

# Berkeley

[technology law Journal]  
ANNUAL REVIEW OF LAW AND TECHNOLOGY

***Unknotting Uniloc***

*Edward Torous*

VOLUME 27  
AR ONLINE  
**20**  
**12**

UNIVERSITY OF CALIFORNIA, BERKELEY  
**SCHOOL OF LAW**  
**BOALT HALL**

# UNKNOTTING *UNILOC*

*Edward Torous*<sup>†</sup>

Greek mythology tells the story of the Gordian Knot. According to the myth, whoever managed to untie the massive, complex knot would rule all of Asia.<sup>1</sup> For hundreds of years, people attempted to unravel the knot to no avail.<sup>2</sup> No one could figure out the purpose or path of each intertwined strand of fiber, and the knot remained fixed until the arrival of Alexander the Great.<sup>3</sup> Alexander, instead of trying to loosen the knot, simply took out his sword and cut the knot in half.<sup>4</sup>

While not quite as complex, patent damages can be equally knotting and vexing.<sup>5</sup> Complex systems, such as computers or mobile phones, present a particularly difficult issue in calculating patent damages. Such consumer electronic devices, like the Gordian Knot, are extremely intricate: they are made of many subcomponents—such as memory chips, microprocessors, and radio antennas—that are covered by patents.<sup>6</sup> For example, Apple has over 200 patents covering the iPhone and its subcomponents alone.<sup>7</sup> If one of those 200 patents, say a patent covering a radio antenna,<sup>8</sup> were infringed, how much would be owed to Apple? At first blush the answer appears to be the value of the radio antenna. But if it cannot be purchased separately in an

---

© 2012 Ted Torous.

† J.D. Candidate, 2012, University of California, Berkeley School of Law.

1. KATHLEEN N. DALY, GREEK AND ROMAN MYTHOLOGY A TO Z 60–61 (3d ed. 2009).

2. *Id.*

3. *Id.*

4. *See id.*

5. This is not the first comparison between patents and the Gordian Knot. *See, e.g.,* Arrhythmia Research Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1061 (Fed. Cir. 1992) (Rader, J., concurring).

6. *See, e.g.,* Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 621 (2008) (noting the myriad subcomponents in a computer system and a number of patents covering some of these subcomponents).

7. *See* Lindsey Gilroy & Tammy D’Amato, *How Many Patents Does It Take To Build an iPhone?*, INTELLECTUAL PROPERTY TODAY (Nov. 2009), <http://www.iptoday.com/issues/2009/11/articles/how-many-patents-take-build-iPhone.asp>.

8. *See, e.g.,* U.S. Patent Application No. 20,100,304,702 (filed June 1, 2009) (Apple’s patent application covering a radio receiver).

electronics store, a radio antenna is difficult to price.<sup>9</sup> Adding to the confusion, a consumer desperate to make a phone call or check email would likely pay an above-market premium for a radio antenna. These and other difficult questions interfere with attempts to accurately value a radio antenna patent.

In an effort to bring clarity to this knotted question, this Note focuses on how to calculate damages for infringement of a patented subcomponent in a complex system. Like the strands of the Gordian Knot, subcomponents in a complex system are often complexly intertwined with each other in puzzling ways that make damages calculations difficult and obtuse.<sup>10</sup> In hopes of emulating Alexander's sword, this Note proposes one way of slicing through the complexity and calculating damages in a complex system. Part I surveys how damages are calculated in patent litigation. It briefly describes the possibility of using lost profits, but focuses on the much more common "reasonable royalty" damages measure as well as the two main methods used to arrive at an appropriate royalty amount. Part II reviews recent legal decisions, including *Uniloc USA, Inc. v. Microsoft Corp.*, and how they affect damages calculations in a complex system. In particular, it focuses on two aspects of those recent decisions: (1) maintaining apportionment to ensure that any reasonable royalty fits the economics of a transaction and the harm caused by infringement; and (2) choosing the most appropriate method for arriving at a royalty rate. Finally, Part III proposes a method, which conforms to recent legal decisions, for calculating damages in a complex system.

## I. EXAMINING THE SWORD: HOW PATENT DAMAGES ARE CALCULATED

Under its constitutional grant of authority, Congress enacted § 284 of the Patent Act, which authorizes damages for patent infringement.<sup>11</sup> Specifically, § 284 authorizes courts to "award the claimant damages adequate to

---

9. Radio receivers are not usually sold individually. Instead, receivers are included in complex systems such as mobile phones. *See, e.g., id.* (noting that the radio receiver can be "implemented as part of a larger system, such as a mobile phone or a multimedia player").

10. Faced with having to compute the value of one patent within Microsoft Office, Judge Marilyn Huff remarked that "[t]his case illustrates the difficulty of properly valuing a small patented component, without a stand-alone market, within a larger program." *Lucent Techs., Inc. v. Microsoft Corp.*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*1 (S.D. Cal. Nov. 10, 2011).

11. 35 U.S.C. § 284 (2006); *see* SKENYON ET AL., PATENT DAMAGES AND PRACTICE § 1:3 (2008).

compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”<sup>12</sup> In theory, a patent owner can seek damages either by establishing lost profits or a reasonable royalty.<sup>13</sup> But in practice, the patentee typically seeks a reasonable royalty, employing one of two methods: the analytical method, or the more common hypothetical negotiation method.

#### A. LOST PROFITS: A METHOD FOR CALCULATING PATENT DAMAGES

The less frequent measure of damages in an infringement suit is lost profits. A patentee seeking lost profits looks for a monetary amount equivalent to the amount of profits that would have been earned through sales *but for* the patent infringement.<sup>14</sup> The law requires but-for causation in order for a patentee to recover,<sup>15</sup> and generally, plaintiffs prove damages by demonstrating “(1) demand for the patented product; (2) absence of acceptable non-infringing substitutes; (3) manufacturing and marketing capability to exploit the demand; and (4) the amount of the profit it would have made.”<sup>16</sup>

But if the patentee fails to pass this four-factor causation test, there is a good chance he will be barred from recovering under a lost profits theory.<sup>17</sup> For example, patentees, such as non-practicing entities who do not create or sell any products, are not eligible for lost profits.<sup>18</sup> Even if a patentee creates

---

12. 35 U.S.C. § 284.

13. Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655 (2009); see also WILLIAM C. ROOKLIDGE ET AL., COMPENSATORY DAMAGE ISSUES IN PATENT INFRINGEMENT CASES: A POCKET GUIDE FOR FEDERAL DISTRICT COURT JUDGES 5 (2011), available at [http://www.fjc.gov/public/pdf.nsf/lookup/damagespatent.pdf/\\$file/damagespatent.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/damagespatent.pdf/$file/damagespatent.pdf) (noting that a patentee can seek an established royalty).

14. Jerry A. Hausman et al., *Patent Damages and Real Options: How Judicial Characterization of Noninfringing Alternatives Reduces Incentives To Innovate*, 22 BERKELEY TECH. L.J. 825, 833 (2007).

15. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995); see also *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978).

16. *Panduit*, 575 F.2d at 1156.

17. See, e.g., *Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1360–61 (Fed. Cir. 2001) (holding lost profits unavailable when lost sales could not be demonstrated); *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1165 (Fed. Cir. 1991) (upholding a trial court’s ruling that lost profits were not available because the plaintiff had failed to prove the last three *Panduit* factors).

18. See Amy L. Landers, *Let the Games Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 323 (2006); Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 657–61 (2009).

or sells a product that practices the patent, calculating lost profits is difficult because the patentee may not “sell a product that directly competes with that of the infringer, [or] the patentee’s sales [may have] failed for reasons unrelated to the infringer’s violation of a patent right,” such as failure to sell the product.<sup>19</sup> Because of these and other difficulties in proving lost profits, a patentee usually seeks to recover under a reasonable royalty theory,<sup>20</sup> which eliminates the troublesome requirements of but-for causation, accurate profits and demand projections, and near identical products—conditions that rarely, if ever, exist in the real world.<sup>21</sup>

B. REASONABLE ROYALTY: THE STANDARD METHOD FOR CALCULATING PATENT DAMAGES

A reasonable royalty is a work of judicial fiction: a court *ex post* awards a monetary amount based on the “result of hypothetical negotiations” between the patentee and the infringer.<sup>22</sup> Because the text of the Patent Act notes that damages should be “in no event less than a reasonable royalty,” the royalty awarded may exceed the licensing rate to which the two parties would have agreed in the “hypothetical negotiation.” In fact, such a “reasonable royalty” may be so high as to exceed the patentee’s lost profits<sup>23</sup> or exceed the infringer’s profits derived from infringement.<sup>24</sup> Some “reasonable royalty” awards have even become so large that scholars characterize them as punitive damages.<sup>25</sup> These various possibilities for a reasonable royalty render the damages calculation an inexact science, which “necessarily involves an element of approximation and uncertainty.”<sup>26</sup> In an effort to bring

19. Landers, *supra* note 18, at 323.

20. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1312 (Fed. Cir. 2011) (“A reasonable royalty is the predominant measure of damages in patent infringement cases.”); ROOKLIDGE, *supra* note 13, at 6 (“In almost every patent case, the patent owner seeks reasonable royalty damages . . .”).

