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Articles

Qualification of Expert Witnesses in United States Patent Litigation: A Review of Federal Circuit Case Law Regarding Rule 702 of the Federal Rules of Evidence*

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Abstract

Expert witnesses serve an important role in United States patent litigation. Patent litigation often involves complex technological issues. Technical experts are needed to help a judge interpret claim language or to assist a jury to understand patented technology or infringing products. When resolving the patentability issues, such as anticipation and obviousness, technical experts are good consultants

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for factfinders. Additionally, damages calculation requires knowledge of industries and financial or accounting theories. Damages experts must get in to resolve the issues of monetary remedies. While expert witnesses play an important role in patent litigation, fewer studies explore the relevant case law about the qualification of experts or the admissibility of expert opinions. So, this paper is intended to address Federal Circuit case law regarding those issues. While Title 35 of the United States Code speaks nothing about expert witnesses, Rule 702 of the Federal Rules of Evidence is the only statutory basis for the requirements of qualified experts. In this paper, the case law review begins by examining the judicial interpretation of Rule 702. Three U.S. Supreme Court cases and several Federal Circuit cases will be analyzed. Then, this paper focuses on two categories of experts: technical experts and damages experts. Cases related to either category will be discussed. While Rule 702 requires an expert to have "scientific, technical, or other specialized knowledge," it is opt to a district court judge to admit or exclude expert witnesses or expert opinions as evidence heard by a jury. Besides, the Federal Circuit's review standard is an abuse of discretion. So, a district court judge usually has much leeway. Furthermore, based on the analysis of the Federal Circuit cases, this article provides legal principles or propositions related to expert testimony.

Keywords: Nonobviousness, Patent Litigation, Expert Witness, Rules of Evidence, Damages Calculation

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論美國專利訴訟之專家證人資格——以美國聯邦巡迴上訴法院與聯邦證據規則第702條有關之判決為中心

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摘 要

專家證人在美國專利訴訟中扮演重要的角色。專利訴訟常涉及技術議題，需要技術專家的參與來幫助解釋請求項或協助陪審團瞭解專利技術或侵權物。當處理可專利性爭點時，技術專家則是事實認定者很好的顧問。此外，賠償金計算需要產業或財務會計理論等知識。賠償金專家必須參與，以能讓金錢式賠償的爭議得以處理。雖然專家證人的角色重要，但對相關判例法的研究不是很多，特別是針對證人資格或證詞採納等議題。因此，本文在探討巡迴上訴法院針對該類議題之判例。美國專利法並無著墨專家證人之規範，而相關議題主要是聯邦證據規則第 702 條所主導。在本文中，首先分析與第 702 條解釋有關之司法意見，包括三件聯邦最高法院判決和幾件巡迴上訴法院判決。接著，本文著重在討論二類專家證人（技術專家和賠償金專家）之相關判決。第 702 條要求專家必須具有「科學的、技術的、或特殊的知識」，但由地方法院的法官來裁定是否要准予或排除專家證人或意見作爲

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證據。此外，對於地院的裁定，巡迴上訴法院的審查基準是「裁量權之濫用」。因而，地院法官有很大的裁量空間。本文亦對相關判決進行分析，並整理相關法理原則。

關鍵詞：非顯而易知性、專利訴訟、專家證人、聯邦證據規則、
損害賠償計算

1. INTRODUCTION

Expert witnesses serve an important role in United States patent litigation.[1] Patent litigation often involves complex technological issues.[2] Technical experts are needed to help a judge interpret claim languages or to assist a jury to understand patented technology or infringing products.[3] When resolving the patentability issues, such as anticipation and obviousness, technical experts are good consultants for factfinders.[4] Additionally, damages calculation requires knowledge of industries and utilization of financial or accounting theories.[5] Damages experts are needed to resolve the issues of monetary remedies.[6]

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1 *See, e.g.*, Alex Reese, *Employee and Inventor Witnesses in Patent Trials: The Blurry Line Between Expert and Lay Testimony*, 16 STAN. TECH. L. REV. 423, 424 (2013); Marilyn L. Huff, *Developments in the Jurisprudence on the Use of Experts*, 7 WASH. J.L. TECH. & ARTS 325, 326-33 (2012).

2 *See* Claire R. Rollor, Note and Comment, *Logic, Not Evidence, Supports a Change in Expert Testimony Standards: Why Evidentiary Standards Promulgated by the Supreme Court for Scientific Expert Testimony Are Inappropriate and Inefficient When Applied in Patent Infringement Suits*, 8 J. BUS. & TECH. L. 313, 316 (2013).

3 *See id.* at 321-22; *see also* Jonathan Hudis, *Experts in Intellectual Property Cases: A New Paradigm*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 651, 656-60 (2000); Aqua-Aerobic Systems, Inc. v. Aerators Inc., 211 F.3d 1241, 1245 (Fed. Cir. 2000) ("Expert testimony is often useful to clarify the patented technology and to explain its meaning through the eyes of experience, but it may not correct errors or erase limitations or otherwise diverge from the description of the invention as contained in the patent documents.").

4 *See* Rollor, *supra* note 2, at 330-32; John B. Sganga, Jr., *Litigating Obviousness: A New Approach for Using Expert Witnesses*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 181, 185-88 (1999).

5 *See* Erika Mayo, Student Note, *Gatekeeping Post-Uniloc: Expert Testimony in Multi-Component Patent Litigation*, 9 HASTINGS BUS. L.J. 539, 546 (2013).

6 *See* Tejas N. Narechania & Jackson Taylor Kirklin, *An Unsettling Development: The Use of Settlement-Related Evidence for Damages Determinations in Patent Litigation*, 2012 U. ILL.

While Title 35 of the United States Code (American patent law) speaks nothing about expert witnesses, the admissibility of expert testimony is governed by Rule 702 of the Federal Rules of Evidence (2010).[7] Rule 702 was created in 1975.[8] Back then, Rule 702 stated:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.[9]

Rule 702 was amended first time and became effective in 2000.[10] Rule 702 then provided:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.[11]

In the 2000 amendment, Congress specifically responded to two Supreme

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J.L. TECH. & POL'Y 1, 39 (2012).

7 *See* James Ware, *Patent Rules of Evidence*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 749, 757-58 (2007).

8 *See* Rollor, *supra* note 2, at 326.

9 *See* Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 588 (1993).

10 *See* U.S. GOV'T PRINTING OFFICE, FEDERAL RULES OF EVIDENCE 15 (2010), *available at* http://www.uscourts.gov/uscourts/rulesandpolicies/rules/2010%20rules/evidence.pdf (last visited Dec. 23, 2013).

11 *See id.* at 14.

Court decisions, *Daubert v. Merrell Dow Pharms., Inc.*[12] of 1993 and *Kumho Tire Co. v. Carmichael*[13] of 1999.[14] The 2000 amendment added more requirements to the nature of expert testimony and emphasized on reliability of a methodology underlying expert testimony.

The latest amendment of Rule 702 occurred in 2011. The current version provides:[15]

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
>
> (b) the testimony is based on sufficient facts or data;
>
> (c) the testimony is the product of reliable principles and methods; and
>
> (d) the expert has reliably applied the principles and methods to the facts of the case.

The current version is not much different from the previous one because the 2011 amendment of the Federal Rules of Evidence was simply a restyling change that was intended to make the statutory language more understandable and consistent with other rules.[16]

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12 Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993).

13 Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

14 *See* CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, EVIDENCE 643 (Aspen Publishers 4th ed. 2009).

15 *See* U.S. GOV'T PRINTING OFFICE, FEDERAL RULES OF EVIDENCE 15 (2013), *available at* http://www.uscourts.gov/uscourts/rules/rules-evidence.pdf (last visited Dec. 23, 2013).

16 *See* Kathleen Keough Griebel, Student Work, *Fred Zain, the CSI Effect, and a Philosophi-*

Rule 702 requires an admitted expert to have scientific, technical, or specialized knowledge related to the issue she is about to testify on.[17] However, Rule 702 is limited by other statutes. For instance, Rule 703 "provides that expert opinions based on otherwise inadmissible hearsay are to be admitted only if the facts or data are 'of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject.'"[18] For another example, Rule 403 "permits the exclusion of relevant evidence 'if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury.'"[19] Thus, an admitted expert cannot testify on whatever he wants to say.[20]

While expert witness entails expenses, the party who introduces an expert may be awarded "expert fees" by the district court as a sanction on the other party. The United States Court of Appeals for the Federal Circuit ("Federal Circuit") in *MarcTec, LLC v. Johnson & Johnson*[21] has held that "[a] district court has inherent authority to impose sanctions in the form of reasonable expert fees in excess of what is provided for by statute,"[22] if it "makes a finding of fraud or bad faith whereby the very temple of justice has been defiled."[23] The plaintiff in *MarcTec, LLC* was sanctioned by the district court to pay expert fees to the defendant.[24] The Federal

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cal Idea of Justice: Using West Virginia as a Model for Change, 114 W. VA. L. REV. 1155, 1159 n.18 (2012).

17 *See* Ware, *supra* note 7, at 757.

18 Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 595 (1993).

19 *Id*.

20 *See* MUELLER & KIRKPATRICK, *supra* note 14, at 657-62.

21 MarcTec, LLC v. Johnson & Johnson, 664 F.3d 907 (Fed. Cir. 2012).

22 *Id.* at 921 (quotation omitted).

23 *Id.* (quotation omitted).

24 *Id.*

Circuit affirmed the sanction mainly because "(1) [the defendant] was forced to incur expert witness expenses to rebut [the plaintiff's] unreliable and irrelevant expert testimony which was excluded under *Daubert*; and (2) the amount [the defendant] was required to expend on experts was not compensable under [35 U.S.C. § 285 that governs an award of attorney fees or litigation cost]."[25] Therefore, "expert fees" may be recovered by inherent authority of a district court while "expert evidence" may cause a party to be sanctioned to pay the opposing party's expert fees if its litigation act falls within 35 U.S.C. § 285.

While expert witnesses play an important role in patent litigation, few studies specifically explore the relevant Federal Circuit case law about the qualification of experts or the admissibility of expert testimony. While Rule 702 of the Federal Rules of Evidence is the statutory basis for the requirements of qualified experts or expert testimony, the Federal Circuit case law governs ultimate evidentiary rules regarding expert testimony, because all patent appeals are heard by the Federal Circuit. Therefore, this paper is intended to address relevant Federal Circuit case law.

In this paper, Part II examines the judicial interpretation of Rule 702. Relevant U.S. Supreme Court's decisions and Federal Circuit's decisions are analyzed. Parts III and IV focus on two categories of experts: technical experts and damages experts. Cases related to each category will be discussed. This paper uses two keywords, "rule 702" and "patent", in case searching through the Westlaw database.[26]

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25 *Id.*

26 It should be noted, however, that certain cases were excluded from the scope of analysis. MicroStrategy Inc. v. Business Objects, S.A., 429 F.3d 1344 (Fed. Cir. 2005), was excluded from analysis because the damages expert issue there arose from a state law claim, so that the Federal Circuit applied the regional circuit case law. *See id.* at 1353-58. Baran v. Med. Device Techs., Inc., 616 F.3d 1309 (Fed. Cir. 2010), was excluded because the evidentiary issue related to the admissibility of an expert report. *See id.* at 1318. Byrne v. Wood, Herron & Evans, LLP, 450 F. App'x. 956 (Fed. Cir. 2011), *vacated* on other ground by Byrne v.

In those cases, the courts did not discuss evidential issues in terms of each individual clause of Rule 702. Accordingly, when analyzing those cases, this article will not use individual clauses of Rule 702 to outline the discussion.

