

SHINING THE *LIMELIGHT* ON DIVIDED INFRINGEMENT: EMERGING TECHNOLOGIES AND THE LIABILITY LOOPHOLE

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The Supreme Court's recent decision in *Limelight Networks, Inc. v. Akamai Technologies, Inc.*¹ leaves a loophole in patent infringement law open with respect to divided infringement and multi-actor patents. Reversing the Federal Circuit's earlier *en banc* decision, the Court concluded that an initial finding that a single party is responsible for direct infringement under 35 U.S.C. § 271(a) is necessary for a finding of induced infringement under 35 U.S.C. § 271(b).² Citing the Federal Circuit's previous decision in *Muniauction Inc. v. Thomson Corp.*, the Court reinforced the single-entity rule when interpreting the definition of infringement set in § 271(a), noting that a "method's steps have not all been performed as claimed by the patent unless they are all attributable to the same defendant, either because the defendant actually performed those steps or because he directed or controlled others who performed them."³ Thus, if there is no direct infringement under § 271(a), there can be no inducement of infringement under § 271(b).⁴

However, the Court acknowledged that its interpretation of § 271(b) may permit a possible infringer to evade liability by dividing the performance of a method patent with a party it neither knows nor controls, thus rendering it more difficult for owners of multi-actor patents

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1. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111 (2014).

2. 35 U.S.C. § 271 (2012). Section 271(a) provides the definition of direct infringement: "Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." *Id.* § 271(a). And 35 U.S.C § 271(b) describes one type of indirect infringement, induced infringement, under which "[w]hoever actively induces infringement of a patent . . . [is] liable as an infringer." *Id.* § 271(b).

3. *Akamai*, 134 S. Ct. at 2117 (citing *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329–1330 (Fed. Cir. 2008)).

4. *Id.*

to defend their intellectual property.⁵ The unanimous decision authored by Justice Alito indicated that the Court may be receptive to imposing liability on multiple actors in patent infringement through a divided infringement⁶ rule but refused to interpret § 271(b) to do so.⁷ Instead, the Court in *Akamai* hinted that the Federal Circuit had previously erred in *Muniauction* by too narrowly defining the scope of § 271(a) and left the possibility of a divided infringement rule grounded in § 271(a) for the Federal Circuit to address upon remand.⁸

Although *Akamai* involved patents covering internet and computer technology,⁹ the decision has broader implications for the doctrine of divided infringement in other contexts involving interactive technologies, particularly in the field of biotechnology but also in electronics and entertainment. As the lack of a clear rule may increase uncertainty in these fields and hamper their development, it is imperative that the Federal Circuit on remand establish a clear divided infringement rule broad enough to close the current loophole for evading liability but narrow enough to protect the inadvertent, non-infringing acts of innocent third parties. But because the Federal Circuit's interpretation will be limited by the current statutory language in § 271, a truly ideal solution for divided infringement of multi-actor patents is likely to require congressional action. However, in the meantime the Federal Circuit should take the opportunity on remand to relax the relationship requirement for divided infringement under § 271(a) in order to narrow the current gap in the law. Part I of this Note will first explore the evolution of divided infringement

5. *Id.* at 2120.

6. "Divided infringement" and "joint infringement" are often used in the literature to describe circumstances in which two or more individuals divide performance of the steps of a method patent, absent a mastermind or agency/contractual agreement. This Note will exclusively use the term "divided infringement" to avoid any confusion.

7. *Akamai*, 134 S. Ct at 2119. The Court interpreted the en banc Federal Circuit's use of § 271(b) as adopting the view that the steps Limelight and its customer performed would infringe Akamai's patent if all performed by the same person. *See id.* at 2118. This theory of infringement under altered circumstances effectively created an odd hybrid of direct infringement under § 271(a) and induced infringement under § 271(b). The Court referred to the earlier case of *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), to demonstrate that it had already rejected such an approach with respect to contributory infringement, and it saw no reason to apply a different rule to induced infringement. *See id.* In *Deepsouth*, the Court established that "there can be no contributory infringement without the fact or intention of a direct infringement." *Id.* at 526.

8. *Id.* at 2120.

9. *Id.* at 2115 (describing the "content delivery network" ("CDN") technology that the patent-in-suit covers).

law from its roots in contributory infringement to the cases leading up to *Akamai*. Part II explains the Federal Circuit en banc and Supreme Court decisions in the *Akamai* case, and Part III urges the Federal Circuit, in light of the Supreme Court's recent decisions in *Mayo Collaborative Services v. Prometheus Labs*¹⁰ and *Alice Corp. v. CLS Bank International*,¹¹ to relax the current relationship requirement for a finding of divided infringement under § 271(a). Finally, Part IV examines potential alternatives to the current law of divided infringement and offers suggestions for moving forward.