21. *See generally* SKENYON, *supra* note 11, § 3:3.

22. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1554 (Fed. Cir. 1995).

23. *See* Landers, *supra* note 18, at 324. In practice, a “reasonable royalty” may be much larger than the result of a likely negotiation. SKENYON, *supra* note 11, § 1:3 (“Reasonable royalty damages can be far different from any pre-infringement, real-world royalty the parties would have actually negotiated. Indeed, the Federal Circuit has routinely affirmed ‘reasonable royalty’ awards that are obviously well in excess of what the parties would have actually agreed to as a result of licensing negotiations prior to infringement.”).

24. SKENYON, *supra* note 11, § 3:2; Landers, *supra* note 18, at 350–51 (citing *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1338 (Fed. Cir. 2008)).

25. *See* Eric E. Bensen & Danielle M. White, *Using Apportionment To Rein in the Georgia-Pacific Factors*, 9 COLUM. SCI. & TECH. L. REV. 1, 3 (2008).

26. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325 (Fed. Cir. 2009) (citing *Unisplay, S.A. v. Am. Elec. Sign Co., Inc.*, 69 F.3d 512, 517 n.7 (Fed. Cir. 1995)).

predictability and order to the damages calculations in spite of these ambiguities, courts have generally adopted two ways to calculate a reasonable royalty: (1) the less common analytical approach, which requires accurate infringer profit projections, and (2) the more common willing licensor/willing licensee approach<sup>27</sup>—colloquially known as the hypothetical negotiation approach.<sup>28</sup>

1. *Analytical Approach: A Method for Calculating a Reasonable Royalty*

In the analytical approach, a court will accept profit projections to calculate the additional profits lost to infringement.<sup>29</sup> The first step in the analytical approach is to determine, from the infringer's internal business documents, her expected profits from the infringing product.<sup>30</sup> Next, this profit is then reduced by the normal profit, based on industry standards and other heuristics, of a non-infringing alternative.<sup>31</sup> The result of this calculation is the applicable reasonable royalty.<sup>32</sup> Unlike the previously discussed analytical approach, there is no but-for causation requirement.<sup>33</sup>

For example, in *TWM Manufacturing Co., Inc. v. Dura Corp.*, the defendant's internal documents showed a profit projection of 37 to 42 percent on sales of the infringing product.<sup>34</sup> In the particular industry, a non-infringing alternative usually had 6.56 to 12.5 percent profit margin.<sup>35</sup> Thus the profit margin was proportionately reduced, and the court awarded the defendant a 30 percent share of the profits of all infringing products.<sup>36</sup> Because this approach requires the existence of accurate profit projections,<sup>37</sup> which are

---

27. David W. Opperbeck, *Patent Damages Reform and the Shape of Patent Law*, 89 B.U. L. REV. 127, 133 (2009).

28. See *Methodologies for Determining Reasonable Royalty Damages*, FISH & RICHARDSON, <http://www.fr.com/reasonableroyalty/> (last visited Feb. 24, 2012).

29. See SKENYON, *supra* note 11, § 3:8 (noting, in addition, that the analytical approach “really has nothing at all to do with any hypothetical licensing negotiation”).

30. *Id.*; Opperbeck, *supra* note 27, at 133 n.35 (citing Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTEL. PROP. L.J. 1, 38–42 (2001) (suggesting that profits could be calculated by subtracting the difference in the rate of return on non-infringing merchandise from infringing merchandise)).

31. SKENYON, *supra* note 11, § 3:8. See generally *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895 (Fed. Cir. 1986) (outlining the steps of the analytical approach).

32. SKENYON, *supra* note 11, § 3:8.

33. See *id.*

34. *TWM Mfg.*, 789 F.2d at 899.

35. *Id.*

36. *Id.*

37. See *Hughes Tool Co. v. Dresser Indus., Inc.*, 816 F.2d 1549, 1557 (Fed. Cir. 1987) (rejecting a profit projection that was ruled inaccurate).

difficult to ascertain,<sup>38</sup> courts use it less often than the hypothetical negotiation approach.<sup>39</sup>

2. *Hypothetical Negotiation Approach: The Standard Method for Calculating a Reasonable Royalty*

In the hypothetical negotiation approach, the reasonable royalty is the product of what the courts call the “royalty base” and the “royalty rate.”<sup>40</sup> The royalty base is “the revenue pool implicated by the infringement,” which can be determined by looking at the retail market of the sub-component,<sup>41</sup> and the royalty rate is the “the percentage of that pool ‘adequate to compensate’ the [patentee] for that infringement.”<sup>42</sup> For example, if a computer contains a microprocessor that infringes a patent, the royalty base is equivalent to the revenue generated by the inclusion of the infringing microprocessor, and the “royalty rate” is equivalent to the percentage of the generated revenue that would have been required to license the infringed patent. If the royalty base and royalty rate are accurate, the arithmetic product of the two is an accurate reasonable royalty per infringement.<sup>43</sup> This example can be expressed algebraically as:

$$\text{ReasonableRoyaltyPerInfringment} = \text{RoyaltyBase} \times \text{RoyaltyRate}$$

A total reasonable royalty can be calculated by multiplying the per infringement reasonable royalty by the quantity of infringement.<sup>44</sup> Traditionally, the term “reasonable royalty” refers to the total measure instead of the per-unit measure.<sup>45</sup> This total measure is expressed algebraically as:

$$\text{ReasonableRoyalty} = (\text{RoyaltyBase} \times \text{RoyaltyRate}) \times \text{QuantityOfInfringement}$$

38. SKENYON, *supra* note 11, § 3:8.

39. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1324 (Fed. Cir. 2009) (noting that the hypothetical approach is “more common”); *see* SKENYON, *supra* note 11, § 3:9 (noting that the hypothetical negotiating approach is “more familiar”). *But see Methodologies for Determining Reasonable Royalty Damages*, *supra* note 28 (“The existence of such a document as found in TWM is not all that unusual, at least in larger companies.”).

40. Cornell Univ. v. Hewlett-Packard Co., 609 F. Supp. 2d 279, 286 (N.D.N.Y. 2009), *amended*, 01-CV-1974, 2009 WL 1405208 (N.D.N.Y. May 15, 2009). This decision was written by then Circuit Judge Rader sitting by designation. *See id.*

41. *See id.* at 286–87.

42. *Id.*

43. Landers, *supra* note 18, at 323–24.

44. *See id.*

45. *See, e.g.,* Uniloc USA, Inc. v. Microsoft Corp., 632 F.3d 1292, 1311 (Fed. Cir. 2011) (referring to a total reasonable royalty as simply a reasonable royalty); *Lucent*, 580 F.3d at 1325.

But using the hypothetical negotiation approach to calculate a reasonable royalty requires accurately calculating the underlying royalty base<sup>46</sup> and royalty rate.<sup>47</sup> Calculating the royalty base and royalty rate presents such unique challenges that “[d]etermining a fair and reasonable royalty is often . . . a difficult judicial chore, seeming often to involve more the talents of a conjurer than those of a judge.”<sup>48</sup> The source of this challenge is the difficulty a court faces in recreating the dynamics of a negotiation, after the fact.<sup>49</sup>

To surmount this challenge, courts have adopted an analysis that examines a number of factors that they have found useful in recreating a negotiation. The district court in *Georgia-Pacific Corp. v. U.S. Plywood Corp.* examined fifteen such factors<sup>50</sup> to determine what sort of economic evidence is relevant in determining a reasonable royalty under the hypothetical negotiation analysis.<sup>51</sup> While there is no set method for using the *Georgia-Pacific* factors, expert witnesses and courts commonly adjust the royalty rate or resulting reasonable royalty after examining how the factors apply to the case at hand.<sup>52</sup> In addition to the *Georgia-Pacific* factors, courts have also relied upon a variety of methodologies to calculate a reasonable royalty.

a) The Proportional Relationship Between the Royalty Base and the Royalty Rate

Regardless of how the royalty base and royalty rate are calculated, the two are inherently linked. Recall that a reasonable royalty is the arithmetic product of the royalty base, the royalty rate, and the quantity of infringement.<sup>53</sup> Basic algebra holds that an increase in the royalty base can be

46. See, e.g., *Uniloc*, 632 F.3d at 1292 (highlighting the difficulty in calculating a royalty base).

47. See generally *Lucent*, 580 F.3d at 1324–25 (showing the difficulty in calculating a royalty rate); *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279 (N.D.N.Y. 2009).