2. SUPREME COURT CASE LAW AND RULE 702

2.1 Daubert v. Merrell Dow Pharms., Inc.

Until *Daubert*, federal courts had struggled with whether the admissibility of expert testimony under Rule 702 should be determined only under the *Frye* test.[27] The *Frye* test is also known as the "general acceptance" test.[28] The "general acceptance" test requires:

> [W]hile courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.[29]

In *Daubert*, the Supreme Court resolved a question of whether the "general acceptance" test is an ultimate test under Rule 702.[30] The Supreme Court held:

> "General acceptance" is not a necessary precondition to the admissibility of scientific evidence under the Federal Rules of Evidence, but the Rules of Evidence—especially Rule 702—do assign to the trial judge the task

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Wood, Herron & Evans, LLP, 133 S. Ct. 1454 (2013), was excluded because the case relates to malpractice. *See Byrne*, 450 F. App'x. at 962.

27 *See* Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 585 (1993).

28 *See* James F. Rogers, James Shelson & Jessalyn H. Zeigler, *Changes in the Reference Manual on Scientific Evidence (Third Edition)*, 80 DEF. COUNS. J. 287, 291 (2013).

29 Frye v. United States, 293 F. 1013, 1014 (C.A.D.C 1923).

30 *See Daubert*, 509 U.S. at 582, 585.

> of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand. Pertinent evidence based on scientifically valid principles will satisfy those demands.[31]

Thus, the "general acceptance" test is not a prerequisite of the admissibility of expert testimony under Rule 702.

As for the requirements of "scientific knowledge," the Supreme Court stated that "an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation—*i.e.*, 'good grounds,' based on what is known."[32] Therefore, such "scientific knowledge" can support evidentiary reliability.[33] Because admitted expert testimony is considered reliable, "an expert is permitted wide latitude to offer opinions, including those that are not based on firsthand knowledge or observation."[34]

Regarding relevancy, the Supreme Court stated, "Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful."[35] It further provides a "helpness" standard requiring "a valid scientific connection to the pertinent inquiry as a precondition to admissibility."[36]

The Supreme Court further suggested guidelines for district courts to determine whether to admit expert witness. First, a district court judge must determine "whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue."[37] That is, a district court judge must perform "a preliminary assessment of whether the reasoning

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31 *Id*. at 597.
32 *Id*. at 590.
33 *See id*.
34 *Id*. at 592.
35 *Id*. at 591 (citation omitted).
36 *Id*. at 591-92.
37 *Id*. at 592.

or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue."[38]

As for considerations of the admissibility assessment, the Supreme Court stated that the inquiry under Rule 702 is "a flexible one"[39] and that the focus "must be solely on principles and methodology, not on the conclusions that they generate."[40] While not specifying any rigid test,[41] the Supreme Court still provided several factors. First, "whether a theory or technique is scientific knowledge" depends on whether the theory or technique "can be (and has been) tested."[42] Second, "whether the theory or technique has been subjected to peer review and publication" may be considered.[43] Third, the "known or potential rate of error" of a "particular scientific technique" and the "existence and maintenance of standards controlling the technique's operation" may be considered.[44] Last, the "general acceptance" test may be considered.[45] It should be noted that those four factors, as the Supreme Court emphasized, are not a "definitive checklist or test."[46] More importantly, each factor is not dispositive.

2.2 General Elec. Co. v. Joiner

One of the most important procedural issues with regard to expert witness is the standard of the appellate review. Admission or exclusion of expert witness is an evidentiary ruling. On appeal, an appellate court has to choose a right standard to

38 *Id*. at 592-93.
39 *Id*. at 594.
40 *Id*. at 595.
41 *See id*. at 593.
42 *Id*.
43 *Id*.
44 *Id*. at 594.
45 *Id*.
46 *Id*. at 593.

review a district court's ruling.[47] The proper standard of appellate review significantly affects the ultimate outcome in every case involving such ruling in the district level.

Generally speaking, the choice of a review standard depends on which category a court decision belongs to.[48] A court decision may be categorized into a question of law, a question of fact, or a matter of discretion.[49] First, a question of law is a question decided by a judge alone.[50] An appellate court reviews a district court decision on a question of law without deference to the district court.[51] It will sit as a trial judge to review the same question of law.[52] Second, a question of fact is a factual dispute decided by either a trial judge or jury.[53] If a factual dispute is decided by the judge, an appellate court will review the decision by a "clear error" standard.[54] That is, the appellate court will review the entire record of evidence to see whether, "with the definite and firm conviction," "a mistake has been committed."[55] A district court's decision cannot be reversed simply because the entire record supports a finding preferred by the appellate court.[56]

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47 *See* Peter Nicolas, *De Novo Review in Deferential Robes?: A Deconstruction of the Standard of Review of Evidentiary Errors in the Federal System*, 54 SYRACUSE L. REV. 531, 531 (2004).

48 *See id.* at 532.

49 *See id.*

50 *See id.*

51 *See id.*

52 *See id.*

53 *See id.*

54 *See id.*

55 *See id.* (quoting *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 395 (1948)).

56 *See id.* ("Under clear error review, the appellate court cannot reverse the trial court's determination merely because it would have found the facts differently had it been sitting as the trier of fact.").

Third, a matter of discretion is a decision a trial judge can make according to law that offers various options for the trial judge to choose.[57] Determining a matter of discretion usually requires a trial judge to weigh several factors.[58] Because each factor is not dispositive and the test is usually flexible, a trial judge has much leeway to resolve the issue.[59] On appeal, an appellate court will review a matter of discretion by an "abuse of discretion" standard.[60] The "abuse of discretion" standard is more deferential than the "clear error" standard.[61] A trial judge's decision that is "arbitrary," "irrational," "capricious," "whimsical," "fanciful," or "unreasonable" constitutes an abuse of discretion.[62] Alternatively speaking, no trial judge's discretion will be reversed unless no reasonable person will support such discretion.[63]

In 1997, the Supreme Court in *General Elec. Co. v. Joiner*[64] "determine[d] what standard an appellate court should apply in reviewing a trial court's decision to admit or exclude expert testimony under *Daubert*,"[65] and held that "abuse of discretion is the appropriate standard."[66] The holding is based on a long-time review standard for a district court's evidentiary rulings, and the standard is "abuse of discretion."[67] The standard applies to "whether to receive or exclude the evi-

57 *See id.*
58 *See id.* at 532-33.
59 *See id.* at 533.
60 *See id.* at 532.
61 *See id.*
62 *See id.* at 533.
63 *See id.*
64 General Elec. Co. v. Joiner, 522 U.S. 136 (1997).
65 *Id*. at 138-39.
66 *Id*. at 139.
67 *See id*. at 141.

dence."[68]

In responding to the appellate court's view about *Daubert*, the Supreme Court clarified that "*Daubert* did not address the standard of appellate review for evidentiary rulings at all."[69] The Supreme Court also reaffirmed that the "*Frye* standard of 'general acceptance' had not been carried over into the Federal Rules of Evidence [which, therefore,] allow district courts to admit a somewhat broader range of scientific testimony than would have been admissible under *Frye*."[70] Furthermore, regarding the application of the abuse-of-discretion standard, the Supreme Court cautioned that appellate courts "may not categorically distinguish between rulings allowing expert testimony and rulings disallowing it."[71]

2.3 Kumho Tire Co. v. Carmichael

In 1999, the Supreme Court in *Kumho* revisited *Daubert* because of the confusion among federal courts about "whether, or how, Daubert applies to expert testimony that might be characterized as based not upon 'scientific' knowledge, but rather upon 'technical' or 'other specialized' knowledge."[72] While recognizing that *Daubert* specifically referred to "scientifical knowledge," the Supreme Court in *Kumho* concluded that *Daubert* extends to "technical or other specialized knowledge."[73]

Additionally, the Supreme Court emphasized that the factors proposed by *Daubert* are what the court "may" consider when determining the admission of

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68 *See id*. at 142.
69 *Id*.
70 *Id*.
71 *Id*.
72 Kumho Tire Co. v. Carmichael, 526 U.S. 137, 146-47 (1999).
73 *Id*. at 147.

expert testimony.[74] The Supreme Court also pointed out that "*Daubert* makes clear that the factors it mentions do not constitute a 'definitive checklist or test.'"[75] Moreover, the Supreme Court agreed with a notion that the "factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony."[76]

While following *Daubert*, the Supreme Court further provided additional considerations. For the first consideration, the Supreme Court stated that "a claim made by a scientific witness has never been the subject of peer review, for the particular application at issue may never previously have interested any scientist."[77] This reflects *Daubert*'s comments on the peer review/publication factor. *Daubert* stated that publication "does not necessarily correlate with reliability" because some "well-grounded but innovative theories will not have been published" or because "[s]ome propositions . . . are too particular, too new, or of too limited interest to be published."[78]

For the second consideration, the Supreme Court stated that "the presence of *Daubert*'s general acceptance factor [does not] help show that an expert's testimony is reliable where the discipline itself lacks reliability, as, for example, do theories grounded in any so-called generally accepted principles of astrology."[79] This new aspect of the "general acceptance" factor shows a type of knowledge that is generally accepted but not reliable, which was not identified by *Daubert*.

In *Kumho*, the Supreme Court specifically addressed the admissibility of ex-

74 *Id*. at 149-50.
75 *Id*. at 150.
76 *Id*. (quoting the Solicitor General's brief).
77 *Id*. at 151.
78 Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 593 (1993).
79 *Kumho Tire Co.*, 526 U.S. at 151.

perience-based testimony and provided two main guidelines. First, the district court judge may ask "how often an engineering expert's experience-based methodology has produced erroneous results, or whether such a method is generally accepted in the relevant engineering community."[80] This reflects the "rate of error" factor and "general acceptance" factor in *Daubert*.

The second guideline relates to knowledge purely based on experience. The Supreme Court provided an example, "a perfume tester able to distinguish among 140 odors at a sniff,"[81] and considered such perfume tester as an expert based purely on experience.[82] For such expert, a trial judge may ask "whether his preparation is of a kind that others in the field would recognize as acceptable."[83] This question reflects the "general acceptance" factor in *Daubert*.

Moreover, while the Supreme Court did not add any substantially new element into the *Daubert* factors, it did specify the role of a trial judge in determining qualified expert testimony. First, a trial judge "must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable."[84] Nonetheless, the Supreme Court pointed out that "a trial court should consider the specific factors identified in *Daubert* where they are reasonable measures of the reliability of expert testimony."[85] Second, a trial judge "must have the same kind of latitude in deciding *how* to test an expert's reliability, and to decide whether or when special briefing or other proceedings are needed to investigate reliability, as it enjoys when it decides *whether or not* that expert's rele-

80 *Id*.
81 *Id*.
82 *Id*.
83 *Id*.
84 *Id*. at 152.
85 *Id*.

vant testimony is reliable" (emphasis added).[86] Accordingly, the Supreme Court reaffirmed that the review standard for admission or exclusion of certain expert testimony is an "abuse-of-discretion" standard.[87]

Last, to clarify the appropriate application of the *Daubert* factors, the Supreme Court held that "whether *Daubert*'s specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine."[88] This reflects the Supreme Court's belief in *Daubert* that it is "confident that federal judges possess the capacity to undertake this review [of reliability of expert testimony]."[89] Thus, it is clear that a trial judge can decide whether to determine certain *Daubert* factor in one case but not in another case.