I. EVOLUTION OF DIVIDED INFRINGEMENT

Divided infringement law stems from the common law doctrine of contributory infringement. This Part examines the origins of divided infringement law, its codification in 35 U.S.C. § 271, and the recent Federal Circuit decisions that have largely shaped this area of patent law.

A. COMMON LAW OF CONTRIBUTORY LIABILITY FOR MULTI-ACTOR INFRINGEMENT

The Patent Act of 1836 did not explicitly define infringement, but granted patent owners “the full and exclusive right and liberty of making, using, and vending to others to be used” their intellectual property.¹² Prior to the statutory codification of patent infringement in the Patent Act of 1952, lower courts addressed multi-actor infringement using an analogy to joint tortfeasor liability under the doctrine of contributory infringement.¹³ As patent law evolved, courts varied in their application of the doctrine of contributory infringement to multi-actor infringement, often grappling with the effects of the doctrine on the scope of patent protection.

In 1871, one of the earliest cases in this area, *Wallace v. Holmes*, recognized that a defendant could be liable for contributory infringement by selling a component that was substantially similar to a patented one and

10. See *Mayo Collaborative v. Prometheus Labs*, 132 S. Ct. 1289 (2012).

11. See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014).

12. Ch. 357, § 5, 5 Stat. 117 (1836).

13. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469 (Fed. Cir. 1990) (noting that prior to the Patent Act of 1952 “liability was under a theory of joint tortfeasance, wherein one who intentionally caused, or aided and abetted, the commission of a tort by another was jointly and severally liable with the primary tortfeasor”). It is important to note that this doctrine of contributory infringement is not the same as the one codified in § 271(c). Both forms of indirect infringement, § 271(b) (induced) and § 271(c) (contributory), stem from this common law doctrine of contributory infringement, which has been interpreted in various ways by different courts.

that had no other use except in an infringing combination.¹⁴ In *Wallace*, the patent in question claimed an improved lamp with a chimney and a burner, the latter of which was the distinguishing feature.¹⁵ The defendant sold the burner as disclosed in the plaintiff's patent by itself, leaving its customers to purchase a chimney.¹⁶ The defendant then attempted to rely on two earlier Supreme Court decisions to disclaim liability for infringement. It pointed to *Prouty v. Ruggles* for the proposition that a defendant did not infringe a patent if he used fewer than all elements of the patent.¹⁷ And it turned to *Keplinger v. De Young* to support the premise that there could be no infringement if the defendant had "no other connection" with the actual user other than a purchase contract.¹⁸ The court, however, held that these cases did not protect the defendant from liability for infringement, in view of the common law principles of joint tortfeasance, and particularly when the defendant's burners had no other non-infringing uses.¹⁹

Following *Wallace*, the Supreme Court initially began expanding the scope of patent protection, particularly to unpatented components that functioned together with patented ones. In *Leeds & Caitlin v. Victor Talking Machine Co.* in 1909, the Court affirmed the legality of tying²⁰ the sale of unpatented disc sound-records to the sale of patented phonograph machines; this allowed the patentee to block the use of unauthorized disc sound-records on its machine.²¹ Consequently, the Court held the

14. See generally *Wallace v. Holmes*, 29 F. Cas. 74 (C.C.D. Conn. 1871).

15. See *id.* at 79.

16. *Id.*

17. See generally *Prouty v. Ruggles*, 41 U.S. (16 Pet.) 336 (1842) (referring to a patented plow with multiple components and holding a defendant not liable for infringement when he used a combination of fewer components in his plow).

18. See *Keplinger v. De Young*, 23 U.S. (10 Wheat.) 358, 365 (1825) (finding a purchase contract for watch chains insufficient for holding a defendant liable for infringement, as such a construction would be "highly inconvenient and unjust to the rest of the community, since it might subject any man who might innocently contract with a manufacturer to purchase all the articles which he might be able to make within a limited period, to the heavy penalty inflicted by the act, although he might have been ignorant of the plaintiff's patent, or that a violation of it would be the necessary consequence of the contract.").