48. Landers, *supra* note 18, at 328 (quoting *Fromson v. W. Litho Plate & Supply Co.*, 853 F.2d 1568, 1574 (Fed. Cir. 1988) *overruled on other grounds by* *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004)).

49. See *Uniloc*, 632 F.3d at 1313 (noting one criticism of a tool used to help calculate a reasonable royalty was the “fails to account for the unique relationship between the parties”).

50. Bensen & White, *supra* note 25, at 2. For the sake of brevity, the factors have been omitted from this Note. The factors can be found at *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) *modified sub nom.* *Georgia-Pac. Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295 (2d Cir. 1971).

51. SKENYON, *supra* note 11, § 3:13.

52. See *Uniloc*, 632 F.3d at 1311 (using the *Georgia-Pacific* factors to adjust the royalty rate); *Lucent Techs., Inc. v. Microsoft Corp. (Lucent II)*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*6 (S.D. Cal. Nov. 10 2011) (using the *Georgia-Pacific* factors to check the reasonable royalty).

53. See *supra* note 43.



offset by a proportional decrease in the royalty rate, or vice versa, with a zero net effect on the reasonable royalty. The following example demonstrates this principle. Assume a royalty base of \$1,000, a royalty rate of 50 percent, and 100 infringing products. The reasonable royalty would be calculated as follows:

$$\text{ReasonableRoyalty} = (\$1000 \times .5) \times 100 = \$500 \times 100 = \$50,000$$

Now, modify this example by doubling the royalty base to \$2,000, halving the royalty rate to 25 percent, and maintaining 100 infringing products. The reasonable royalty is unaffected:

$$\text{ReasonableRoyalty} = (\$2,000 \times .25) \times 100 = \$500 \times 100 = \$50,000$$

In other words, an underestimated royalty rate can offset an overestimated royalty base, and vice versa.<sup>54</sup>

b) The Apportionment Requirement: Putting the Reasonable in Reasonable Royalty

An important and reoccurring concept in hypothetical negotiations is apportionment.<sup>55</sup> In 1853, the United States Supreme Court decided two patent cases, *Livingston v. Woodworth* and *Seymour v. McCormick*, holding in both that damages in a patent case were to be limited to “actual gains and profits” associated with the infringement.<sup>56</sup> In other words, monetary awards were to be apportioned to the harm caused by infringement of a patent.<sup>57</sup>

While the holdings of *Livingston* and *Seymour* have never been overturned, courts have relaxed the apportionment requirement.<sup>58</sup> This decline in apportionment is evident in reasonable royalty awards that exceed profits gained through infringement.<sup>59</sup> Moreover, even though apportionment is

54. *See* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1338–39 (Fed. Cir. 2009) (“Simply put, the base used in a running royalty calculation can always be the value of the entire commercial embodiment, as long as the magnitude of the rate is within an acceptable range (as determined by the evidence).”).

55. *See generally* Bensen & White, *supra* note 25 (describing the history and importance of apportionment in patent law).

56. *Id.* at 8–9 (citing *Livingston v. Woodworth*, 56 U.S. 546, 555–59 (1853); *Seymour v. McCormick*, 57 U.S. 480, 485–91 (1853)).

57. *Id.* at 9.

58. *Id.* at 21–22.

59. *Id.* at 22; *see, e.g.*, *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1338 (Fed. Cir. 2008) (finding that a \$31.80 per unit reasonable royalty was not unreasonable, even though the infringer expected to profit only \$8.00 per unit).

embodied in the tenth and the thirteenth *Georgia-Pacific* factors, the other factors do not require apportionment.<sup>60</sup>

Another reason for the decline in apportionment is greater acceptance of the “entire market value” rule.<sup>61</sup> A patentee who argues for entire market value seeks all profits from an embodying device.<sup>62</sup> But despite their acceptance in theory of entire market value, courts have placed limits on its use, allowing patentees to win heightened damages under the rule only when the infringing patent is the “basis for customer demand” for the embodying device or “substantially create[s] the value of the component parts” in the embodying device.<sup>63</sup> This creates a significant hurdle for patentees wishing to use the rule as a basis for damages. For example, if a computer contains a microprocessor that infringes a patent, the patentee would try to argue that since the inclusion of the infringing microprocessors substantially drove sales of computers, then the “entire market value” rule should apply. The rule would then take the appropriate royalty base to be not just the additional revenue generated by inclusion of the component, but rather *all* the revenue generated by the sale of the whole computer system.<sup>64</sup> Critics of the entire market value rule have noted that it has been liberally applied<sup>65</sup> and that it ignores the value of the other components in an infringing device.<sup>66</sup>

Despite the decline in use, apportionment has again become a highly visible issue.<sup>67</sup> In 2007, both houses of Congress considered patent reform bills that required apportionment amongst other patent law reforms.<sup>68</sup> These bills would have required that awards be apportioned “only to that economic value properly attributable to the patent’s specific contribution over the prior art.”<sup>69</sup> However, the successful 2011 patent reform act, the Leahy-Smith

60. *See Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

61. Bensen & White, *supra* note 25, at 2, 18–19; *see, e.g.*, *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1580 (Fed. Cir. 1989) (upholding the trial court’s decision to allow a patentee to seek all profits associated with sales of heaters, where the infringing patent only covered foam included inside heaters).

62. *See Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1549 (Fed. Cir. 1995).

63. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011) (quoting *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009); *Rite-Hite*, 56 F.3d at 1549–50)).

64. *See Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279 (N.D.N.Y. 2009).

65. Landers, *supra* note 18, at 357–59.

66. Lemley, *supra* note 18, at 662–63.

67. *See Chris Marchese & Olga May, Runaway Patent Damages Awards: Is Statutory Reform on the Way?*, L.A. DAILY J., Aug. 13, 2010, at 7.

68. S. 1145 § 4, 110th Cong. (2007); H.R. 1908 § 5, 110th Cong. (2007).

69. S. 1145 § 4, 110th Cong. (2007); H.R. 1908 § 5, 110th Cong. (2007).

America Invents Act of 2011, does not include an apportionment requirement.<sup>70</sup>

c) The 25 Percent Rule of Thumb: The Intersection of Apportionment and Reasonable Royalty

Ignoring apportionment, courts prior to the *Uniloc* decision had created and applied the so-called “25 percent rule of thumb.” *Uniloc* has since struck down the rule as an impermissible method of determining the reasonable royalty, but it is still important to understand how the method works given the history of its application and the reason why *Uniloc* ultimately struck it down. This 25 percent rule provided that the profits from the royalty base should, regardless of the nature or importance of the patent, be distributed 25 percent to the patent owner and 75 percent to the creator of the embodying product.<sup>71</sup> This 25-percent-of-the-profit amount would be divided by the total revenue in order to generate a royalty rate.<sup>72</sup> In other words, the 25 percent rule of thumb was a shorthand method for generating a royalty rate in a reasonable royalty calculation.<sup>73</sup> Expressed algebraically, the 25 percent rule of thumb calculates the royalty as follows:

$$\text{RoyaltyRate} = (0.25 \times (\text{ProfitMargin} \times \text{RoyaltyBase})) \div \text{TotalRevenue}$$

But why 25 percent? Why not diminish the profit base to 10 percent or increase it to 50 percent? The answer is historical. Robert Goldscheider invented the rule of thumb and settled on 25 percent while working as an attorney in Switzerland in 1959.<sup>74</sup> Goldscheider, who at the time helped negotiate licensing agreements for large technology companies, “noticed a pattern between the 5% royalty rate paid by each of the licensees and their respective pre-tax profitability rates. Such profitability was approximately 20% in each case.”<sup>75</sup> Based on this, he concluded “that 5% was a healthy royalty rate, and [he] was interested to note that it usually constituted about 25% of the profitability ultimately achieved by the various licensees.”<sup>76</sup>

70. Leahy-Smith America Invents Act of 2011, Pub. L. No. 112-29, 125 Stat. 284 (codified as amended in scattered sections of 35 U.S.C.).

71. *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1313 (Fed. Cir. 2011).

72. *See id.* at 1312–13 (citing Robert Goldscheider et al., *Use Of the 25 Per Cent Rule in Valuing IP*, 37 LES NOUVELLES 123, 123 (Dec. 2002)).

73. *Id.*

74. Robert Goldscheider, *The Classic 25 Rule and the Art of Intellectual Property Licensing*, 6 DUKE L. & TECH. REV. 1, 7–10 (2011).