3. FEDERAL CIRCUIT CASE LAW AND RULE 702

3.1 Choice of Law and Review Standard

It has been settled that the Federal Circuit "reviews the admission of expert testimony for an abuse of discretion."[90] However, because "[e]videntiary rulings by the district court are reviewed under regional circuit law,"[91] it is possible that

86 *Id*.

87 *Id*.

88 *Id*.

89 Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 593 (1993).

90 Sundance, Inc. v. DeMonte Fabricating Ltd., 550 F.3d 1356, 1360 (Fed. Cir. 2008); Liquid Dynamics Corp. v. Vaughan Co., Inc., 449 F.3d 1209, 1218 (Fed. Cir. 2006) ("[W]e review decisions to admit expert testimony for abuse of discretion under Seventh Circuit law.").

91 Liquid Dynamics Corp. v. Vaughan Co., Inc., 449 F.3d 1209, 1218 (Fed. Cir. 2006); Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc., 637 F.3d 1269, 1284 (Fed. Cir. 2011) ("We review a district court's decision to exclude evidence under the

the same factual context may result in different outcomes when applying different regional circuit laws. Nonetheless, the variation of those standards may be not significant in the case of patent litigation because the Federal Circuit ultimately applies its patent case law for analysis or analogy.

3.2 Evolution of the Interpretation of Rule 702, Daubert, and Kumho

3.2.1 Early Decisions

While Rule 702 was amended by Congress to respond to *Daubert*, the rules indicated in *Daubert* do coexist with Rule 702 under the Federal Circuit case law. The early decisions of the Federal Circuit focus on the general principles of applying Rule 702 in view of *Daubert*. These cases were mainly related to reliability of a methodology that expert testimony relied on.

In 2003, the Federal Circuit in *Micro Chem., Inc. v. Lextron, Inc.*[92] recognized *Daubert* as a landmark case that established "the analytical framework for determining the admissibility of expert testimony under Rule 702."[93] The Federal Circuit also stated that according to *Daubert*, "[t]he trial court acts as a 'gatekeeper' to exclude expert testimony that is irrelevant or does not result from the application of reliable methodologies or theories to the facts of the case."[94]

With respect to the *Daubert* factors, the Federal Circuit held that *Daubert* "set forth a non-exclusive list of factors that district courts may use in evaluating expert testimony."[95] Besides, the Federal Circuit noted that *Kumho* "emphasized that the

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law of the regional circuit.").

92 Micro Chem., Inc. v. Lextron, Inc., 317 F.3d 1387 (Fed. Cir. 2003).

93 *Id.* at 1391.

94 *Id.*

95 *Id.*

Daubert inquiry is 'a flexible one' and that the analysis will depend on the nature of the issue, the witness's expertise, and the subject of the testimony."[96] The Federal Circuit also confirmed that *Kumho* "explained that the principles of *Daubert* apply not only to scientific testimony, but to all expert testimony."[97]

Furthermore, the Federal Circuit distinguished the requirement for "sufficient facts and data" and the necessity for "reliable principles and methods."[98] By looking to the legislative history, the Federal Circuit stated that "[w]hen, as here, the parties' experts rely on conflicting sets of facts, it is not the role of the trial court to evaluate the correctness of facts underlying one expert's testimony."[99] This statement reaffirmed a trial judge's role as a gatekeeper as opposed to "a replacement of the adversary system."[100] Whenever any underlying facts or data is challenged, as the Federal Circuit quoted, "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence."[101] Thus, the dispute about the admissibility of expert testimony cannot rest on the reliability of facts or data that the expert relies on for her testimony.

In 2006, the Federal Circuit in *Liquid Dynamics Corp. v. Vaughan Co.*[102] discussed the application of the *Daubert* factors. The Federal Circuit considered *Daubert* as guidance for a trial judge "[w]hen faced with expert scientific testimony."[103] Under *Daubert*, as the Federal Circuit held, "a district court must first

96 *Id.*
97 *Id.*
98 *See id.* at 1392.
99 *Id.*
100 *Id.*
101 *Id.* (quoting Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 595 (1993)).
102 Liquid Dynamics Corp. v. Vaughan Co., Inc., 449 F.3d 1209 (Fed. Cir. 2006).
103 *Id.* at 1220.

determine 'whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact at issue.'"[104] For satisfying this prerequisite, the Federal Circuit stated that *Daubert* "requires an assessment of the reasoning and methodology underlying the testimony to determine whether it is scientifically valid."[105]

Specifically, the Federal Circuit recognized that *Daubert* "set forth four factors for district courts to consider when evaluating the validity and relevance of scientific evidence pursuant to Rule 702 of the Federal Rules of Evidence."[106] The Federal Circuit further rephrased the four factors as follows: "(1) whether the methodology can and has been tested, (2) whether the methodology is subject to peer review, (3) the potential rate of error, and (4) the general acceptance of the methodology."[107] When considering these four factors, as the Federal Circuit emphasized, a district court must focus its "inquiry into the relevance and reliability of scientific evidence ... solely on principles and methodology, not on the conclusions that they generate."[108]

In 2007, the Federal Circuit in *MEMC Elec. Materials, Inc. v. Mitsubishi Materials Silicon Corp.*[109] held "[u]nder *Daubert* and Rule 702, expert opinion evidence must be both reliable and relevant to the issue before the trial court."[110] In *MEMC Elec. Materials, Inc.*, the disputed claim was a silicon wafer that is used to

104 *Id.* (quoting Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993)).
105 *Id.*
106 *Id.* at 1220-21.
107 *Id.* at 1221.
108 *Id.* (citations and quotations omitted).
109 MEMC Elec. Materials, Inc. v. Mitsubishi Materials Silicon Corp., 248 F. App'x. 199 (Fed. Cir. 2007).
110 *Id.* at 203.

make chips of integrated circuits.[111] The disputed limitation of the claim was "substantially free of agglomerated intrinsic point defects" interpreted as "a concentration of agglomerated defects which is less than the detection limit of these defects, which is currently about 10^3 defects/cm^3."[112]

The plaintiff retained its employee as an expert witness.[113] The expert prepared a defect analysis of accused wafers, but the analysis report was challenged by the defendant because the report did not provide objectively reliable evidence that can show that the accused wafers are read on the disputed limitation.[114] Because the plaintiff's expert opinion could not objectively verify the testing methodology, the district court excluded the expert from testifying on infringement.[115]

The Federal Circuit agreed with the district court's ruling for two reasons. First, the Federal Circuit found that "While the various tests carried out by [the plaintiff's expert] may be commonly used in the industry to examine defects in silicon wafers, the record indicates that the results of those tests cannot prove that all the claim limitations are met."[116] This may respond to the defendant's assertion that the detection limit of the plaintiff's defect testing is 3,300 defects/cm^3.[117] Second, to the extent that the expert modified the standard testing methodology, the Federal Circuit was of the view that the record supported the district court's finding that the modification is scientifically reliable.[118] This may respond to the defendant's argument that the expert ignored noise or contamination in the test re-

111 *See id.* at 201.
112 *Id.*
113 *See id.*
114 *See id.* at 203.
115 *See id.* at 202.
116 *Id.* at 203.
117 *Id.*
118 *Id.*

sults.[119] Therefore, the Federal Circuit held that the district court did not abuse its discretion by excluding the plaint's expert testimony because the testimony "failed to meet the standards of relevance and reliability required by Rule 702."[120]

3.2.2 Recent Decisions

While "reliability" of a methodology is the ultimate concern when a trial court applies the *Daubert* factors, the analysis of admissibility of expert testimony does not end. Rule 702 requires that expert testimony should be based on "sufficient data or facts." Some recent Federal Circuit cases have addressed this issue.

In 2008, the Federal Circuit in *Monsanto Co. v. David*[121] ruled that Rule 702 does not require that the facts or data which expert testimony relies on must be prepared by such expert.[122] In *Monsanto Co.*, the patent infringement dispute dealt with the issue that whether the defendant's soybeans contained a gene that is claimed by the plaintiff's patent.[123] To prove infringement, the plaintiff prepared scientific field tests showing the defendant's exclusive planting of the soybeans containing the patented gene.[124] The plaintiff further presented expert testimony based on the scientific field tests.[125] The defendant challenged the admission of the plaintiff's expert testimony by stating that the tests the expert relied on were prepared by the plaintiff's scientific team, but not by the expert.[126]

The Federal Circuit did not accept the defendant's argument for two rea-

119 *Id.*
120 *Id.*
121 Monsanto Co. v. David, 516 F.3d 1009 (Fed. Cir. 2008).
122 *See id.* at 1015-16.
123 *See id.* at 1012-13.
124 *See id.* at 1015.
125 *See id.*
126 *See id.*

sons.[127] First, "Federal Rules of Evidence establish that an expert need not have obtained the basis for his opinion from personal perception."[128] By citing a statement in *Daubert*, the Federal Circuit recognized that an expert need not rely on first-hand knowledge.[129] Second, Rule 703 supports that an expert herself need not prepare "facts or data" for her evidentiary analysis.[130] The Federal Circuit interpreted Rule 703 as a provision that "expressly authorizes the admission of expert opinion that is based on 'facts or data' that themselves are inadmissible, as long as the evidence relied upon is 'of a type reasonably relied upon by experts in the particular field in forming opinions.'"[131] Therefore, the admissibility of expert testimony does not depend on the admissibility for the "facts or date" prepared by others.[132]

In 2010, the Federal Circuit in *i4i Ltd. P'ship v. Microsoft Corp.*[133] resolved whether a challenge to expert testimony is a question of weight or a question of admissibility. While recognizing that "*Daubert* requires the district court ensure that any scientific testimony 'is not only relevant, but reliable,'"[134] the Federal Circuit separated the issue of "relevance or reliability" and the issue of "the degree of relevance or reliability."[135] As the Federal Circuit held, "[w]hen the methodology is sound, and the evidence relied upon sufficiently related to the case at hand, disputes about the degree of relevance or accuracy (above this minimum threshold)

127 *See id.* at 1015-16.
128 *Id.* at 1015.
129 *See id.*
130 *See id.* at 1015-16.
131 *Id.* at 1016.
132 *See id.*
133 i4i Ltd. P'ship v. Microsoft Corp., 598 F.3d 831 (Fed. Cir. 2010).
134 *Id.* at 852.
135 *Id.*

may go to the testimony's weight, but not its admissibility."[136] Therefore, the review of an evidentiary ruling on admission or exclusion of expert testimony should not focus on arguments about "the degree of relevance or accuracy" of the methodology or evidence the expert relies on.