19. See *Wallace*, 29 F. Cas. at 80.

20. A tying arrangement is one in which a party sells one product, "but only on the condition that the buyer also purchases a different (or tied) product, or at least agrees that he will not purchase that product from any other supplier." *N. Pac. R. Co. v. United States*, 356 U.S. 1, 5-6 (1958).

21. See generally *Leeds & Caitlin v. Victor Talking Mach. Co.*, 213 U.S. 325 (1909) (extending patent protection to unpatented phonograph records by tying them to patented phonograph players).

defendant who sold such disc sound-records liable for contributory infringement.²² Similarly in *Henry v. A.B. Dick Co.* in 1912, the Court approved a tying arrangement that required purchasers of a mimeograph device to use only ink sold by the patentee, holding a defendant selling ink for the mimeograph liable for contributory infringement.²³

To address some of the antitrust concerns arising from this expansion of patent rights, the Supreme Court quickly set off on a path to limit the scope of patentees' rights, overruling tying arrangements in *Motion Pictures Patents Co. v. Universal Film Manufacturing Co.* in 1917.²⁴ In *Motion Pictures Patents*, the patentee owned a projector film feeding mechanism that it licensed to projector makers under the condition that the projectors would be used solely for playing films licensed by the patentee.²⁵ The Court concluded that the patent owner could not extend his monopoly by mandating the use of non-patented items with the patented one.²⁶ While not a case explicitly concerned with contributory infringement, *Motion Pictures Patents* set a strong policy against extending a patent monopoly to unpatented components.²⁷ Some lower courts continued to find contributory infringement when the sale of the unpatented product was accompanied by active inducement,²⁸ while other courts used the policy from *Motion Pictures Patents* to tighten up the law of contributory infringement.²⁹

22. See *id.* at 332–33.

23. See *Henry v. A.B. Dick Co.*, 224 U.S. 1, 32 (1912).

24. See *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 510–11 (1917).

25. *Id.* at 505–07.

26. *Id.* at 516–17.

27. 5 DONALD S. CHISUM, CHISUM ON PATENTS § 17.02[3] (2014).

28. For example, the Second Circuit in *Westinghouse Electric Manufacturing Co. v. Precise Manufacturing Corp.* upheld a patentee's tying arrangement when it found that the defendant intended for its product to be used in an infringing device, even when there were non-infringing uses for its product. See *Westinghouse Elec. & Mfg. Co. v. Precise Mfg. Corp.*, 11 F.2d 209, 211–12 (2d Cir. 1926). In *Westinghouse*, the defendant sold transformers that could be used in infringing radio receivers. *Id.* at 211. While the transformers had non-infringing uses, the defendant advertised them to be used in an infringing combination and provided instructions on how to do so, leading the court to conclude that the defendant was liable for contributory infringement. *Id.* at 211–12.

29. In *Chas. H. Lilly Co. v. I.F. Laucks, Inc.*, the Ninth Circuit held that the sale of a standard article of commerce (one with infringing and non-infringing uses) could not constitute contributory infringement, even if the seller knew that it would be used in an infringing combination. See *Chas. H. Lilly Co. v. I.F. Laucks, Inc.*, 68 F.2d 175 (9th Cir. 1933). There, the plaintiff's patents concerned a soya bean flour-based glue. *Id.* at 176. The defendant manufactured the soya bean flour for a variety of uses and reached out to a glue manufacturer, Kaseno Products Company. *Id.* at 177. Plaintiffs alleged that the

The Supreme Court further limited rights of patentees in *Cabrice Corp. v. American Patents Development Corp.*, where it established the doctrine of “patent misuse” as a further restriction on tying arrangements.³⁰ In *Cabrice*, the patent covered a refrigerated transportation container using dry ice with a notice specifying that the container only be used with dry ice sold by the patentee.³¹ The Court held the notice an improper means of expanding the patent to cover an unpatented article and withheld a remedy for contributory infringement on grounds of misuse.³² Following *Cabrice*, the Court continued to withhold remedies for contributory infringement on the basis of patent misuse³³ and even extended the misuse doctrine to deny a patentee relief against a defendant who directly infringed a patent because the patentee attempted to use an impermissible tying arrangement.³⁴