75. *Id.* at 9.

76. *Id.*

Although courts had tacitly accepted the 25 percent rule of thumb for determining a royalty rate, even prior to *Uniloc*, the rule was not without its critics.<sup>77</sup> They argued that (1) the rule ignores apportionment principles and the role of the patent in the embodying product;<sup>78</sup> (2) it ignores the identities and bargaining strengths of each party;<sup>79</sup> and (3) it ignores the reality of how negotiations actually occur.<sup>80</sup> In part to address these concerns, the Federal Circuit, when it decided *Uniloc*, increased its scrutiny of damages awards, rejected the 25 percent rule of thumb, and set the stage for a new method of determining the reasonable royalty.

## II. SHARPENING THE SWORD: *UNILOC* AND THE LAW

In 2009, perhaps motivated by the failure of Congress to pass patent reform or by the threat of Congress passing wide-reaching patent reform, the Federal Circuit began to closely scrutinize damage awards in patent cases.<sup>81</sup> The Federal Circuit's scrutiny focused on (1) maintaining apportionment to ensure that any reasonable royalty fits the economics of a transaction and the harm caused by infringement; and (2) choosing the most appropriate method to arrive at a royalty rate. The most recent product of this scrutiny is the court's rejection of the 25 percent rule of thumb in the *Uniloc* case.<sup>82</sup>

### A. CASE LAW SINCE 2009 REQUIRES AN APPORTIONED ROYALTY BASE

One of the first cases to take on the charge of apportionment, *Cornell University v. Hewlett-Packard Co.*, then Circuit Judge Rader, sitting by designation, held, in a 2009 judgment as a matter of law ("JMOL") motion, that the royalty base claimed by the plaintiff and based on sales of an infringing microprocessor, was incorrectly calculated because it failed to apportion the royalty base correctly.<sup>83</sup> The microprocessor at issue included a subcomponent that infringed a method patent.<sup>84</sup> This method patent covered the ordering of calculations within a microprocessor.<sup>85</sup> Because there was no

---

77. See *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1313 (Fed. Cir. 2011).

78. *Id.*

79. *Id.*

80. *Id.* at 1313–14.

81. See Roy Epstein & Paul Malherbe, *Reasonable Royalty Patent Infringement Damages After Uniloc*, AIPLA QUARTERLY, Winter 2011, at 4–7.

82. *Uniloc*, 632 F.3d at 1320.

83. 609 F. Supp. 2d 279, 283.

84. *Id.*

85. Specifically, the patent covered "multiple and out-of-order computer processor instructions in a single machine clock cycle. This technique employs a dispatch stack and

retail market for the sub-component, it could not be priced, and thus made a poor royalty base.<sup>86</sup> Faced with this dilemma, Judge Rader held that the correct royalty base was the “smallest salable infringing unit with close relation to the claimed invention—namely the [micro]processor itself.”<sup>87</sup> Yet the patentee had not selected the smallest salable unit, the microprocessor, as its royalty base. Instead, the patentee had selected a motherboard that included the microprocessor as its royalty base.<sup>88</sup> The patentee argued to no avail that the overestimation of the royalty base could be offset by a lower royalty rate.<sup>89</sup> Judge Rader flatly rejected this logic, stating that “[t]his argument rings hollow as a threshold matter” and “is legally incorrect.”<sup>90</sup>

A few months later, the Federal Circuit also underscored the importance of apportioning the royalty base in *Lucent Technologies, Inc. v. Gateway, Inc.*<sup>91</sup> In *Lucent*, then Chief Judge Michel, writing for a unanimous court, rejected a reasonable royalty jury award of \$357,693,056.18 because the award was not supported by “substantial evidence.”<sup>92</sup> The over a third of a billion dollar reasonable royalty award was the result of a hypothetical negotiation, over a patent that covered a “date picker” computer algorithm.<sup>93</sup> Microsoft’s Outlook, Money, and Windows Mobile products were found to infringe this

---

precedence count memory. By achieving multiple and out-of-order processing, this invention enhances the throughput of processors with multiple functional units.” *Id.*

86. *See id.*

87. *Id.* at 288.

88. *Id.* at 287. Here, the patentee was seeking the largest possible royalty base: the entire market value. The entire market value allows for the recovery of the value of the whole embodying product if the infringing component meets the following requirements:

- (1) the infringing components must be the basis for customer demand for the entire machine including the parts beyond the claimed invention;
- (2) the individual infringing and non-infringing components must be sold together so that they constitute a functional unit or are parts of a complete machine or single assembly of parts; and
- (3) the individual infringing and non-infringing components must be analogous to a single functioning unit.

*Id.* at 286 (citation omitted).

89. *Id.* at 289.

90. *Id.*

91. 580 F.3d 1301 (Fed. Cir. 2009).

92. *Id.* at 1335.

93. *See id.* at 1308, 1338. A date picker allows a computer user to select a date by clicking on its visual representation in a calendar. *Id.* at 1317 (“[A date picker] displays a monthly calendar as a grid of numbered dates, along with graphical controls that allow the user to scroll to adjacent months or skip directly to a different month and year. Once the user defines a date with the tool, the software enters the numerical day, month, and year into the corresponding field in the appointment form.”).

patent because they incorporated a virtual calendar that incorporated a date picker.<sup>94</sup> The patentee originally claimed that the appropriate royalty base was a computer with Microsoft's infringing software installed on it.<sup>95</sup> This royalty base was rejected as an unacceptable overestimation.<sup>96</sup> In attempt to better apportion the royalty base, the patentee proposed that Microsoft's Outlook, Money, and Windows Mobile were appropriate royalty bases.<sup>97</sup> However, the decrease in the royalty base was accompanied by an increase in the royalty rate that left the total reasonable royalty unaffected.<sup>98</sup> This unchanged reasonable royalty was legally unacceptable to the Federal Circuit.<sup>99</sup>

At first blush, the legal threads of *Cornell* and *Lucent* seem to be parallel in holding that a royalty base must be narrowly apportioned, based on the "smallest salable infringing unit," and not over-estimated by using the full value of an infringing product when an infringing feature constitutes merely a small part of a complex piece of hardware or software. But closer examination of the two decisions reveals a problematic knot. In *Lucent*, Chief Judge Michel remarked that the royalty base could still be over-estimated "as long as the magnitude of the [royalty] rate is within an acceptable [decreased] range."<sup>100</sup> This is in stark contrast to then Circuit Judge Rader's holding in *Cornell*: that an increased royalty base could not offset an under-estimated royalty rate.<sup>101</sup>

---

94. *Id.* at 1317.

95. *Id.* at 1338.

96. *Id.*

97. *Id.*

98. *Id.*

99. *Id.*

100. *Id.* at 1339. Here, the patentee was again seeking the largest possible royalty base, through the entire market value rule.

101. When asked in an interview about this apparent inconsistency, Judge Michel responded:

The *Lucent* opinion focused on what market values are available, and as I recall that case there was really no subassembly that had a market value so that the only accurate number that was available was the sales price of the total device times the number of sales of that device made. Now . . . in *Cornell* there seems to be a suggestion that you can't use an overall sales price of a device where the patent only covers only something less than the total device. But I think it depends on, number one, if there is any other number that's available that's provable and proven and, number two, it depends on whether there is a proper discounting that will commensurate with the value added by the part of the total product that is covered by the patent.

Paul C. Michel, Former C.J. Fed. Cir., Remarks at *Calculating Damages in a Post Uniloc World* Panel (Mar. 1, 2011).

To summarize, pre-*Uniloc* caselaw already insisted on a royalty base that is apportioned to the harm caused by infringement. In a complex system, such as a computer, this is accomplished by restricting the royalty base to the “smallest salable infringing unit.” But one question that remained was whether an overestimation in the royalty base can be offset by an appropriate reduction in the royalty rate.<sup>102</sup>

B. CASE LAW SINCE 2009 HAS ALSO HEIGHTENED EVIDENCE REQUIREMENTS FOR DAMAGE CALCULATIONS

Numerous Federal Circuit cases since 2009 have emphasized the need for more specific and factual evidence in damage calculations.<sup>103</sup> In *Lucent*, in addition to rejecting the proposed royalty base, the Federal Circuit rejected some evidence used to calculate the reasonable royalty award.<sup>104</sup> In particular, the Federal Circuit noted that licensing agreements within the same industry, alone, would not suffice as comparable unless the relevant technologies were comparable.<sup>105</sup> Instead, a more nuanced and detailed analysis that looks at the individual components and financial structuring of a licensing agreement is required.<sup>106</sup>

After *Lucent*, the Federal Circuit continued to increase the rigor of required damage analysis in *ResQNet.com, Inc. v. Lansa, Inc.*<sup>107</sup> and *Wordtech Systems, Inc v. Integrated Networks Solutions, Inc.*<sup>108</sup> In *ResQNet.com*, the Federal Circuit held that licensing agreements to provide “finished software products and source code, as well as services such as training, maintenance, marketing, and upgrades” had no “link” to a hypothetical negotiation concerning

102. Compare *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 289 (N.D.N.Y. 2009) (holding that an underestimated royalty rate is “legally incorrect”), with *Lucent*, 580 F.3d at 1339 (holding that an underestimated royalty rate is acceptable “as long as the magnitude of the [royalty] rate is within an acceptable [decreased] range”).