On appeal, the defendant in *i4i Ltd. P'ship* challenged the district court's evidentiary ruling on admission of expert testimony of the plaintiff's damages expert.[137] The defendant's main argument rested on the relevant facts the plaintiff's expert used to evaluate a reasonable royalty rate.[138] While agreeing with the defendant that "[the plaintiff's] expert could have used other data in his calculations,"[139] the Federal Circuit held no abuse of discretion.[140]

The holding was based on a notion that "[t]he existence of other facts ... does not mean that the facts used failed to meet the minimum standards of relevance or reliability."[141] What Rule 702 requires, as the Federal Circuit held, is to ask "whether the expert relied on facts sufficiently related to the disputed issue."[142] Therefore, although "the data were certainly imperfect, and more (or different) data might have resulted in a 'better' or more 'accurate' estimate in the absolute sense,"[143] the Federal Circuit held that *Daubert* does not require a trial judge "to evaluate the correctness of facts underlying an expert's testimony."[144] Instead, the Federal Circuit stated that it is the jury's role to determine "what facts are most

136 *Id.* at 853.
137 *See id.* at 852.
138 *See id.* at 854.
139 *Id.* at 855.
140 *See id.* at 856.
141 *Id.* at 855-56.
142 *Id.* at 856.
143 *Id.*
144 *Id.*

relevant or reliable."[145] That is, when a case is subject to a jury trial, "[t]he jury [is] entitled to hear the expert testimony and decide for itself what to accept or reject."[146]

In 2011, the Federal Circuit in *Uniloc USA, Inc. v. Microsoft Corp.*[147] clarified that the facts an expert relied on under Rule 702 must be tied to the facts of the case. In *Uniloc USA, Inc.*, the Federal Circuit abrogated the 25% Rule as a reliable method for estimating a reasonable royalty as damages for patent infringement. The holding was based primarily on a notion that "[e]xpert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful,"[148] and the notion was taken from *Daubert*.[149] With that notion, the Federal Circuit further held, "If the patentee fails to tie the theory to the facts of the case, the testimony must be excluded."[150]

To support its holding, the Federal Circuit further analyzed *General Elec. Co.* and *Kumho* to highlight why the Supreme Court affirmed the exclusion of expert testimony in both cases.[151] Regarding *General Elec. Co.*, the Federal Circuit pointed out the Supreme Court's critique that "[t]he studies [done by the expert] were so dissimilar to the facts presented in this litigation."[152] This critique indicates the relevancy requirement of expert testimony. Regarding *Kumho*, the Federal Circuit characterized the issue there as "whether 'it was [reasonable to] us[e] such an approach ... to draw a conclusion regarding *the particular matter to which the*

145 *Id.*
146 *Id.*
147 Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292 (Fed. Cir. 2011).
148 *Id.* at 1315.
149 *See id.*
150 *Id.*
151 *See id.* at 1315-16.
152 *Id.* at 1315 (quoting General Elec. Co. v. Joiner, 522 U.S. 136, 144-45 (1997)).

expert testimony was directly relevant.'"[153] Particularly, the Federal Circuit stated that *Kumho* required the district court to "decide whether this particular expert had sufficient specialized knowledge to assist the jurors 'in deciding the particular issues in the case.'"[154] This requirement indicates that the methodology the expert relies on has to relate to the particular issues.

The discussions on those two cases reflect the third requirement of expert testimony under Rule 702, that is, "the witness has applied the principles and methods reliably to the facts of the case." Drawing from those two cases, the Federal Circuit concluded that "[t]he bottom line of [*Kumho* and *General Elec. Co.*] is that one major determinant of whether an expert should be excluded under *Daubert* is whether he has justified the application of a general theory to the facts of the case."[155]

In 2013, the Federal Circuit in *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*[156] held that "data" must come from a reliable source.[157] In *Power Integrations, Inc.*, the expert testimony of the plaintiff was used for damages calculation.[158] When preparing the damages testimony, the expert relied on some documents to estimate the shipments of infringing products.[159] On appeal, the defendant challenged the admissibility of the expert testimony because the expert used the data that "was an unauthenticated hearsay 'press release' retrieved

153 *Id.* at 1315-16 (quoting Kumho Tire Co. v. Carmichael, 526 U.S. 137, 153-54 (1999)) (emphasis original).

154 *Id.* at 1316 (quoting *Kumho Tire Co.*, 526 U.S. at 156).

155 *Id.* at 1315-16 (quoting *Kumho Tire Co.*, 526 U.S. 137, 153-54 (1999)) (emphasis original).

156 Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., 711 F.3d 1348 (Fed. Cir. 2013).

157 *Id.* at 1373.

158 *See id.* at 1370.

159 *See id.* at 1372.

from the Internet."[160] The plaintiff responded that the "data source" was reliable because the same data "would be reasonably relied upon by experts in [the expert's] field.[161] However, the Federal Circuit disagreed with the plaintiff.[162]

The Federal Circuit questioned the source of those documents the plaintiff's damages expert relied on.[163] First, when the expert was asked of "whether the provider of the documents 'found [them] off the internet,'" the answer was "I can only assume so."[164] Second, the plaintiff unpersuasively responded that the expert "was a qualified expert, and he found the [documents] and other materials he considered, while researching the case."[165]

This questioning reflects the Federal Circuit's rephrasing of Rule 702(b) & (c) as amended in 2011. That is, expert testimony should be "'the product of reliable principles and method' applied to 'sufficient facts or data.'"[166] However, this view may cause a conflict with the Federal Circuit's past view regarding "facts or data." The traditional view (e.g., *i4i Ltd. P'ship*) does not require "facts or data" be reliable. Instead, the Federal Circuit has held that the reliability of "facts or data" is subject to cross-examination and is a question of credibility to be decided by the jury. Now, under *Power Integrations, Inc.*, both "reliable principles and methods" and "sufficient facts or data" are considered as a whole.[167] As Federal Circuit held, "while an expert's data need not be admissible, the data cannot be derived from a

160 *Id.*
161 *Id.* at 1373.
162 *See id.*
163 *See id.*
164 *Id.* (quoting the expert's answer).
165 *Id.* (quoting the plaintiff's response).
166 *Id.* (quoting Rule 702(b), (c)).
167 *See id.*

manifestly reliable source."[168]

Maybe in the context of damages calculation, any method for calculation is drawn from data or facts in the market. So, "facts or data" that form the basis of expert testimony have to be reliable to some extent that the expert acquires the facts or data from a reliable source.

3.3 Rule 26 of the Federal Rules of Civil Procedure

Rule 26 of the Federal Rules of Civil Procedure requires a party to disclose the identity and expected testimony of its testifying experts.[169] Under *Meyer Intellectual Properties Ltd. v. Bodum, Inc.*,[170] Rule 26 governs one prerequisite of a qualified expert.[171] If an expert fails to prepare a written expert report, required by Rule 26(a), including "a complete statement of all opinions the witness will express and the basis and reasons for them"[172] and such report cannot "convey the substance of the expert's opinion ... so that the opponent will be ready to rebut, to cross-examine, and to offer a competing expert if necessary,"[173] then a district court may exclude such expert from testifying.[174]

One example of a deficient expert report is "an expert report that merely lists a number of prior art references and concludes that one skilled in the art would find the claims obvious."[175] In *Innogenetics, N.V. v. Abbott Labs.*,[176] the report written

168 *Id.*

169 *See* GENE R. SHREVE & PETER RAVEN-HANSEN, UNDERSTANDING CIVIL PROCEDURE 324 (LexisNexis 3d ed. 2002).

170 Meyer Intellectual Properties Ltd. v. Bodum, Inc., 690 F.3d 1354 (Fed. Cir. 2012).

171 *See id.* at 1374-75.

172 *See id.* at 1374.

173 *See id.* at 1374-75.

174 *See id.* at 1375.

175 *Id.*

176 Innogenetics, N.V. v. Abbott Laboratories, 512 F.3d 1363 (Fed. Cir. 2008).

by the defendant's expert "merely [list] a number of prior art references and then [concluded]" that the disputed claim was obvious.[177] Under the Federal Circuit case law, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."[178] Because the report stated nothing about "how or why a person ordinarily skilled in the art would have found the claims of the [disputed] patent obvious in light of some combination of those particular references,"[179] the Federal Circuit held "Such vague testimony would not have been helpful to a lay jury in avoiding the pitfalls of hindsight that belie a determination of obviousness."[180] As a result, the Federal Circuit "affirmed the district court's decision precluding the expert's vague and conclusory testimony regarding obviousness."[181]

It should be noted, however, that a report that "contains a sufficiently detailed statement of his opinions and the bases for [the] conclusions"[182] may qualify as a written expert report required by Rule 26.[183] In *Meyer Intellectual Properties Ltd.*, the expert report "defined a person of ordinary skill in the art" and "provided detailed claim charts comparing the asserted claims to the relevant prior art."[184] The expert report, however, did not explain a way of how a person of ordinary skill in the art would have been motivated to combine these prior arts, but merely stated such person "would have been familiar with" prior arts to conclude that "the combination would have been obvious" and that the invention only copied an old appa-

177 *Id.* at 1373.
178 *Id.* (citation omitted).
179 *Id.*
180 *Id.*
181 Meyer Intellectual Properties Ltd. v. Bodum, Inc., 690 F.3d 1354, 1375 (Fed. Cir. 2012).
182 *Id.*
183 *See id.* at 1375-76.
184 *Id.* at 1375.

ratus and method.[185] Still, the Federal Circuit recognized such expert report as a Rule 26 report because the technology involved there was not complex.[186] The Federal Circuit even accepted simple explanation such as "common sense" as one form of motivation.[187]

Moreover, under *Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*,[188] while admitting expert testimony, a district court judge may limit the scope of testimony to what has been disclosed to another party. In *Siemens Med. Solutions USA, Inc.*, the infringement issue focused on the Doctrine of Equivalents.[189] The defendant's expert had an experience with the claimed element and its asserted equivalent.[190] However, the experience resulted from the expert's participation in a research related to national security issues.[191] As the result, the expert could not "use any work-related materials in the litigation" or "produce any [research institute's] documents during discovery."[192] Instead, the expert prepared the opinion by recollection without reviewing those government-owned, classified materials.[193] The district court found that although the expert's opinion cited some references that are documents from the research institute, it was unfair that the plaintiff could not examine those references that form the basis of the expert's analysis.[194] Therefore, the district court granted the plaintiff's "motion to

185 *Id.*
186 *Id.*
187 *Id.*
188 Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc., 637 F.3d 1269 (Fed. Cir. 2011).
189 *See id.* at 1278.
190 *See id.*
191 *See id.*
192 *See id.*
193 *See id.*
194 *See id.*

exclude portions of [the expert's] testimony that were not disclosed in discovery," such as the expert's report or deposition, and held that the expert could not rely on the testing that was not disclosed to the plaintiff during discovery as well.[195]

The defendant challenged the district court's exclusion.[196] The Federal Circuit affirmed the district court's ruling and held that the district court only "imposed sensible limitations on proposed testimony based upon undisclosed data and information."[197] The Federal Circuit considered that the district court's ruling comported with two provisions of the Federal Rules of Civil Procedure.[198] Primarily, the district court's ruling followed Rule 26 by which experts are required to "provide a written report containing a complete statement of all opinions the witness will express and the basis and reasons for them and the facts or data considered by the witness in forming them."[199] Rule 26 strengthens "fundamental fairness [which] requires disclosure of all information supplied to a testifying expert in connection with his testimony."[200] Because the plaintiff in *Siemens Med. Solutions USA, Inc.* "had no principled way to test his recollection and opinion,"[201] the district court was right on limiting the testimony of the defendant's expert.[202]

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195 *See id.*

196 *See id.* at 1285.

197 *See id.* at 1286.

198 *See id.* at 1286-87. The other provision is Rule 37, where "if a party fails to comply with Rule 26(a), the party is not allowed to use that information or witness to supply evidence on a motion, at a hearing, or at a trial, unless the failure was substantially justified or is harmless." *See id.* at 1287 (quotation omitted) (citing Fed. R. Civ. P. 37(c)(1)). Because the defendant did not "argue that its failure to disclose was substantially justified or harmless," the Federal Circuit did not discuss the issue related to Rule 37. *See id.*

199 *Id.* at 1286 (quotation omitted) (citing Fed. R. Civ. P. 26(a)(2)(B)(i)-(ii)).

200 *Id.* (citation omitted).

201 *Id.* (citation omitted).

202 *Id.*

In conclusion, to stand in front of a jury, a party must disclose an expert report under Rule 26 of the Federal Rules of Civil Procedure. The court can then consider whether to admit such expert testimony or whether to limit such expert testimony to what was disclosed in the Rule 26 report.

