of Conduct

Participants generally agreed that the U.S. adversarial system often leads to polarization of expert analysis. Testifying experts noted that they work with the data, evidence, and assumptions that their hiring litigators provide. This information can be incomplete. Furthermore, budgetary and advocacy pressures can limit or skew expert testimony. Furthermore, many economic damages theories are open-ended. Moreover, the *Georgia-Pacific* framework invites wide expert discretion. These considerations have tarnished the view of economic damages experts in the view of many judges. The patent damages field is widely perceived to be prone to the "hired gun" abuse.

Several participants suggested that the reliability of testifying experts could be enhanced by the federal courts—by Supreme Court changes to the Federal Rules of Civil Procedure or the Federal Rules of Evidence or by local rules—establishing an expert code of conduct. The United Kingdom provides a useful model.[38] The PROTOCOL emphasizes that the testifying expert has an "overriding duty," before compliance with any relevant professional code of conduct, to assist the tribunal and that this obligation overrides any obligation to the person instructing or paying them.[39] They are to provide opinions that are "independent, regardless of the pressures of litigation."[40] The PROTOCOL further provides that "[i]f experts consider that those instructing them have not provided information which they require, they may, after discussion with those instructing them and giving notice, write to the court to seek directions."[41]

E. Affording Sufficient Opportunity to Apportion Value

Many participants highlighted the practical, evidentiary, and case management limitations on presenting an adequate understanding of the patents, technologies, and other factors bearing on the apportionment of value in multi-component/feature devices, systems, and services. Such evidence is essential for avoiding the royalty stacking concerns, but risks substantially expanding the scope of the evidence introduced.

Many courts exacerbate these challenges by significantly limiting the time for presenting a case to the jury. While time limits often help to focus the understanding of validity and infringement issues, they can severely limit the presentation of patent damages issues, particularly since damages issues typically come at the end of the trial. Furthermore, when

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[37] (3rd ed. 2011).

[38] *See* CIVIL JUSTICE COUNCIL, PROTOCOL FOR THE INSTRUCTION OF EXPERTS TO GIVE EVIDENCE IN CIVIL CLAIMS (June 2005, amended October 2009), available at https://www.justice.gov.uk/courts/procedure-rules/civil/contents/form_section_images/practice_directions/pd35_pdf_eps/pd35_prot.pdf.

[39] *See id*. at 4.1.

[40] *See id*. at 4.3.

[41] *See id*. at 12.1.

liability and damages are tried together under a common time constraint, defendants are put to a difficult choice: allocating much of their time to the liability issues in the hopes of defeating liability at the risk of not having sufficient time to present adequate apportionment evidence. Furthermore, presenting the full range of components bearing on apportionment can require overcoming extensive evidentiary hurdles.

These problems can be ameliorated through bifurcation of patent damages and allowing expert witnesses greater leeway to consider other patents, components, and licenses bearing on the apportionment of value. A court could broach these issues in early case management in an effort to persuade the parties to develop more liberal ground rules for enabling the full range of apportionment considerations to be considered.

F. Simplified Jury Instructions

The *Georgia-Pacific* factors are numerous and complex, and considered so mind-numbing that jurors often have difficulty understanding how to juggle so many considerations to determine a reasonable royalty. Constructively, the Federal Circuit Bar Association's January 2016 Model Jury Instructions[42] have boiled down the factors to just a few:

> *6.7 Reasonable Royalty—Relevant Factors*
>
> In determining the reasonable royalty, you should consider all the facts known and available to the parties at the time the infringement began. Some of the kinds of factors that you may consider in making your determination are:
>
> (1) The value that the claimed invention contributes to the accused product.
>
> (2) The value that factors other than the claimed invention contribute to [the accused product].
>
> (3) Comparable license agreements, such as those covering the use of the claimed invention or similar technology.

This concise and focused instruction provides a more balanced and comprehensible set of considerations than the *Georgia-Pacific* laundry list. At a minimum, the first of these factors—"The value that the claimed invention contributes to the accused product"—provides a sensible "upper bound" on the reasonable royalty determination. As noted in Part III of this report, such an upper bound comports with a critical area of consensus among workshop participants: "There was general agreement that the patent holder is entitled to a royalty based on the value contributed by the patented invention and that this will generally be less than the entire value of multi-component/feature devices or services." This principle helps address the concern that reasonable royalties can produce outsize lottery-type awards in the multi-component/feature/patent context.

G. Alternative Dispute Resolution

Participants from a variety of perspectives highlighted how the determination of a reasonable royalty within the *Georgia-Pacific* framework produces an expensive, time-consuming, polarized battle of the experts. It typically results in very expensive litigation and too often produces little useful information. In some cases, final offer arbitration holds promise as a

[42] *See* Instructions, *supra note* 6.

mechanism for moving parties toward more reasonable positions in determining a reasonable royalty.

Appendix A

Patent Damages Workshop
Berkeley Center for Law & Technology
University of California at Berkeley
3 March 2016

10:00 Welcome and Introductions
Carl Shapiro

10:15 Session #1: Major Current Issues in Patent Damages Law
Moderators: Peter Menell and Stuart Graham

11:15 Coffee Break

11:30 Session #2: Patent Litigation: Reports from the Front Lines
Moderators: Tim Simcoe and Peter Menell

12:30 Lunch

2:00 Session #3: Expert Economic Testimony: How Can We Narrow the Gap?
Moderators: Stuart Graham and Carl Shapiro

3:00 Break

3:15 Session #4: Patent Damages and Business Reality – Connected or Not?
Moderators: Carl Shapiro and Tim Simcoe

4:30 General Discussion

5:30 Reception

6:30 Dinner

Appendix B

Patent Damages Workshop Participants

Name	Affiliation
Richard Cederoth	Sidley Austin LLP
Michael Chapman	Analysis Group, Inc.
Tina Chappell	Intel Corp.
Colleen Chien	Santa Clara University (School of Law)
Iain Cockburn	Boston University (Business School)
Jorge Contreras	University of Utah (College of Law)
Thomas Cotter	University of Minnesota (Law School)
Alan Cox	National Economic Research Associates (NERA)
Peter Detkin	Intellectual Ventures
Joseph Farrell	University of California at Berkeley (Department of Economics)
Richard Gilbert	University of California at Berkeley (Department of Economics)
John Golden	University of Texas, Austin (School of Law)
Stuart Graham	Georgia Tech (College of Business)
Sarah Guichard	RPX Corp.
Carl Gulbrandsen	Wisconsin Alumni Research Foundation (WARF)
Michael Jacobs	Morrison & Foerster LLP
James Kearl	Brigham Young University (Department of Economics)
Noreen Krall	Apple, Inc.
Dan Lang	Cisco Systems, Inc.
Greg Leonard	Edgeworth Economics LLC
Allen Lo	Google, Inc.
Matthew Lynde	Cornerstone Research
Damon Matteo	Fulcrum Strategy
Peter Menell	University of California at Berkeley (School of Law)
Robert Merges	University of California at Berkeley (School of Law)
Matthew Powers	Tensegrity Law Group LLP
William Rooklidge	Gibson, Dunn & Crutcher LLP
Pamela Samuelson	University of California at Berkeley (School of Law)
Carl Shapiro	University of California at Berkeley (Business School)
Jule Sigall	Microsoft Corp.
Timothy Simcoe	Boston University (Business School)
Matthew Vella	Vella Patent Services LLC
Andrew Wojnicki	IBM Corp.