103. See, e.g., *Lucent*, 580 F.3d at 1335 (rejecting an award because the “jury’s damages award is not supported by substantial evidence, but is based mainly on speculation or guesswork”).

104. A number of different methods for calculating the reasonable royalty had been proposed at trial. See *id.* at 1323–40.

105. *Id.* at 1329 (“[A] lump-sum damages award cannot stand solely on evidence which amounts to little more than a recitation of royalty numbers, one of which is arguably in the ballpark of the jury’s award, particularly when it is doubtful that the technology of those license agreements is in any way similar to the technology being litigated here.”).

106. See *id.* at 1325–32. Accordingly, a licensing agreement that licenses a pool of patents is not indicative of the value of an individual patent that has little resemblance to any patent in the pool. See *id.* at 1328.

107. 594 F.3d 860 (Fed. Cir. 2010).

108. 609 F.3d 1308 (Fed. Cir. 2010).

software that controls a computer's user interface.<sup>109</sup> The court succinctly noted that for a comparable license to be relevant, any "technological and economic differences" must be accounted for.<sup>110</sup> And in *Wordtech*, the Federal Circuit rejected a hypothetical royalty that was based, in part, on averaging the cost of two comparable licenses together.<sup>111</sup> Thus, prior to *Uniloc*, the Federal Circuit had already increased the evidentiary threshold required to prove damages.<sup>112</sup>

C. *UNILOC*: REJECTION OF THE 25 PERCENT RULE AND HEIGHTENED SCRUTINY OF THE ROYALTY RATE

Against this backdrop of increased scrutiny, *Uniloc's* rejection of the 25 percent rule of thumb is not surprising.<sup>113</sup> In the *Uniloc* case, Microsoft was found to have infringed Uniloc's '216<sup>114</sup> software registration patent with its Production Activation feature in Microsoft Windows and Microsoft Office.<sup>115</sup> At issue before the Federal Circuit was the validity of a \$388 million reasonable royalty award that a jury had awarded the patentee, Uniloc, at trial.<sup>116</sup> Defending this sum, Uniloc's expert witness determined from internal Microsoft documents that the value of the Product Activation feature was \$10 per copy of Microsoft Windows or Microsoft Office.<sup>117</sup> Using the 25 percent rule of thumb, the expert concluded that Uniloc would retain 25 percent of this profit, or \$2.50 per Product Activation feature.<sup>118</sup> \$2.50 represented 2.9 percent of the total revenue per sale of Microsoft Windows and Microsoft Office; in other words the royalty rate was 2.9 percent.<sup>119</sup> Before continuing, the expert applied the *Georgia-Pacific* factors, found them to offset each other, and as a result, the factors did not change

---

109. *ResQNet.com*, 594 F.3d at 870.

110. *Id.* at 873.

111. *Wordtech*, 609 F.3d at 1322.

112. *See e.g.*, *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301 (Fed. Cir. 2009).

113. *See Landers, supra* note 18, at 333–34 (noting that while the rule of thumb did have supporters it faced significant criticism for being economically unsound).

114. U.S. Patent No. 5,490,216 (filed Sep. 21, 1993).

115. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1296–97 (Fed. Cir. 2011). Product Activation is likely familiar to many (frustrated) Microsoft Windows and Microsoft Office users. This feature required a user, after thirty days of use, to enter a twenty-five digit alphanumeric key. This key was distributed with either Microsoft Windows or Microsoft Office, but had a knack for easily being lost.

116. *Id.* at 1311.

117. *Id.*

118. *Id.*

119. *Id.*



the royalty rate.<sup>120</sup> The expert witness then concluded that the quantity of infringement was 225,978,721 or the number of new copies of Microsoft Windows and Office sold.<sup>121</sup> Arguing that the entire market value rule applied, the expert witness found the total royalty base to be \$19.28 billion, or the total revenue of Microsoft Windows and Office.<sup>122</sup> This is equivalent to \$85.13 per copy of Microsoft Windows or Office.<sup>123</sup> Uniloc's expert witness then calculated a reasonable royalty of \$564,946,803.<sup>124</sup> This figure can be expressed algebraically as:

$$\begin{aligned} \text{ReasonableRoyalty} &= (\text{RoyaltyBase} \times \text{RoyaltyRate}) \times \text{QuantityOfInfringement} \\ &= (85.31 \times .029) \times 225,978,721 \approx \$564,946,803. \end{aligned} \supseteq 125$$

Even though the jury awarded Uniloc less than the \$565 million its expert calculated, the Federal Circuit concluded that the jury award of \$388 million was based on the expert's faulty calculations.<sup>126</sup> Defendant Microsoft had unsuccessfully objected to the expert's testimony and use of the 25 percent rule of thumb in limine because of the *Daubert* case.<sup>127</sup> In *Daubert*, the Supreme Court held that a trial court could only admit expert testimony if the testimony was pertinent to the case at hand.<sup>128</sup> Specifically, the Supreme Court concluded that "[e]xpert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful" and not admissible under Federal Rule of Evidence 702.<sup>129</sup> While *Daubert* focused on expert testimony that was scientific in nature,<sup>130</sup> the Court, in *Kumho Tire*, expanded the scope of its ruling to all expert testimony, not just scientific expert testimony.<sup>131</sup> Following the jury award, Microsoft appealed the expert's use of the 25 percent rule of thumb as well as the jury's reasonable royalty award.<sup>132</sup>

120. *Id.*

121. *Id.*

122. *Id.* at 1318.

123. Dividing 19,280,000,000 by 225,978,721 infringing units results in a per-unit royalty base of \$85.31.

124. *Uniloc*, 632 F.3d at 1311. This sum is greater than the amount awarded by the jury at trial.

125. *Id.* The product of 85.31, .029, and 225,978,721 is slightly less than 564,946,803. This is because of rounding in the per-unit base of 85.31 to two significant digits.

126. *Id.* at 1311 ("The jury here awarded Uniloc \$388 million, based on the testimony of Uniloc's expert, Dr. Gemini. Dr. Gemini opined that damages should be \$564,946,803.").

127. *Id.* at 1300.

128. *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 589–91 (1993).

129. *Id.* at 591.

130. *Id.* at 582–84.

131. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147–51 (1999).

132. *Id.*

Relying on this legal standard, the *Uniloc* court rejected the 25 percent rule of thumb.<sup>133</sup> The *Uniloc* court found that the rule of thumb's generalized calculation ignored the facts and issues that might shape the calculation of a royalty rate in a specific case.<sup>134</sup> The court unequivocally held that "as a matter of Federal Circuit law[,] . . . the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation."<sup>135</sup> Moreover, the court concluded that "[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."<sup>136</sup> Thus, the Federal Circuit concluded that Uniloc's expert testimony should have been excluded and the jury award, based on this testimony, nullified.<sup>137</sup>

Equally relevant, the Federal Circuit rejected the use of the entire market value in the *Uniloc* case and held that an overestimated royalty base could not be offset by an appropriately decreased royalty rate. The *Uniloc* court noted that an overestimated royalty base could not be corrected for "simply by asserting a low enough royalty rate."<sup>138</sup> In other words, Chief Judge Rader's *Cornell* analysis trumped Chief Judge Michel's *Lucent* analysis.<sup>139</sup>

### III. WIELDING THE SWORD: CALCULATING DAMAGES AFTER *UNILOC*

When the *Uniloc* court definitively struck down the 25 percent rule of thumb, it failed to provide guidance on what metrics should replace it.<sup>140</sup> The only insight provided was 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."<sup>141</sup> However, this guidance has hardly been enough; uncertainty in how to calculate a royalty rate coupled with required

---

133. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1315 (Fed. Cir. 2011).

134. *Id.*

135. *Id.*

136. *Id.*

137. *Id.* at 1317–18.

138. *Id.* at 1320.

139. *Compare id.*, with *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1339 (Fed. Cir. 2009) (holding that an underestimated royalty rate is acceptable "as long as the magnitude of the [royalty] rate is within an acceptable [decreased] range").