3.4 An Expert in the Pertinent Art

A qualified expert has to be an expert in the pertinent art. When a technical issue, often a factual question, is adjudicated in patent litigation, a court often resolves such technical issue in view of a person having ordinary skill in the art.[203] The Federal Circuit has made some important decisions elaborating the conceptual relationship between "an expert in the pertinent art" and "a person having ordinary skill in the art."

3.4.1 A Person of Ordinary Skill in the Art

Under *Sundance, Inc. v. DeMonte Fabricating Ltd.*,[204] a qualified expert must be an expert in the pertinent art to be able to testify on infringement or validity. In *Sundance, Inc.*, the defendant introduced its patent attorney as an expert to testify on patent prosecution, claim construction, non-infringement and invalidity.[205] The district court admitted the defendant's expert testimony, but the Federal Circuit held the evidentiary ruling was an abuse of discretion.[206] On appeal, instead of explaining why the patent attorney acquired "the relevant expertise in the pertinent art,"[207] the defendant mainly argued that "reliance on a 'patent expert' for 'an opinion on the ultimate question,' such as infringement or invalidity, is en-

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203 *See* Rollor, *supra* note 2, at 321-22 .
204 Sundance, Inc. v. DeMonte Fabricating Ltd., 550 F.3d 1356 (Fed. Cir. 2008).
205 *See id.* at 1360.
206 *See id.* at 1361.
207 *Id.* at 1362.

tirely appropriate."[208] But, the Federal Circuit disagreed.[209]

The Federal Circuit clarified that the issues of infringement or validity "are analyzed in great part from the perspective of a person of ordinary skill in the art"[210] and that "testimony explaining the technical evidence from that perspective may be of great utility to the factfinder."[211] However, the defendant failed to explain how its patent attorney "possesses the relevant expertise in the pertinent art."[212] There was no evidence showing that the defendant's patent attorney has experiences in the technology at dispute.[213] Accordingly, the Federal Circuit held that defendant's patent attorney was not "qualified as an expert by knowledge, skill, experience, training, or education,"[214] and, therefore, that the defendant "fail[ed] to see how [its patent attorney] could 'assist the trier of fact to understand the evidence or to determine a fact in issue.'"[215]

While requiring that the proof of infringement, non-infringement, invalidity or validity should be based on "the perspective of a person of ordinary skill in the art," the Federal Circuit did not use the term "a person of ordinary skill in the art" to describe the qualification of an expert. Instead, the Federal Circuit held that an expert witness has to be "qualified as an expert in the pertinent art" so as to testify on non-infringement or invalidity.[216]

Under *Sundance, Inc.*, "an expert in the pertinent art" is not exactly the same

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208 *Id.* at 1361 (quoting the defendant's brief).
209 *See id.*
210 *Id.*
211 *Id.*
212 *Id.* at 1362.
213 *Id.*
214 *Id.* at 1362.
215 *Id.* (quoting Rule 702).
216 *Id.* at 1363.

as "a person of ordinary skill in the art." On the one hand, the Federal Circuit emphasized that "[w]e do not, of course, suggest that being a person of ordinary skill in the art automatically entitles a witness to testify as an expert on these or other matters [and] that Rule 702 requires a witness to possess something more than ordinary skill in the art to testify as an expert."[217] On the other hand, it recognized that "[a] witness possessing merely ordinary skill will often be qualified to present expert testimony both in patent trials and more generally."[218] Therefore, those two terms are either overlapped or independent.

Last, if a witness is not an expert in the pertinent art, as the Federal Circuit held, the witness may neither "testify as an expert as to anticipation, or any of the underlying questions, such as the nature of the claimed invention, what a prior art references discloses, or whether the asserted claims read on the prior art reference,"[219] nor "testify as an expert on obviousness, or any of the underlying technical questions, such as the nature of the claimed invention, the scope and content of prior art, the differences between the claimed invention and the prior art, or the motivation of one of ordinary skill in the art to combine these references to achieve the claimed invention."[220]

3.4.2 Patent Attorney

The Federal Circuit has clarified that a patent attorney is not a *per se* expert in patent cases. In *Sundance, Inc. v. DeMonte Fabricating Ltd.*,[221] the Federal Circuit held "[u]nless a patent lawyer is also a qualified technical expert, his testimony on

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217 *Id.*
218 *Id.*
219 *Id.* at 1364.
220 *Id.*
221 Sundance, Inc. v. DeMonte Fabricating Ltd., 550 F.3d 1356 (Fed. Cir. 2008).

these kinds of technical issues is improper and thus inadmissible."[222] Regarding the capability of a patent attorney as a technical expert, the Federal Circuit stated that "patent lawyers are often qualified to testify as technical experts, but such a qualification must derive from a lawyer's technical qualifications in the pertinent art."[223] Accordingly, a patent attorney who can testify as an expert is not based on his status as a patent attorney but a technical expert who happens to be an attorney.

In addition, a trial judge cannot exclude an expert from testifying simply because he is not a patent attorney. In *Outside the Box Innovations, LLC v. Travel Caddy, Inc.*,[224] the Federal Circuit held that "the exclusion of a technical expert for the reason that he is not a lawyer is contrary to Federal Rule of Evidence 702 and the benefits of technological assistance in resolution of technological issues."[225] The holding was based on the nature of patent cases, as the Federal Circuit clarified that "[d]espite the complexity of patent law, patents are not for inventions of law; they are for inventions of technology."[226] So, while recognizing that "many lawyers have technical training,"[227] the Federal Circuit cautioned that "it is technological experience in the field of the invention that guides the determination of obviousness, not the rhetorical skill or nuanced advocacy of the lawyer."[228]

3.4.3 Inventor

As illustrated in Federal Circuit case law, an inventor is not equal to a technical expert. The expertise of an inventor must be evaluated case-by-case. In *Cen-*

222 *Id.* at 1362.
223 *Id.* at 1363.
224 Outside the Box Innovations, LLC v. Travel Caddy, Inc., 695 F.3d 1285 (Fed. Cir. 2012).
225 *Id.* at 1296.
226 *Id.*
227 *Id.* at 1297.
228 *Id.*

tricut, LLC v. Esab Group, Inc.,[229] the plaintiff submitted one inventor of the patent-in-suit as an expert for testifying on infringement.[230] The knowledge about the disputed claim relates to "work function."[231] The Federal Circuit held that the particular inventor was not qualified as an expert under Rule 702 for three reasons.[232] First, the inventor "admitted that he was not an expert on the issue of work function."[233] He "had not studied the [work function] at college, and had no graduate degree."[234] Last, he did not acquire "an expert's knowledge of work function during the course of his employment."[235]

In *Air Turbine Tech., Inc. v. Atlas Copco AB*,[236] while recognizing that the inventor "may have particularized knowledge and experience as a co-inventor of the claimed invention," the Federal Circuit, however, held that "[it] does not necessarily mean he also has particularized knowledge and experience in the structure and workings of the accused device."[237] Thus, an inventor may be an expert in the field of his invention, but not an expert in the field of the accused product.

3.5 Claim Construction

Claim construction is based on intrinsic evidence and extrinsic evidence. The former includes claims, specification, and prosecution history, while the latter covers, among other things, expert testimony.[238] Because claim construction is a

229 Centricut, LLC v. Esab Group, Inc., 390 F.3d 1361 (Fed. Cir. 2004).
230 *See id.* at 1368.
231 *See id.* at 1365-66.
232 *See id.* at 1368.
233 *Id.*
234 *Id.*
235 *Id.*
236 Air Turbine Tech., Inc. v. Atlas Copco AB, 410 F.3d 701 (Fed. Cir. 2005).
237 *Id.* at 714.
238 *See, e.g.*, Thomas W. Krause & Heather F. Auyang, *What Close Cases and Reversals Re-*

question of law decided by a trial judge alone, no procedural or evidentiary rule applies to this determination. This concept has been explored in a dictum in *Pitney Bowes, Inc. v. Hewlett-Packard Co.*,[239] which implies that Rule 702 does not extend to the weighing of expert testimony as extrinsic evidence applied in claim construction.

In 1999, right after *Kumho*, the Federal Circuit in *Pitney Bowes, Inc.* discussed in footnote 2 the difference between the admissibility of expert testimony under Rule 702 and that under claim construction.[240] The Federal Circuit compared *Kumho* with *Vitronics Corp. v. Conceptronic, Inc.*,[241] its 1996 case law that governs the use of expert testimony in claim construction.[242] *Vitronics Corp.* has been recognized as providing "specific guidance concerning the practical application of claim construction principles."[243]

While both parties in the suit did not rely on *Kumho* as a ground for their arguments, the Federal Circuit highlighted a statement in *Kumho* that "the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable."[244] However, the Fed-

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veal About Claim Construction at the Federal Circuit, 12 J. MARSHALL REV. INTELL. PROP. L. 583, 602 (2013); Etan S. Chatlynne, *On Measuring the Expertise of Patent-Pilot Judges: Encouraging Enhancement of Claim-Construction Uniformity*, 12 J. MARSHALL REV. INTELL. PROP. L. 309, 313 (2013).

239 Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298 (Fed. Cir. 1999).

240 *See id.* at 1308 n.2.

241 Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576 (Fed. Cir. 1996).

242 *See Pitney Bowes, Inc.*, 182 F.3d at 1308-09.

243 *See* Lawrence M. Sung, *Echoes of Scientific Truth in the Halls of Justice: The Standards of Review Applied by the United States Court of Appeals for the Federal Circuit in Patent-Related Matters*, 48 AM. U. L. REV. 1233, 1247 (1999).

244 *See Pitney Bowes, Inc.*, 182 F.3d at 1308 n.2 (quoting Kumho Tire Co. v. Carmichael, 526 U.S. 137, 152 (1999)).

eral Circuit merely discussed how *Kumho* influences *Vitronics Corp.* and held that there is no substantial effect.[245] The Federal Circuit's conclusion was based on the rationale that "Rule 702's gatekeeper function ... relates solely to the admissibility of evidence—a separate issue to claim construction."[246]

Claim construction is a question of law that is not subject to jury's determination.[247] Contrarily, Rule 702 governs the admissibility of expert testimony that is intended to help a jury understand the technical or scientific facts of the case.[248] Because these two issues are distinguishable, the Federal Circuit stated, on the one hand, that "*Vitronics* does not prohibit courts from examining extrinsic evidence, even when the patent document is itself clear."[249] It also emphasized that "*Vitronics* does not set forth any rules regarding the admissibility of expert testimony into evidence."[250] On the other hand, *Kumho* was a case considered by the Federal Circuit as one "discussing whether expert testimony was 'reliable' for purposes of the 'basic gatekeeping obligation' imposed on trial judges under Federal Rule of Evidence 702 to ensure that scientific, technical or other specialized knowledge is sufficiently 'reliable' to be admitted into evidence."[251] Therefore, the Federal Circuit held that *Vitronics Corp.* "did not decide under what circumstances expert testimony should be admitted or excluded, but merely concerns whether and under what circumstances courts can rely on already admitted extrinsic evidence as dispositive in their claim constructions."[252] This conclusion indicates that Rule 702

245 *See id.*
246 *Id.*
247 *See id.* at 1304.
248 *See* PAUL C. GIANNELLI, UNDERSTANDING EVIDENCE 307-08 (LexisNexis 2d ed. 2006).
249 *Pitney Bowes, Inc.*, 182 F.3d at 1308.
250 *Id.*
251 *Id.* at 1308 n.2.
252 *Id.*

does not govern the trial judge's considering expert testimony for claim construction.