And in *Mercoird Corp. v. Mid-Continent Investment Co.*, the Court not only reaffirmed the doctrine of misuse but cast doubt on the entire law of contributory infringement.³⁵ In *Mercoird*, the patentee (Mid-Continent) claimed a domestic heating system consisting of three main elements, one of which was unpatented and exclusively licensed to a third party (Minneapolis-Honeywell) for sale.³⁶ The third party, in advertising its product—a switch—tried using a tying arrangement by informing its customers that the patented heating system could only be used with its switch.³⁷ The defendant (Mercoird) sold a switch that had no non-infringing uses.³⁸ Even though the Court acknowledged that the defendant was a contributory infringer, it refused to grant the patentee injunctive relief because the patentee’s licensing scheme with a third party constituted an inappropriate extension of the patent to unpatented devices.³⁹ In holding that the patentee “could have enjoined the infringement had [it] not misused the patent for the purpose of

defendant’s act of selling flour to the glue manufacturer constituted contributory infringement. *Id.* The court, however, concluded that Plaintiffs could not enjoin the sale of the soya bean flour and did not find the defendant liable for contributory infringement. *Id.* at 179.

30. See *Carbice Corp. of Am. v. Am. Patents Dev. Corp.*, 283 U.S. 27 (1931).

31. See *id.* at 29.

32. *Id.* at 33–34.

33. See *Leitch Mfg. Co. v. Barber Co.*, 302 U.S. 458, 463 (1938).

34. See *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 494 (1942).

35. See *Mercoird Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661 (1944).

36. *Id.* at 664.

37. *Id.* at 663.

38. *Id.* at 664.

39. *Id.* at 668–69.

monopolizing unpatented material,” the majority observed that the result of the decision was to “limit substantially the doctrine of contributory infringement.”⁴⁰ Thus where the doctrines of contributory infringement and patent misuse were in conflict, the Court gave deference to the latter. Shortly after the *Mercoïd* decision, a lower court even used this decision to question contributory infringement where no evidence of a tying arrangement existed.⁴¹ The majority of courts, however, continued using the doctrine of contributory infringement to provide relief to patentees for multi-actor violations of their intellectual property rights.⁴²

Consequently, despite various attempts to define boundaries on the use of contributory infringement in imposing liability in cases of divided infringement, this area of law remained uncertain leading up to the codification of infringement law in 1952.

B. THE PATENT ACT OF 1952

The Patent Act of 1952 codified American patent law and provided for two categories of infringement: direct and indirect.⁴³

1. *Direct Infringement*

Section 271(a) holds a party liable for direct infringement when he performs all of the elements of another’s patent. For method patents, an accused infringer must perform every step of the method.⁴⁴ Because direct infringement is a strict-liability offense, an alleged direct infringer need not be aware of the patent in order for the patentee to obtain a remedy.⁴⁵ Courts have also interpreted § 271(a) to address the doctrine of divided infringement, where a relationship status between two or more parties can

40. *Id.* While the third party initiated the tying arrangement, its misuse was inputted to the patentee since the third party was a licensee.

41. *See Stroco Prods. Inc. v. Mullenbach*, 67 U.S.P.Q. 168, 170 (S.D. Cal. 1944) (holding that “[p]laintiff is, by its action against defendant for contributory infringement[,] attempting to use its patent to secure a monopoly on unpatented portions of complete combination”).

42. *See Florence-Mayo Nuway Co. v. Hardy*, 168 F.2d 778, 785 (4th Cir. 1948) (limiting *Mercoïd* to the proposition that a combination patent may not be used to protect an unpatented part of the invention from competition and holding a defendant liable for selling machinery with knowledge, purpose, and intent that it would be used in an infringing combination).

43. 35 U.S.C. § 271 (1952).

44. *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1378 (Fed. Cir. 2007) (“Direct infringement requires a party to perform or use each and every step or element of a claimed method or product.”) (citing *Warner-Jenkinson Co. v. Hilton Davis Corp.*, 520 U.S. 17, 40 (1997)).

45. *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007).

lead to a finding of divided infringement.⁴⁶ This relationship status standard is in flux, however, as courts debate which standard to apply and how to interpret the facts of each infringement scenario.⁴⁷

2. *Indirect Infringement*

Section 271 also sets forth two forms of indirect infringement, codifying the previous contributory infringement caselaw in subsections (b), addressing induced infringement, and (c), addressing contributory infringement.⁴⁸ Under § 271(b), a party is liable for induced infringement if it actively induces another actor to infringe a patent.⁴⁹ To obtain a remedy under induced infringement, a patentee must show that: (1) another person actually infringed, (2) the alleged inducer knew of the patent, and nevertheless (3) knowingly induced the infringing acts with a specific intent to encourage infringement by that person.⁵⁰ And under § 271(c), a party who sells, offers to sell, or imports to the United States a material part of an invention, knowing that it is not a staple article or commodity of commerce suitable for substantial non-infringing uses, is liable for contributory infringement.⁵¹ Alongside actual infringement, a patentee seeking to establish contributory infringement must prove that (1) an accused indirect infringer sold or supplied a component of a patented invention, (2) that was material to the invention, (3) while knowing that the component was specially made or adapted for infringing use, and (4) is not a staple article suitable for substantial non-infringing uses, in order to win a claim of contributory infringement.⁵²