140. Despite the Federal Circuit's unequivocal language, some courts may still be utilizing the rule of thumb. See *Is "The 25 Percent Rule" Still Alive After Uniloc?*, PATENT LAWYER BLOG (Sep. 27, 2011), <http://patentlaw.jmbm.com/2011/09/is-the-25-percent-rule-still-a.html>.

141. *Uniloc*, 632 F.3d at 1317.

apportioning of the royalty base and stricter evidentiary standards for damages has caused trial courts to struggle in calculating reasonable royalties.<sup>142</sup>

This Note argues that one way to cut through this uncertainty, and determine a reasonable royalty that satisfies the increased scrutiny of *Uniloc* and its predecessors, is to follow the four-step method the *Lucent* case (“*Lucent II*”) used on remand.<sup>143</sup> The method proceeds in four steps: (1) correctly apportion the royalty base by finding the appropriate “smallest salable unit;” (2) determine the profit margin on that base; (3) multiply the profit margin by the number of affected units to find a ceiling on a reasonable royalty award; and (4) divide the ceiling between the patentee and the infringer according to a profit division factor based on business realities and other negotiating factors. The amount divided to the patentee is the reasonable royalty. Or expressed algebraically:

$$\text{ReasonableRoyalty} = (\text{ApportionedRoyaltyBase} \times \text{ProfitMargin}) \times \text{NumberOfAffectedUnits} \times \text{ProfitDivisonFactor}$$

This Part outlines the *Lucent II* court’s method for calculating a reasonable royalty and articulates why this method is a practical and effective means of cleaving the knotted question of calculating damages and is likely to withstand *Uniloc* scrutiny.

#### A. STEP ONE: CORRECTLY APPORTION THE ROYALTY BASE

*Uniloc* and its predecessors demand that any calculation of damages include a correctly apportioned royalty base.<sup>144</sup> *Uniloc*’s implicit endorsement of Chief Judge Rader’s methodology in *Cornell* indicates that when there is no direct market for the infringing subcomponent, the appropriate royalty base

142. See, e.g., *Lucent II*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*1 (S.D. Cal. Nov. 10 2011). (“This case illustrates the difficulty of properly valuing a small patented component, without a stand-alone market, within a larger program.”); see also Thomas Cotter, *Four Principles for Calculating Reasonable Royalties in Patent Infringement Litigation*, 27 SANTA CLARA COMPUTER & HIGH TECH L.J. (forthcoming 2011) (“Whether cases such as *Lucent* and *Uniloc* will stem the calls for legislative reform—and whether future Federal Circuit panels will adhere to the economic logic of these decisions—nevertheless remains to be seen.”).

143. See *Lucent II*, 2011 WL 5513225. As of December 2011, this ruling is being appealed to the Federal Circuit. However, shortly after being filed, the appeal was dismissed. *Lucent Techs., Inc. v. Microsoft Corp. (Lucent III)*, No. 2012-1081, 2012 WL 762996 (Fed. Cir. Jan. 18, 2012).

144. See, e.g., *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1320 (Fed. Cir. 2011); *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 289 (N.D.N.Y. 2009).

is the smallest salable unit that includes the infringing subcomponent.<sup>145</sup> *Cornell's* and *Uniloc's* prohibition on over-estimation of the royalty base emphasizes the significance of a correctly apportioned royalty base.<sup>146</sup>

Correctly apportioning the royalty base is key to determining a correct royalty rate and reasonable royalty award. The royalty base affects both the royalty rate and the overall reasonable royalty because it determines what is being bargained for.<sup>147</sup> For example, the royalty rate on which two negotiating entities eventually agree when licensing a whole computer (the computer being the royalty base) might be significantly less than the royalty rate when licensing a computer microprocessor (the chip being the royalty base) because of greater competition in the computer market than in the microprocessor market.<sup>148</sup> Making the correct determination at this stage is critical because selection of the royalty base affects the application of several of the *Georgia-Pacific* factors, which are in turn used to adjust royalty rates.<sup>149</sup> Finally, since a reasonable royalty is the product of a royalty base and a royalty rate, the more accurate the royalty base, the more accurate the product, the reasonable royalty.<sup>150</sup>

The *Lucent II* court's analysis focuses much of its attention on apportioning the correct royalty base. Recall, the *Lucent* case centered on a date picker patent and was remanded for a new trial on damages.<sup>151</sup> At the conclusion of the new damages trial, the jury awarded the patentee \$70 million for infringement of the date picker algorithm in Microsoft Outlook.<sup>152</sup> In her post jury-award JMOL analysis, District Judge Marilyn Huff focused her apportionment analysis on determining the value of the smallest salable unit, which was Microsoft Outlook.<sup>153</sup>

In an attempt to accurately apportion the value of the royalty base, Judge Huff laboriously estimated the revenue generated by Microsoft Outlook. This was not an easy task because Microsoft usually sells Outlook as part of its Office suite—only a quarter of a million stand-alone copies of Microsoft

---

145. See *Cornell*, 609 F.Supp.2d at 288. It should be noted that the smallest salable unit itself could be an overestimation of the royalty base.

146. *Id.*; *Uniloc*, 632 F.3d at 1320.

147. See *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1338 (Fed. Cir. 2009).

148. See *id.* at 1332–35.

149. See *id.* (specifically, factors eight, eleven, twelve, and thirteen).

150. See Landers, *supra* note 18, at 323–24.

151. *Lucent*, 580 F.3d at 1340.

152. See *Lucent II*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*1 (S.D. Cal. Nov. 10, 2011). While Microsoft Money and Windows Mobile also infringed on the date picker algorithm, “the vast majority of the claimed damages” focused on Microsoft Office.” *Id.*

153. See *id.*

Outlook were sold, compared with over 100 million copies of Microsoft Outlook sold as part of Microsoft Office.<sup>154</sup> The patentee tried to argue that each sale of Microsoft Office generated \$67 of revenue from Microsoft Outlook,<sup>155</sup> while Microsoft argued that each sale of Office generated only \$13.45 in revenues attributable to Outlook.<sup>156</sup> The court rejected the plaintiff's apportionment scheme, reasoning that it unrealistically valued the other Microsoft Office programs—Word, Excel, and PowerPoint—at only \$31.<sup>157</sup> The court similarly rejected Microsoft's apportionment scheme as undervaluing Microsoft Outlook.<sup>158</sup> Ultimately, the Court found that the appropriately apportioned royalty base was \$24.55, or approximately a quarter of Microsoft Office's revenue.<sup>159</sup>

The level of detail *Lucent II* exhibited in determining the royalty base underscores the necessity of apportionment. Recall, at the first trial, the patentee had argued that the correct royalty base was a computer loaded with Microsoft's software.<sup>160</sup> Now, even though Microsoft Outlook was rarely sold without Microsoft Office, there was no disagreement that it was the smallest salable unit and the appropriate royalty base; rather the disagreement in *Lucent II* was only over the value of Microsoft Outlook.<sup>161</sup>

Thus the first step in generating an accurate reasonable royalty is to generate an accurate royalty base.<sup>162</sup> Apportionment is crucial; only the revenue associated with the smallest salable unit that contains the infringing

---

154. *Id.* at \*4, \*9. 241,800 stand-alone copies of Microsoft Outlook were sold. 109.5 million copies of Microsoft Outlook were sold with Microsoft Office. *Id.* at \*1.

155. *Id.* at \*5 (“[Patentee’s damages expert] testified that his use of \$67 as the value for Outlook sold as part of Office was corroborated by a 2010 Microsoft pricing document. The internal document showed that the difference in retail prices between Office with Outlook (\$279.99) and Office without Outlook (\$149.99) was \$130, roughly the retail price of stand-alone Outlook at that time (\$139.99).”).

156. *Id.* at \*10.

157. *Id.* at \*11.

158. *Id.* at \*11.

159. *Id.* (“The Court concludes that the evidence supports, at most, allocating 25% of the Office revenue to Outlook, representing one-fourth of Office products—Outlook, Word, Excel, and PowerPoint. This allocation yields a per-unit revenue attributable to Outlook within Office of \$24.55 by multiplying the \$98.19 per unit revenue of Outlook by 25%.”).

160. *See* *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1338 (Fed. Cir. 2009).

161. *See* *Lucent II*, 2011 WL 5513225, at \*4–6.