4. ISSUES SPECIFICALLY RELATED TO TECHNICAL EXPERTS

4.1 Necessity of Expert Testimony

Under *Centricut, LLC v. Esab Group, Inc.*,[253] the necessity of expert testimony as evidence proving infringement depends on the degree of technology complexity. If the technology is "easily understandable without the need for expert explanatory testimony,"[254] the Federal Circuit has held that "expert testimony will not be necessary."[255] If complex technology is involved, to the extent that "relevant expert testimony regarding matters beyond the comprehension of laypersons is sometimes essential," the Federal Circuit, on the other hand, has "repeatedly approved the use of expert testimony to establish infringement."[256] However, in the cases of complex technology, the Federal Circuit has emphasized that while expert testimony is "typically" necessary,[257] there is no "*per se* rule that expert testimony is required to prove infringement when the art is complex."[258]

Unfortunately, the complexity standard does not help a lot because the Federal Circuit in *Centricut* did not teach how to determine the degree of technological complexity. However, there may be a standard that can be inferred from Honorable Judge Kimberly A. Moore's article. That is, if the patented technology "has made

253 Centricut, LLC v. Esab Group, Inc., 390 F.3d 1361 (Fed. Cir. 2004).
254 *Id.* at 1369 (citation omitted).
255 *Id.*
256 *Id.* at 1369-70 (citation omitted).
257 *Id.* at 1370 (citation omitted).
258 *Id.*

patent trials extremely difficult for lay juries to understand,"[259] it reaches the degree of complexity and introducing a technical expert to assist fact-finders becomes more necessary.

4.2 Expert Testimony Outweighing Non-Expert Testimony

Under *Centricut, LLC v. Esab Group, Inc.*,[260] "in a case involving complex technology, where the accused infringer offers expert testimony negating infringement, the patentee cannot satisfy its burden of proof by relying only on testimony from those who are admittedly not expert in the field."[261] In *Centricut, LLC*, the patented technology related to plasma arc torches, and the subject matter of the disputed claim was an electrode.[262] The infringement issue related to a specific technical question about a work function between two materials.[263] "Work function" is a form of energy required to remove an electron from a material.[264] An electrode is removed from a low work function more easily from a high work function.[265] The technology of "work function" was considered complex by the Federal Circuit.[266]

The defendant was the only party that offered expert testimony from a physics professor.[267] The defendant's expert did not explain why the accused product does not infringe the patent, but focused on why the plaintiff cannot prove infringement

259 Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 11 FED. CIRCUIT B.J. 209, 209 (2012).
260 Centricut, LLC v. Esab Group, Inc., 390 F.3d 1361 (Fed. Cir. 2004).
261 *Id.* at 1370.
262 *See id.* at 1363-64.
263 *See id.* at 1364.
264 *See id.*
265 *See id.*
266 *See id.* at 1370.
267 *See id.* at 1367.

or questioned the plaintiff's infringement theories.[268] On the other side, the plaintiff provided four non-expert witnesses to testify on the technical question.[269] However, the plaintiff's infringement theories did not directly answer the work-function question.[270] Rather, the plaintiff's theories were based on another phenomenon from which the plaintiff claimed to draw inferences to answer the work-function question.[271]

At the district court level, the fact-finding was conducted by the trial judge.[272] While not mentioning the plaintiff's theories in the decision, the district court relied on other pieces of the plaintiff's evidence and found infringement.[273] On appeal, the Federal Circuit reversed that finding because the plaintiff did not meet its burden of proof.[274] Specifically, the Federal Circuit stated *Centricut, LLC* "stands as an apt example of what may befall a patent law plaintiff who presents complex subject matter without inputs from experts qualified on the relevant points in issue when the accused infringer has negated infringement with its own expert."[275]

4.3 Expert Testimony Based on Correct Claim Construction

In determining patent infringement, a court will first interpret a claim.[276] Then, the court or jury will compare the infringing product or process with the

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268 *See id.* at 1368-69.
269 *See id.* at 1368-69.
270 *See id.* at 1368-69.
271 *See id.* at 1368-69.
272 *See id.* at 1365.
273 *See id.* at 1366.
274 *See id.* at 1363.
275 *Id.* at 1370.
276 *See* DONALD S. CHISUM ET AL., PRINCIPLES OF PATENT LAW: CASES AND MATERIALS 860-61 (Found. Press 3d ed. 2004).

claim to see whether all elements of the claim can be found literally, or under the doctrine of equivalents, in the infringing product or process.[277] Thus, before a fact-finder can make a determination, she must know a correct interpretation of the claim at issue. To assist a fact-finder, a technical expert must rely on a correct claim interpretation for her analysis.

Under *Air Turbine Tech., Inc. v. Atlas Copco AB,*[278] expert testimony on infringement that does not rely on correct claim construction may be excluded. In *Air Turbine Tech., Inc.*, the disputed patent relates to "an 'automatic braking mechanism' for turbine grinders and other rotary devices."[279] During the pre-trial proceeding, the district court granted the defendant's motion to exclude two plaintiff's expert witnesses, one technical expert and one co-inventor of the patent-in-suit, from testifying on the infringement issue.[280] The exclusion of the technical expert from testifying was affirmed by the Federal Circuit.[281]

To resolve the evidentiary issue of the exclusion of the technical expert from testifying, the Federal Circuit applied the Fifth Circuit case law that is important for the Federal Circuit to reach its conclusion.[282] While not specifying any Fifth Circuit case, the Federal Circuit seemed to apply *Texas A&M Research Found. v. Magna Transp., Inc.*[283] cited by the plaintiff.[284] While "Rule 37(c)(1) [of the Federal Rules of Civil Procedure] provides that a party who fails to disclose such information [under Rule 26] 'shall not, unless such failure is harmless, be permitted

277 *See id.* at 861.
278 Air Turbine Tech., Inc. v. Atlas Copco AB, 410 F.3d 701 (Fed. Cir. 2005).
279 *Id.* at 704.
280 *See id.* at 706.
281 *See id.* at 713.
282 *See id.*
283 Texas A&M Research Found. v. Magna Transp., Inc., 338 F.3d 394 (5th Cir. 2003).
284 *See Air Turbine Tech., Inc.*, 410 F.3d at 712.

to use as evidence at a trial, at a hearing, or on a motion any witness or information not so disclosed,'"[285] the Fifth Circuit in *Texas A&M Research Found.* held "In evaluating whether a violation of rule 26 is harmless, and thus whether the district court was within its discretion in allowing the evidence to be used at trial, we look to four factors: (1) the importance of the evidence; (2) the prejudice to the opposing party of including the evidence; (3) the possibility of curing such prejudice by granting a continuance; and (4) the explanation for the party's failure to disclose."[286]

The plaintiff's main argument rested on the timing of the district court's ruling on claim construction. The plaintiff argued that because the trial judge finalized the claim construction just before trial, so there was an excuse of not submitting the expert opinion with respect to some claim limitation.[287]

However, the Federal Circuit held that the district court's ruling was not an abuse of discretion because of three reasons. First, the district court determined the meaning of the asserted claim limitation one month before trial.[288] Second, the issue of the meaning of the asserted claim limitation occurred very early.[289] Third, while the district court did change the claim construction, the meaning of the asserted claim limitation had never amended.[290] Therefore, the Federal Circuit concluded that "Under these circumstances, [the plaintiff] should have at least attempted to supplement [its expert's] expert report."[291]

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285 *Texas A&M Research Found.*, 338 F.3d at 401-02.
286 *Id.* at 402.
287 *See Air Turbine Tech., Inc.*, 410 F.3d at 711-12.
288 *See id.* at 713.
289 *See id.*
290 *See id.*
291 *Id.*

4.4 Experimental Evidence Prepared by an Expert

In *Aqua-Aerobic Sys., Inc. v. Aerators Inc.*,[292] the Federal Circuit affirmed the district court's summary judgment for non-infringement mainly because the defendant offered experimental evidence provided by its expert while the plaintiff did not submit rebuttal evidence.[293] The disputed claim was a downflow mixer for mixing materials in an open surface body of liquid and included two disputed limitations, one of which prevents passage of atmospheric air to a propeller and the other of which prevents the flow of atmospheric air to a propeller.[294] To assert non-infringement, the defendant presented expert-done experimental evidence showing that the accused mixer "admits more than a negligible or minuscule amount of air to the propeller."[295] The Federal Circuit found that the defendant's experimental evidence "was not controverted by any technical submission of the plaintiff."[296] While the plaintiff's expert did criticize the defendant's experimental evidence, the plaintiff had never shown that the accused mixer does exclude air.[297] Therefore, the Federal Circuit affirmed the summary judgment of non-infringement.[298]

4.5 Judicially-Recognized Scientific Knowledge

Liquid Dynamics Corp. v. Vaughan Co.[299] shows that scientific knowledge that has been recognized as reliable by courts may be considered reliable under

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292 Aqua-Aerobic Sys., Inc. v. Aerators Inc., 211 F.3d 1241 (Fed. Cir. 2000).
293 *See id.* at 1245.
294 *See id.* at 1244.
295 *See id.* at 1245.
296 *See id.*
297 *See id.*
298 *See id.*
299 Liquid Dynamics Corp. v. Vaughan Co., 449 F.3d 1209 (Fed. Cir. 2006).

Rule 702. In *Liquid Dynamics Corp.*, the patent at dispute relates to "a system of pumps that stir mixtures of solids and liquids in large 1,000,000-gallon tanks."[300] The disputed limitation relates to a flow pattern in the patented tank.[301] The plaintiff offered an expert opinion that contains an analysis of the flow pattern in the accused tank, and the method used for the analysis was Computational Fluid Dynamics ("CFD").[302] The expert opinion was part of evidence of the infringement.[303]

Regarding the issue of the admissibility of the expert testimony based on CFD, the defendant's main argument was that the expert used incorrect parameters for computer simulation.[304] The Federal Circuit disagreed.[305] Relying on Eleventh Circuit case law, *Quiet Tech. DC-8, Inc. v. Hurel-Dubois UK Ltd.*,[306] the Federal Circuit held that "CFD analysis has been previously recognized in the scientific community and has been recognized as reliable by at least one circuit."[307] *Quiet Tech. DC-8, Inc.* was considered an analogue case by the Federal Circuit in *Liquid Dynamics Corp.* because the appellant in *Quiet Tech. DC-8, Inc.* also provided a similar argument that the appellee's expert "used incorrect data or was missing data to run the CFD software and used the wrong equations to run his CFD analysis."[308] The Fifth Circuit responded that the appellant's argument related to weight of the expert testimony rather than the admissibility, and it further held the flaws of the

300 *Id.* at 1213.
301 *See id.* at 1213-15.
302 *See id.* at 1217-18.
303 *See id.* at 1218.
304 *See id.* at 1220.
305 *See id.* at 1221.
306 Quiet Tech. DC-8, Inc. v. Hurel-Dubois UK Ltd., 326 F.3d 1333 (11th Cir. 2003).
307 *Liquid Dynamics Corp.*, 449 F.3d at 1221.
308 *Id.*

expert testimony are subject to cross-examination.[309] Among other things, the Fifth Circuit recognized CFD as "generally reliable scientific evidence."[310]

Based on its interpretation of *Quiet Tech. DC-8, Inc.*, the Federal Circuit stated that here the defendant's "challenge [also] goes to the weight of the evidence rather than the admissibility of [the expert's] testimony and analysis."[311] So, while the plaintiff's expert admitted that the CFD "models did not exactly match the various accused tanks,"[312] the Federal Circuit held that "they were based on reliable scientific methodology and subject to cross examination."[313]

Therefore, on the one hand, *Liquid Dynamics Corp.* may support a narrow notion that under the Federal Circuit case law, CFD is presumed to be reliable scientific knowledge under Rule 702. On the other hand, *Liquid Dynamics Corp.* may support a broad notion that judicially-recognized scientific knowledge is deemed to be reliable under Rule 702.