In both induced and contributory infringement, the patent owner has the burden of not only proving the existence of underlying direct infringement,⁵³ but also demonstrating that the accused indirect infringer had knowledge of the patent's existence.⁵⁴ This intent standard itself has

46. *See infra* Section I.C.

47. *See id.*

48. 35 U.S.C. § 271.

49. § 271(b).

50. *See Vita-Mix Corp. v. Basic Holding, Inc.*, 581 F.3d 1317, 1328 (Fed. Cir. 2009).

51. § 271(c).

52. Alice Juvon Abn, *Finding Vicarious Liability in U.S. Patent Law: The Control of Direction Standard for Joint Infringement*, 24 BERKELEY TECH. L.J. 149, 151 (2009).

53. *See Dynacore Holdings Corp. v. U.S. Philips Corp.*, 363 F.3d 1263, 1272 (Fed. Cir. 2004).

54. *See Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 488–91 (1964) (finding that contributory infringement requires both knowledge of the patent's existence and that the component produced is infringing).

been the subject of much debate,⁵⁵ which the Supreme Court attempted to settle in *Global-Tech Appliances Inc. v. SEB S.A.* in 2011.⁵⁶ The Court held that in order to be liable for infringement, a defendant must have had knowledge both of the patent and that his acts infringed the patent.⁵⁷ But the Court did reaffirm the Federal Circuit's rule that the knowledge standard could be met by a showing of willful blindness, when a defendant "acted despite an objectively high likelihood that its actions constituted infringement of a valid patent."⁵⁸

C. EVOLUTION OF DIVIDED INFRINGEMENT AND THE
RELATIONAL STANDARD

For fear of ensnaring innocent parties unaware that their actions contributed to the infringement of a patent, courts were traditionally reluctant to recognize divided infringement when two or more parties divided performance of claims in a patent.⁵⁹ Prior to 2007, the Federal Circuit issued no decision squarely on the issue of liability for divided infringement.⁶⁰ Lower courts, however, sometimes found liability based on a different range of relationships between parties.

1. *District Courts Apply a Patchwork of Relational Standards*

In early cases, courts often protected patent owners from defendants who attempted to escape infringement by coordinating with third parties. For example, a court in the Southern District of New York in *Metal Film Co. v. Metlon Corp.* held a defendant liable for infringement when it hired an outside contractor to perform one step of the patent.⁶¹ Likewise, a

55. Prior to *Global-Tech*, the mental state required by the Federal Circuit to assign liability under induced patent infringement was largely undetermined. The Federal Circuit primarily oscillated between two standards; one only required that the defendant have had the intent to induce the acts that later constituted patent infringement. *See* *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1469 (Fed. Cir. 1990). The other, more stringent, standard required the defendant to have had knowledge that his actions would induce infringement of the patent-in-suit. *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 553 (Fed. Cir. 1990) ("The plaintiff has the burden of showing that the alleged infringer's actions induced infringing acts and that he knew or should have known his actions would induce actual infringements.").

56. *See* *Global-Tech Appliances, Inc. v. SEB S.A.*, 131 S. Ct. 2060 (2011).

57. *See id.* at 2068.

58. *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007).

59. *See, e.g.,* *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1571 (Fed. Cir. 1983).

60. 5 Donald S. Chisum, CHISUM ON PATENTS § 16.02[6][a] (2014).