162. *See, e.g.*, *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 288 (N.D.N.Y. 2009).

product may be considered.<sup>163</sup> Significant evidence will be required to demonstrate this revenue stream.<sup>164</sup>

B. STEP TWO: DETERMINE THE PROFIT-ADJUSTED ROYALTY BASE

The next step is to determine what amount of the total revenue associated with the royalty base is profit.<sup>165</sup> This is determined by adjusting the royalty base by the appropriate profit margin:<sup>166</sup>

$$\text{ProfitAdjustedRoyaltyBase} = \text{ApporitionedRoyaltyBase} \times \text{ProfitMargin}$$

Evidence of the infringer's profit margin should be readily discoverable. Since the royalty base is based on a salable unit, internal corporate documents likely exist as to the profitability of the unit. In both *Uniloc* and *Lucent II* such internal documents revealed those profit margins.<sup>167</sup>

There are a number of factors to consider in calculating profit margins. Depending on the nature of the infringement, profit margins increase.<sup>168</sup> This may occur if infringement leads to an increase in profits<sup>169</sup> or decrease in costs<sup>170</sup> for the infringer. Federal Circuit law indicates that a patentee can recover these internal savings or profits even if there are no additional sales.<sup>171</sup> To compensate for these savings, the profit margin rate should be appropriately adjusted. However, in instances where infringement affects

---

163. *Id.*

164. *See, e.g., Lucent II*, 2011 WL 5513225, at \*10–11.

165. *Id.* at \*5.

166. While Federal Circuit law does not cap reasonable royalty awards at the profits derived from infringement, post *Uniloc*, it is still appropriate to reduce the royalty base by the profit margin. *See id.* at \*5. *Golight, Inc. v. Wal-Mart Stores, Inc.* holds that a reasonable royalty award can be in excess of the profits derived from the infringing product. 355 F.3d 1327, 1338 (Fed. Cir. 2004). But recall, the 25 percent rule of thumb divided *profits* not revenue. Goldscheider, *supra* note 74, at 7–10. Given the Federal Circuit's emphasis on apportionment and accurately calculating damages, it seems unlikely that a replacement for the 25 percent rule of thumb would expand liability beyond profits derived from infringement. Moreover, this Note is only proposing *one* valid method for calculating a reasonable royalty post *Uniloc*. Other valid methods might well include calculations in excess of profit.

167. *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1311 (Fed. Cir. 2011) (showing that the royalty base had already been adjusted by the profit margin); *Lucent II*, 2011 WL 5513225, at \*5.

168. *See, e.g., Uniloc*, 632 F.3d at 1311.

169. *See id.*

170. *See, e.g., Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1080 (Fed. Cir. 1983).

171. *See id.* at 1080 (holding that here decreased manufacture costs due to infringement were cause for a reasonable royalty, even though infringement did not lead to more total sales).

sales and does not affect internal costs, the profit margin should not be adjusted and instead should remain at the regular profit margin for the royalty base.<sup>172</sup>

Once a profit margin is determined, the apportioned royalty base should be multiplied by the profit margin to produce the profits associated with the royalty base or the profits adjusted royalty base. Thus in *Lucent II*, the court adjusted the \$24.55 royalty base by a 76.2 percent profit margin.<sup>173</sup> The profit-adjusted royalty base was therefore \$18.71.<sup>174</sup>

C. STEP THREE: DETERMINE THE TOTAL PROFIT-ADJUSTED ROYALTY BASE

The next step is to multiply the profit-adjusted royalty base by the number of affected units to determine the total profit-adjusted royalty base. This calculation takes a per-salable-unit metric, the profit-adjusted royalty base, and multiplies it by the total number of affected units:

$$\text{TotalProfitAdjustedRoyaltyBase} = \text{ProfitAdjustedRoyaltyBase} \times \text{NumberOfAffectedUnits}$$

However, two questions arise from this equation. First, what is the appropriate method for measuring the number of affected units? Second, why should the calculation reflect the number of affected units instead of the total number of infringing units?

1. *How To Measure the Number of Affected Units*

Because of the different ways that infringement can change the economics of a product sale, there are two ways to measure the number of affected units. Infringement may either increase demand for the infringing product, or it may change the infringer's costs or profits of selling the product with the infringing feature.<sup>175</sup> For example, infringement in *Lucent II* increased the sales of Microsoft's Outlook. Meanwhile infringement in *Uniloc* drove no additional sales, but added ten dollars in value to each sale of Microsoft Windows and Microsoft Office by reducing the ease of making

---

172. See *Lucent II*, 2011 WL 5513225, at \*5 (stating that here infringement only increased sales, thus the profit margin used was not adjusted).

173. *Id.*

174. The *Lucent II* court actually reduced the base at a later stage. By the associative property of multiplication, where the reduction occurs does not affect the final result. For simplicity's sake, the reduction is made in the second step. See *id.* at \*11–12.

175. Compare *id.* at \*4, with *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1296–97 (Fed. Cir. 2011).

illicit copies.<sup>176</sup> These scenarios require different analysis of the number of affected units.

a) Measuring the Number of Affected Units when Infringement Increases Demand

When infringement increases demand of an infringing unit, a useful tool to measure that demand is a consumer survey.<sup>177</sup> Consumer surveys are widely used in other fields of intellectual property litigation, especially trademark disputes, where surveys of consumers' perceptions are routine in proving secondary meaning.<sup>178</sup> In the patent context, courts have consistently used surveys in determining whether consumer demand supports the use of the entire market value rule. In fact, surveys are so crucial to proving consumer demand that in *Cornell*, the lack of a survey measuring demand caused then Judge Raider, sitting by designation, to reject the use of the entire market value.<sup>179</sup> Moreover, in *i4i Ltd. Partnership v. Microsoft Corp.*, the Federal Circuit held that a consumer survey measuring consumer demand via usage studies was admissible under *Daubert*.<sup>180</sup>

However, survey authors must be sure to write surveys that illuminate consumer demand, not preference. In *Fractus S.A. v. Samsung Electronics Co., Ltd.*, a patentee commissioned two surveys to determine the consumer value of a cellular telephone antenna.<sup>181</sup> The patentee claimed that the antenna on the defendant's cellular telephones violated its patented multi-band, internal antenna technology.<sup>182</sup> The two consumer surveys concluded "that over 90% of respondents prefer an internal cell phone antenna versus an external antenna" and that "an internal antenna contributes between \$16.02 and \$29.96 to the value of a cell phone."<sup>183</sup> However, this information was

---

176. *Uniloc*, 632 F.3d at 1296–97.

177. See, e.g., *Lucent II*, 2011 WL 5513225, at \*5.

178. See, e.g., *Zatarains, Inc. v. Oak Grove Smokehouse, Inc.*, 698 F.2d 786, 795 (5th Cir. 1983) ("The authorities are in agreement that survey evidence is the most direct and persuasive way of establishing secondary meaning.").

179. *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 288 (N.D.N.Y. 2009) ("Cornell did not offer a single demand curve or any market evidence indicating that Cornell's invention drove demand for bricks. The absence of such evidence is unavoidable when hypothetical revenues unrelated to actual product sales form the foundation of a royalty base proffer. Reliance on hypothetical sales or estimated revenues is entirely permissible in connection with a reasonable royalty analysis.").

180. *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 855–56 (Fed. Cir. 2010) *cert. granted*, 131 S. Ct. 647, (2010) *aff'd*, 131 S. Ct. 2238 (2011).

181. No. 6:09-CV-203-LED-JDL, slip op. at 1–3 (E.D. Tex. Apr. 29, 2011).

182. *Id.* at 2.

183. *Id.* at 1–2.



excluded from trial because the surveys measured consumer preference, not demand.<sup>184</sup>

Following this trend, the patentee in *Lucent II* created a consumer survey that accurately measured the demand created by the inclusion of the infringing date picker in Microsoft Outlook. Specifically, the patentee's survey revealed that 7 percent of all purchasers who used the date picker feature would not have purchased Microsoft Outlook if it did not contain a date picker feature.<sup>185</sup> This 7 percent rate was multiplied by 43 percent, or the percentage of Microsoft Outlook users who revealed in the survey that they used the date picker feature.<sup>186</sup> The result was a 3 percent rate, which represented the number of additional sales generated by the inclusion of the date picker.<sup>187</sup> A 3 percent rate of additional sales resulted in 3.3 million more sales of Microsoft Outlook.<sup>188</sup>

But surveys are not the only way to measure demand. Any accurate, based in fact, measurement of demand will suffice.<sup>189</sup> The requirement of any instrument, survey or not, is that it measures the demand caused by infringement.

b) Measuring the Number of Affected Units when Infringement Changes Cost Structures

Infringement does not always drive demand. Instead it can change cost structures by increasing profits<sup>190</sup> or decreasing costs of all units sold.<sup>191</sup> In these scenarios, the number of affected units is the total number of infringing units.<sup>192</sup> This makes intuitive sense because a change in cost structure affects *all* units.

Regardless of how the number of affected units is measured, in step three, the number of affected units should be multiplied by the profit-

---

184. *See id.*

185. *Lucent II*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*4–5 (S.D. Cal. Nov. 10 2011).