4.6 Technical Expert and Nonobviousness

4.6.1 Nonobviousness

Under 35 U.S.C. § 103, "[a] patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill

309 *See id.*

310 *Id.* (quoting Quiet Tech. DC-8, Inc. v. Hurel-Dubois UK Ltd., 326 F.3d 1333, 1345 (11th Cir. 2003)).

311 *Id.*

312 *Id*.

313 *Id.*

in the art to which the claimed invention pertains."[314] "Obviousness" is a question of law.[315] Four factual inquiries have to be resolved before determining obviousness.[316] They include: "the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the field of the invention, and any relevant objective considerations."[317]

The ultimate question is "whether there was an apparent reason to combine the known elements in the way a patent claims."[318] When determining obviousness, as the Supreme Court has held, "it will often be necessary to look to interrelated teachings of multiple patents; to the effects of demands known to the design community or present in the marketplace; and to the background knowledge possessed by a person having ordinary skill in the art."[319] To overcome obviousness, several non-obviousness factors may be considered.[320] They, known as "secondary considerations," include: "commercial success, long felt but unsolved needs, failure of others, etc."[321]

While the final question of non-obviousness is a question of law, there are factual questions needed to be decided.[322] The key issue is who can be a person having ordinary skill in the art ("PHOSITA").[323] The Federal Circuit in *Daiichi San-*

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314 35 U.S.C. § 103 (2013).

315 *See* Outside the Box Innovations, LLC v. Travel Caddy, Inc., 695 F.3d 1285, 1295 (Fed. Cir. 2012).

316 *See id.*

317 *Id.*

318 KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 401 (2007).

319 *Id.*

320 *See* Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966).

321 *Id.* at 17.

322 *See* CHISUM ET AL., *supra* note 276, at 564-65.

323 *See id.* at 620-21.

kyo Co. v. Apotex, Inc.[324] has provides several factors for defining a PHOSITA.[325] The factors include "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field."[326] But, neither of these factors is dispositive.[327]

After the level of a PHOSITA is decided, a technical expert can come in to assist the court or jury to figure out what such PHOSITA would have thought about the non-obviousness or obviousness of the claimed invention.[328] There are various cases showing the role of a technical expert in playing a PHOSITA.

4.6.2 Invalidity Testimony

Under *Dow Chem. Co. v. Mee Indus., Inc.*,[329] "[c]orroboration is required of any witness whose testimony alone is asserted to invalidate a patent, regardless of his or her level of interest."[330] In *Dow Chem. Co.*, the Federal Circuit disagreed with the defendant's theory of obviousness based on an expert testimony that

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324 Daiichi Sankyo Co. v. Apotex, Inc., 501 F.3d 1254 (Fed. Cir. 2007).

325 *See* Brenda M. Simon, *The Implications of Technological Advancement for Obviousness*, 19 MICH. TELECOMM. & TECH. L. REV. 331, 339 (2013).

326 *Daiichi Sankyo*, 501 F.3d at 1256 (citation and quotation both omitted).

327 *See id.* ("These factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art.").

328 *See* Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 899 (2004) ("The defendant can offer testimony of an expert witness who will review the prior art and explain why it would have made the invention obvious, and the patent owner will predictably counter with its own expert telling the opposite story.").

329 Dow Chem. Co. v. Mee Indus., Inc., 341 F.3d 1370 (Fed. Cir. 2003).

330 *Id.* at 1378 (citations omitted).

shows prior public use.[331] The Federal Circuit held that "the testimony was vague as to whether the alleged [prior public use] occurred more than a year prior to the filing of the applications that issued as the patents-in-suit, and the testimony lacked corroboration in any event."[332] Because the expert testimony was improperly admitted, the Federal Circuit reversed the district court's judgment of obviousness.[333]

4.6.3 Common Sense

"Common sense" can be one determining factor of obviousness.[334] After *KSR Int'l Co. v. Teleflex Inc.*[335] held by the Supreme Court in 2007, a court can base on "common sense" to combine prior art references to reach the conclusion of obviousness, which has been criticised as a hindsight approach to obviousness.[336]

Under *Meyer Intellectual Properties Ltd. v. Bodum, Inc.*,[337] an expert may testify on "common sense" for establishing obviousness. In *Meyer Intellectual Properties Ltd.*, the district court excluded the defendant's expert from testifying on obviousness because it held that in his report the expert "advance[d] his opinion as a mere *ipse dixit*: 'Trust me—I know obviousness when I see it, and this is it.'"[338] However, the Federal Circuit reversed that ruling.[339] While characterizing the expert report as merely stating that "the [disputed patents] are obvious because one

331 *See id.*
332 *See id.*
333 *See id.*
334 *See* Thomas G. Hungar & Rajiv Mohan, *A Case Study Regarding the Ongoing Dialogue Between the Federal Circuit and the Supreme Court: The Federal Circuit's Implementation of KSR v. Teleflex*, 66 SMU L. REV. 559, 561-62 (2013).
335 KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398 (2007).
336 *See* Simon, *supra* note 325, at 339-40.
337 Meyer Intellectual Properties Ltd. v. Bodum, Inc., 690 F.3d 1354 (Fed. Cir. 2012).
338 *Id.* at 1363 (citation omitted).
339 *See id.* at 1376.

skilled in the art would have been motivated based on familiarity with the prior art to combine the known method ... with the [known] structure,"[340] the Federal Circuit held that the expert "invoked the common sense of one skilled in the art as evidence of motivation to combine prior art references."[341] Under the Federal Circuit case law, "the common sense of one skilled in the art can play a role in the obviousness analysis."[342] Therefore, the Federal Circuit ruled that the district court abused its discretion by preventing the defendant's expert from being heard by the jury.[343]

Meyer Intellectual Properties Ltd. creates a problem because it may ease the burden of proof on a defendant to form its obviousness arguments. While the Supreme Court in *KSR* affirmed a flexible test of obviousness,[344] it still cautioned that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."[345] When a technical expert testifies at the time of trial, her knowledge has already been based on the long-existing and contemporary technology. It is unavoidable to bring the contemporary technology into the mind of a PHOSITA at the time of the invention. Even though the Supreme Court allows an "obvious-to-try" standard,[346] there is still some form of motive, such as "a design need or market pressure to solve a

340 *Id.* at 1375.
341 *Id.*
342 *Id.* at 1375-76 (quotation omitted).
343 *See id.* at 1376.
344 *See* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 421-22 (2007) ("Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.").
345 *Id.* at 421.
346 *See id.*

problem [, and] a finite number of identified, predictable solutions."[347]

Therefore, a technical expert has to base his view on some reference. Merely concluding that a PHOSITA would have been motivated to combine prior art references at the time of the invention without reciting any other documents is a representation of hindsight. *Meyer Intellectual Properties Ltd.* is now more likely to cause that hindsight.

4.6.4 Rebuttal to Obviousness Factors

As shown in *Outside the Box Innovations, LLC v. Travel Caddy, Inc.*,[348] expert testimony on non-obviousness may help prevent judicial hindsight of obviousness. In *Outside the Box Innovations, LLC*, the patentee submitted an expert to testify that the prior art references did not disclose all elements of the claims and there was no suggestion of combining these references to reach the claimed invention.[349] The district court excluded the patentee's expert from testifying on non-obviousness because the expert was not a patent attorney and therefore could not understand the claims.[350]

While holding that an abuse of discretion existed, the Federal Circuit did not end its analysis because the infringer also argued that the exclusion was harmless.[351] Applying the Eleventh Circuit case law, the Federal Circuit disagreed with the infringer's assertion.[352] Under the Eleventh Circuit case law, "errors in admission or exclusion of evidence may be tolerated unless they affect the *substantial rights* of the parties; that is, unless the errors have a 'substantial influence' on the

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347 *Id.*

348 Outside the Box Innovations, LLC v. Travel Caddy, Inc., 695 F.3d 1285 (Fed. Cir. 2012).

349 *See id.* at 1298.

350 *See id.* at 1295-96.

351 *See id.* at 1297.

352 *See id.* at 1297-99.

outcome of a case or leave 'grave doubt' as to whether they affected the outcome of a case."[353] The Federal Circuit found that the exclusion of the patentee's expert testimony might have influenced the outcome of the obviousness analysis.[354] Therefore, the exclusion ruling could not be affirmed.[355]

The Federal Circuit's holding was based on a non-obviousness concern on the district court's obviousness analysis. The Federal Circuit cautioned that "advances in technology may in retrospect appear obvious to a judge, stimulated by advocacy."[356] The solution of eliminating such judicial hindsight as recognized by the Federal Circuit is "the testimony of persons experienced in the field of the invention."[357] Reviewing the district court's reasoning, the Federal Circuit found that "[a] substantial right was indeed affected, for obviousness depends on evidentiary facts found and evaluated from the viewpoint of a person in the field of the invention, as of the time of the invention."[358]

Therefore, while an obviousness analysis is based on evaluating the *Graham* inquiries to answer the ultimate question of law, expert testimony is helpful for a patentee to defend obviousness and to prevent judicial hindsight. So, an evidentiary ruling that excludes such expert testimony is an abuse of discretion.

Unlike *Meyer Intellectual Properties Ltd.*, the Federal Circuit in *Outside the Box Innovations* offers to a patentee a good tool to conquer a "common sense" conclusion made by the technical expert of its opponent. But, both precedents create a phenomenon where an issue of obviousness is a battle of technical experts. Whether a claim is obvious is subject to the credibility of each technical

353 *Id.* at 1297 (emphasis added) (citations and quotations both omitted).
354 *See id.* at 1297-98.
355 *See id.* at 1299.
356 *Id.* at 1297.
357 *Id.*
358 *Id.* at 1297-98.

expert, but not to an objective view of a PHOSITA.