186. *Id.*

187. *Id.*

188. *Id.*

189. *See* *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 288 (N.D.N.Y. 2009).

190. *See, e.g., Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1311 (Fed. Cir. 2011) (finding that infringement caused Microsoft Windows to be more profitable).

191. *See, e.g., Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1080 (Fed. Cir. 1983) (finding that infringement caused decrease in cost).

192. *See generally Uniloc*, 632 F.3d at 1292 (finding that the size of the royalty base was the total of all sales of Microsoft Windows and Microsoft Office—225,978,721 units).

adjusted royalty base, derived in step two, to generate a measure of the total profit-adjusted royalty base. In *Lucent II*, the court multiplied the \$18.71 profit-adjusted royalty base by 3.3 million, which resulted in a \$52.6 million total profit-adjusted royalty base—after being reduced for foregone profits.<sup>193</sup> A total profit-adjusted royalty base, such as the \$52.6 million in *Lucent II*, represents a ceiling on a reasonable royalty award.<sup>194</sup>

2. *Why Examining the Number of Affected Units, Instead of the Total Number of Infringing Units, is Appropriate*

The court in *Lucent II* based its damages calculations on the number of sales motivated by infringement—not the total number of infringing units.<sup>195</sup> Specifically, the court determined that there were 3,300,000 additional sales because of the infringement<sup>196</sup> and based its damages calculations on this number, not on the total 109,500,00 copies of Microsoft Outlook that nonetheless included infringing source code.<sup>197</sup> This means that Microsoft was penalized zero dollars for violating the date picker patent on 106,200,000 million copies of Microsoft Outlook. This result seems at odds with the black letter law “that whoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes a patent.”<sup>198</sup>

But inspection of case law suggests this limitation is not abnormal. First, Chief Judge Rader’s definition of royalty base in *Cornell* limits the royalty base to the “revenue pool implicated by the infringement.”<sup>199</sup> Sales unaffected by infringement do not affect or implicate revenue. Second, rejection of entire market value analysis in *Cornell*, *Lucent*, and *Uniloc* suggest a sustained effort to award damages commensurate to the harm caused by infringement.<sup>200</sup> Third, limiting damages calculations to the number of affected units is consistent with the historical trend of apportionment detailed in *Livingston v. Woodworth* and *Seymour v. McCormick*, which limits damages to “actual gains and profits” associated with the infringement.<sup>201</sup>

---

193. See *Lucent II*, 2011 WL 5513225, at \*4–5, \*11–12.

194. *Id.* at \*11–12.

195. See *id.* at \*4.

196. *Id.*

197. See *id.*

198. 35 U.S.C. § 271(a) (2006) (emphasis added).

199. *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 286 (N.D.N.Y. 2009).

200. See *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1320 (Fed. Cir. 2011); *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1338 (Fed. Cir. 2009); *Cornell*, 609 F. Supp. 2d at 289.

201. *Livingston v. Woodworth*, 56 U.S. 546, 559 (1853); *Seymour v. McCormick*, 57 U.S. 480 (1853).

D. STEP FOUR: DIVIDE THE TOTAL ADJUSTED ROYALTY BASE  
AMONGST THE PARTIES

The final step in calculating an appropriate reasonable royalty is to analyze the hypothetical negotiation in order to divide the total profit-adjusted royalty base among the parties. Given the nature of negotiation, it is unlikely that negotiation factors such as the identities and bargaining strengths of each party can ever be reduced to a formula or heuristic.<sup>202</sup> Therefore, proper division of the total profit-adjusted royalty base likely requires the use of expert testimony analyzing the bargaining positions and strengths of each party in a hypothetical negotiation.<sup>203</sup>

Because the total profit-adjusted royalty base represents a ceiling on the possible damages award, the defendant in *Lucent II* at most faced \$52.6 million damage award.<sup>204</sup> Compare this with the initial district court award of \$357 million.<sup>205</sup> Careful apportionment and calculation of the royalty base, as described in steps one through three, *supra*, capped the damages associated with the maximum royalty rate at a dollar figure nearly *one-seventh* the previous amount.<sup>206</sup> Also striking is that using the method described greatly reduces the need to rely on expert witness testimony because it focuses on verifiable metrics rather than making subjective assertions about comparable licensing agreements.

While expert testimony is likely to vary from case to case under the method described, expert witnesses will likely focus on the negotiation forces between the two parties rather than drawing tenuous comparisons with existing comparable agreements. For example, in *Lucent II* the court allowed the patentee to offer an expert witness testifying to the “business realities” of a hypothetical negotiation and focusing on the “parties’ various interests and alternatives to reaching an agreement.”<sup>207</sup> The defendant similarly offered an expert witness who roughly used the same interests and alternatives

---

202. *See Uniloc*, 632 F.3d at 1313 (noting criticisms of the 25 percent rule of thumb formula).

203. *See Cotter*, *supra* note 142 (“One way out of this dilemma would be for courts to permit an expert witness to testify (where appropriate) concerning the amount the willing licensee would have paid, based in part on the expert’s analysis of the existence and strength of other patents potentially reading on the end product.”).

204. *Lucent II*, No. 07-CV-02000-H (CAB), 2011 WL 5513225, at \*11–12 (S.D. Cal. Nov. 10 2011).

205. *Lucent*, 580 F.3d at 1308.

206. *Lucent II*, 2011 WL 5513225, at \*11–12 (the final award was \$26.3 million).

207. *Id.* at \*6.

paradigm.<sup>208</sup> Yet, the two experts reached vastly different conclusions. Persuaded by neither expert, the judge seemingly split the difference, awarding half of the total profit-adjusted royalty base, \$26.3 million, to the patentee.<sup>209</sup> Splitting the difference or awarding each side fifty percent of the total adjusted royalty is equivalent to a 0.5 profit division factor. Thus the equation:

$$\text{ReasonableRoyalty} = (\text{ApportionedRoyaltyBase} \times \text{ProfitMargin}) \times \text{NumberOfAffectedUnits} \times \text{ProfitDivisonFactor}$$

Simplifies to:

$$\begin{aligned} \text{ReasonableRoyalty} &\approx (\$24.55 \times .762) \times 3,300,000 \times 0.5^{210} \\ \text{ReasonableRoyalty} &\approx \$26,300,000 \end{aligned}$$

#### IV. CONCLUSION: CLEANING THE SWORD

Instead of cutting through the knot, *Uniloc* added yet another twist to calculating a reasonable royalty. Eliminating the 25 percent rule of thumb increases the difficulty of calculating a royalty rate.<sup>211</sup> In turn, this makes calculating a reasonable royalty even more obtuse and less predictable.<sup>212</sup> These limitations, along with the inherent technical intricacy of a complex system, make calculating a reasonable royalty a tightly wound problem.<sup>213</sup>

This Note argues that a reasonable royalty award can be calculated in such a complex system by aggressively apportioning the royalty base to the smallest salable unit, under Judge Rader's guidance in *Cornell*.<sup>214</sup> An accurate royalty base limits a reasonable royalty award by providing a maximum bound on the award.<sup>215</sup> This bound can be quite significant: accurate apportioning in *Lucent II* reduced the maximum possible award from over

208. *Id.* at \*6 n.4.

209. *See id.* at \*11–12.

210. The product does not quite equal the reasonable royalty because forgone profits have not been deducted.

211. *See Lucent II*, 2011 WL 5513225, at \*1.

212. *See supra* Section II.A.

213. *See, e.g., Lucent II*, 2011 WL 5513225, at \*1 (“This case illustrates the difficulty of properly valuing a small patented component, without a stand-alone market, within a larger program.”).

214. *See supra* Section III.A.

215. *See supra* Section III.C.

\$350 million to just over \$50 million.<sup>216</sup> Effectively, this bound limits the impact of expert testimony on how profits should be shared between the patentee and the infringer; regardless of how persuasive an expert witness is, a reasonable royalty will never exceed the apportioned royalty base.<sup>217</sup>

Is this the only sword for cutting through the damages knot? Surely not.<sup>218</sup> Like the scores who tried to untangle or cut through the Gordian Knot, there will be many attempts to elegantly unravel patent damages. But this is a sharp and readily available method for cutting through the morass of patent damages.

---

216. Compare *Lucent II*, 2011 WL 5513225, at \*10–11 (nearly \$50 million award), with *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1308 (Fed. Cir. 2009) (over \$350 million award).

217. See *Lucent II*, 2011 WL 5513225, at \*10–11.

218. See Cotter, *supra* note 142 (“Whether cases such as *Lucent* and *Uniloc* will stem the calls for legislative reform—and whether future Federal Circuit panels will adhere to the economic logic of these decisions—nevertheless remains to be seen.”).