5. ISSUES SPECIFICALLY RELATED TO DAMAGES EXPERTS

5.1 No Need of Expert Testimony on Damages

Under *Dow Chem. Co. v. Mee Indus., Inc.*,[359] "reasonable royalty damages can be awarded even without [expert] testimony."[360] The rule is based on 35 U.S.C. § 284 providing "The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances."[361] Thus, "expert testimony is not necessary to the award of damages, but rather 'may [be] receive[d] ... as an aid.'"[362]

5.2 Reliable Methodology for Estimating a Reasonable Royalty

Under *i4i Ltd. P'ship v. Microsoft Corp.*,[363] the "use of a hypothetical negotiation and *Georgia-Pacific* factors for estimating a reasonable royalty" may be a reliable method for estimating a reasonable royalty. In *i4i Ltd. P'ship*, the Federal Circuit affirmed the district court's evidentiary ruling on admission of the plaintiff's damages expert.[364] The expert's damages theory was based on a hypothetical negotiation between the plaintiff and defendant.[365] The hypothetical negotiation

359 Dow Chem. Co. v. Mee Indus., Inc., 341 F.3d 1370 (Fed. Cir. 2003).
360 *Id.* at 1381.
361 *Id.*
362 *Id.* at 1382.
363 i4i Ltd. P'ship v. Microsoft Corp., 598 F.3d 831 (Fed. Cir. 2010).
364 *See id.* at 852.
365 *See id.*

resulted in a baseline royalty rate.[366] Then, the expert adjusted the rate by applying several *Georgia-Pacific* factors.[367]

By reviewing the expert's testimony about the methodology, the Federal Circuit held that "[the expert's] testimony about the acceptance of the hypothetical negotiation model among damage experts and economists, combined with his methodical explication of how he applied the model to the relevant facts, satisfied Rule 702 and *Daubert*."[368] In addition, the Federal Circuit recognized that "the facts [used by the expert] were drawn from internal [defendant's] documents, publicly available information about other custom [relevant products], and a survey designed to estimate the amount of infringing use"[369] and held that "these facts had a sufficient nexus to the relevant market, the parties, and the alleged infringement."[370] Thus, the Federal Circuit concluded that "[the expert] based his calculations on facts meeting these minimum standards of relevance and reliability."[371]

5.3 Unreliable 25% Rule

Under *Uniloc USA, Inc. v. Microsoft Corp.*,[372] "[e]vidence 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."[373] The 25 percent rule of thumb is a rule commonly applied to estimating a

366 *See id.* at 852-53.
367 *See id.* at 853-54.
368 *Id.* at 854.
369 *Id.* at 856.
370 *Id.*
371 *Id.*
372 Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292 (Fed. Cir. 2011).
373 *Id.* at 1315.

reasonable royalty.[374] The rule states that "the licensee pay[s] a royalty rate equivalent to 25 per cent of its expected profits for the product that incorporates the [patent] at issue."[375] By citing several scholarly articles, the Federal Circuit concluded three major flaws of the 25 percent rule: (1) "it fails to account for the unique relationship between the patent and the accused product"; (2) "it fails to account for the unique relationship between the parties"; (3) "the rule is essentially arbitrary and does not fit within the model of the hypothetical negotiation within which it is based."[376] Thus, the Federal Circuit held that "the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation."[377]

Because "the 25 percent rule of thumb in a reasonable royalty calculation is far more unreliable and irrelevant than reliance on parties' unrelated licenses,"[378] the Federal Circuit even rejected the 25 percent rule as "a starting point to which the *Georgia-Pacific* factors are then applied to bring the rate up or down."[379]

With respect to a proper standard for determining a sound methodology for damages calculations under a hypothetical negotiation, the Federal Circuit did provide some guidance. The "patentee bears the burden of proving damages,"[380] Under *Daubert*, the Federal Circuit held that "the patentee must 'sufficiently [tie the expert testimony on damages] to the facts of the case.'"[381] By relying on three

374 *See id.* at 1314.
375 *Id.* at 1312 (citation omitted).
376 *Id.* at 1313-14 (citation omitted).
377 *Id.* at 1315.
378 *Id.* at 1317.
379 *Id.*
380 *Id.* at 1315.
381 *Id.*

prior cases regarding damages calculations based on a reasonable royalty,[382] the Federal Circuit concluded that "there must be a basis in fact to associate the royalty rates used in prior licenses to the particular hypothetical negotiation at issue in the case."[383] So, when using prior licenses as a basis for estimating a reasonable royalty, a damages expert must compare the factual scenarios of prior licenses to the scenario that fits to the present case. In addition, it is necessary to address "a particular hypothetical negotiation or reasonable royalty involving any particular technology, industry, or party."[384]

Regarding the *Georgia-Pacific* factors, the Federal Circuit held that they are still applicable.[385] However, the Federal Circuit requires a trial judge to determine whether "expert testimony opining on a reasonable royalty rate [is] 'carefully tie proof of damages to the claimed invention's footprint in the market place.'"[386] When applying the *Georgia-Pacific* factors, a trial judge must determine whether expert testimony on any *Georgia-Pacific* factor is "tied to the relevant facts and circumstances of the particular case at issue and the hypothetical negotiations that would have taken place in light of those facts and circumstances at the relevant time."[387]

After *Uniloc*, the *Georgia-Pacific* factors are still good guidance for calculating a reasonable royalty. When a damages expert follows the fifteen factors to form

382 *See id.* at 1316 (discussing ResQNet.com, Inc. v. Lansa, Inc., 594 F.3d 860 (Fed. Cir. 2010); Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301 (Fed. Cir. 2009); Wordtech Sys., Inc. v. Integrated Networks Solutions, Inc., 609 F.3d 1308 (Fed. Cir. 2010); *see also* Anthony D. Raucci, Notes, *A Case Against the Entire Market Value Rule*, 69 WASH. & LEE L. REV. 2233, 2253-54 (2012).

383 *Uniloc USA, Inc.*, 632 F.3d at 1317.

384 *Id.*

385 *See id.*

386 *Id.*

387 *Id.* at 1318.

his negotiation theory, [388] he must tie his theory to the factual pattern of the pre-

[388] *See* Georgia-Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), stating:

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.
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 sig-

sent dispute before him.[389] This task is not simple because the 25% rule is not valid any more. As Epstein & Malherbe have pointed out, the challenge caused by *Uniloc* is "how a reasonable royalty might be determined when no comparable license is available."[390]

In a case where some prior, comparable licensing cases do exist, a damages expert may use those historic facts to form his baseline theory of damages calculation of the present case.[391] For cases where there is no comparable licensing case, *Uniloc* does not teach how to form "a basis in fact to associate the royalty rates used in prior licenses to the particular hypothetical negotiation at issue in the case." [392] The Federal Circuit failed to answer what analogous feature can be drawn from prior licensing and then applied to the existing case. Thus, the damages calculation based on a reasonable royalty becomes unstable.

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nificant 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.

389 *See* Roy J. Epstein & Paul Malherbe, *Reasonable Royalty Patent Infringement Damages After Uniloc*, 39 AIPLA Q.J. 3, 6 (2011) ("*Uniloc* makes it clear that patent damages methodology requires an economically coherent hypothetical negotiation tied to the *Georgia-Pacific* factors and grounded in the facts of the particular case.").

390 *Id.* at 25.

391 *See* John C. Jarosz & Michael J. Chapman, *The Hypothetical Negotiation and Reasonable Royalty Damages: The Tail Wagging the Dog*, 16 STAN. TECH. L. REV. 769, 818-19 (2013).

392 *See* Edward Torous, *Unknotting Uniloc*, 27 BERKELEY TECH. L.J. 381, 397-98 (2012).

5.4 Sales Data of Infringing and Non-infringing Products

Under *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*,[393] expert testimony on damages must be based on sales data representing infringing products. In *Power Integrations, Inc.*, the patented technology was an electric circuit used in a power supplier for a mobile phone.[394] The plaintiff's damages expert used the sales data of some company's mobile phones to estimate damages, but did not clarify whether all mobile phones sold were embedded with a power supplier that uses the patented electric circuit.[395] The expert only made an assumption that all sold mobile phones used a power supplier with the patented circuit.[396] The district court admitted the plaintiff's expert testimony as evidence.[397]

On appeal, the Federal Circuit found two flaws in the plaintiff's expert report. First, while the expert testified that the infringing circuit was found in a mobile phone charger, not in a mobile phone, the sales data did not reflect any sales of chargers or refer to chargers.[398] Instead, the expert relied on the sales data of mobile phones.[399] The expert's analysis indicated that the sold mobile phones were assumed to include a charger with the infringing circuit.[400] However, the Federal Circuit pointed out that "the document relied upon by [the expert] does not specify the nature of the shipments, nor does it provide any reliable link which might indi-

393 Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., 711 F.3d 1348 (Fed. Cir. 2013).
394 *See id.* at 1357.
395 *See id.* at 1372.
396 *See id.* at 1373-74.
397 *See id.* at 1374.
398 *See id.* at 1373.
399 *See id.*
400 *See id.*

cate that the shipped phones included chargers."[401] That is, the documents show nothing about whether the shipped mobile phones used any charger. Thus, the expert's assumption was groundless.[402]

Second, the plaintiff's expert speculatively assumed that all chargers include an infringing circuit.[403] The Federal Circuit criticized that the expert's data has "no model numbers or other indicia from which he could reasonably infer that chargers assumed to be included incorporated [the infringing circuit]."[404] That is, without product model information, there is no possible way to infer whether a mobile phone does have a charger and whether that charger incorporates an infringing circuit. Further more, the plaintiff's vice president of worldwide sales testified that the plaintiff and other companies also sold competing chargers to the same mobile phone company.[405] That is, the sales data covered mobile phones of both infringing chargers and non-infringing chargers. Because the expert did not distinguish the sales of infringing products from those of non-infringing products, the Federal Circuit held the expert's assumption was only speculation.[406]

Because the plaintiff's "expert opinion derived from unreliable data and built on speculation,"[407] the Federal Circuit concluded that "[w]ithout more, [the expert's] testimony and data regarding worldwide shipments of [those] mobile phones are too far removed from the facts of this case, which involves [the] infringing power circuits."[408] This holding reflects the Federal Circuit's attitude that "facts or

401 *Id.*
402 *See id.* at 1373-74.
403 *See id.* at 1374.
404 *Id.*
405 *See id.*
406 *See id.*
407 *Id.*
408 *Id.*

data" must be tied to the facts of the dispute. The basis of damages calculation must be tied to the sales of infringing products.

Finally, the Federal Circuit cited *Kumho* to criticize that the expert's "layered assumptions lack the hallmarks of genuinely useful expert testimony,"[409] and further held that "[s]uch unreliable testimony frustrates a primary goal of expert testimony in any case, which is meant to place experience from professional specialization at the jury's disposal, not muddle the jury's fact-finding with unreliability and speculation."[410] So, the Federal Circuit held the district court's admission of the plaintiff's damages expert was an abuse of discretion.[411]

Therefore, the damages calculation based on the sales data of infringing products and non-infringing products is not "sufficient facts or data" required by Rule 702. Expert testimony must be based on the sales data that represents infringing products. Otherwise, it is inadmissible evidence.

6. CONCLUSION

While Rule 702 requires an expert to have "scientific, technical, or other specialized knowledge," it is opt to a district court judge to admit or exclude expert witnesses or expert opinions as evidence heard by jury. Further more, the Federal Circuit's review standard is abuse of discretion. So, a district court judge usually has much leeway in her evidentiary ruling.

According to the Federal Circuit case law, a trial judge is obligated under Rule 702 and *Daubert* to exclude irrelevant or unreliable expert testimony from evidence. She must apply those four *Daubert* factors for determining the admissibility of expert testimony: "(1) whether the methodology can and has been tested, (2)

409 *Id.* (quoting Kumho Tire Co. v. Carmichael, 526 U.S. 137, 156 (1999)).
410 *Id.*
411 *See id.*

whether the methodology is subject to peer review, (3) the potential rate of error, and (4) the general acceptance of the methodology." If the principles or methods an expert relies on fulfill any *Daubert* factor, such expert testimony is admissible. Additionally, such admitted principles or methods are still required to be relevant to the disputed issue.

The Federal Circuit also requires that the facts or data on which an expert relies should be relevant to the disputed issue. However, the accuracy or reliability of the facts or data is not subject to the Rule 702 examination, because it is opt to the jury to weigh evidence. In the damages calculation context, the Federal Circuit requires the damages theory proposed by a patentee to be tied to the factual scenario in the case. Besides, the data must come from a reliable source.

Moreover, an admitted expert cannot testify on everything, even though it is reliable and relevant. Rule 26 of the Federal Rules of Civil Procedure requires a disclosure of expert opinions probably presented to the jury, because it is fair to let the other party know such information to prepare for rebuttal or cross-examination. Therefore, the content not disclosed under Rule 26 may not be testified on.

Finally, if there is no negative indication about a challenged expert's knowledge required for certain factual issue in litigation, the Federal Circuit will allow such expert to be admitted. However, the case may not be vacated if there is no prejudice to the party that opposes the district court's ruling. If the improper ruling of admissibility of expert testimony is harmless, the Federal Circuit may still sustain the lower court's final decision.

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