61. While not discussing the issue in depth in its decision, the court in *Metal Film* viewed the two companies as acting like one such that the "infringing acts of one can be deemed the infringing acts of the other on the basis that one has induced the

judge in the Western District of Louisiana in *Shields v. Halliburton Co.* reaffirmed the notion that a defendant could not escape liability for infringement by “having another [party] perform one step of the process or patent.”⁶² In *Shields*, three different companies collectively carried out a patent for offshore drilling; although no single company completed every step of the patented process, the court held all three jointly liable for their combined action.⁶³

In another line of cases, an agency relationship requirement standard slowly emerged for a finding of divided infringement, requiring that the defendant have had a relationship with other actors such that he exerted direction or control over their activities. Courts were not explicit whether the relationship standard applied to direct or indirect infringement, however. In *Crowell v. Baker Oil Tools*, the Ninth Circuit observed that “one may infringe a patent if he employs an agent for that purpose or [has] the offending articles manufactured for him by an independent contractor.”⁶⁴ Following this logic in *Free Standing Stuffer, Inc. v. Holly Development Co.*, the District Court of the Northern District of Illinois held a defendant sales company liable for jointly infringing a patented method of inserting advertisement cards in newspapers because it directed the printer and newspaper to carry out the steps of the patent.⁶⁵ And even in an instance where there was no explicit agency relationship, in *Mobil Oil Corp. v. W.R. Grace & Co.*, the District Court of Connecticut found infringement where the defendant performed all the steps of a patented method except the last step—which consisted merely of heating a catalyst—which was intended to be completed by the defendant’s customers.⁶⁶ There, the court reasoned that the defendant had effectively made each of its customers its agents because it knew that they would perform the last step.⁶⁷

Other courts applied a less stringent standard, only requiring “some connection” between the actors to find divided infringement. In *Faroudja*

infringement of the other” under § 271(b). *Metal Film Co. v. Melton Corp.*, 316 F. Supp. 96, 109 n.11 (S.D.N.Y. 1970). The patent-in-suit involved a method for making yarn, and the defendant contracted the vacuum metalizing step (a very common procedure at this time) to an outside contractor. *Id.* at 110 n.12.

62. *Shields v. Halliburton Co.*, 493 F. Supp. 1376, 1389 (W.D. La. 1980).

63. *See id.* at 1380–81.

64. *See Crowell v. Baker Oil Tools, Inc.*, 143 F.2d 1003, 1004 (9th Cir. 1944).

65. *Free Standing Stuffer, Inc. v. Holly Dev. Co.*, 187 U.S.P.Q. 323, 333 (N.D. Ill. 1974).

66. *See Mobil Oil Corp. v. W.R. Grace & Co.*, 367 F. Supp. 207, 253 (D. Conn. 1973).

67. *Id.*

Laboratories, Inc. v. Dwin Electronics, Inc., the patent in question concerned a method for improving image quality in televisions through a series of signal conversions and multiplications.⁶⁸ The defendant sold products that allowed consumers to take television transmissions and improve the image quality on their screens.⁶⁹ Rather than require an agency relationship, the court concluded that divided infringement required only a showing of “some connection” between the various entities.⁷⁰ This connection could be established where the parties “worked in concert” or were in “direct contact.”⁷¹ Following *Faroudja*, several district courts employed the “some connection” requirement.⁷²

2. *The Federal Circuit Steps In and Adopts a “Control or Direction” Standard*

When the Federal Circuit finally addressed the issue of multi-actor infringements in 2005, it appeared to adopt the aforementioned agency standard for divided infringement. In *Cross Medical Products v. Medtronic Sofamor Danek*, the court found that the defendant medical device manufacturer did not infringe patents covering implants used by orthopedic surgeons to stabilize the spine during surgery.⁷³ Even though the defendant’s personnel regularly appeared in an operating room with surgeons and directed surgeons in the assembly of the apparatus, the Federal Circuit refused to find liability for divided infringement as the defendant and surgeons were not in an explicit agency relationship.⁷⁴

However, a different panel of the Federal Circuit just one year later appeared to adopt a looser standard in the dicta of *On Demand Machine Corp. v. Ingram Industries, Inc.*⁷⁵ In *On Demand Machine*, patentees accused Amazon.com along with others of infringing a patent covering on-

68. *Faroudja Labs., Inc. v. Dwin Elecs., Inc.*, No. 97-20010 SW, 1999 WL 111788, at *1 (N.D. Cal. Feb. 24, 1999).

69. *Id.* at *2.

70. *Id.* at *5.

71. *Id.* at *6.

72. *See Cordis Corp. v. Medtronic AVE, Inc.*, 194 F. Supp. 2d 323 (D. Del 2002); *Marley Mouldings Ltd. v. Mikron Indus.*, No. 02-2855, 2003 WL 1989640 (N.D. Ill. Apr. 30, 2003); *Hill v. Amazon.com, Inc.*, No. Civ.A.2:02-CV-186, 2006 WL 151911 (E.D. Tex. Jan. 19, 2006).

73. *See Cross Med. Prods. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1311 (Fed. Cir. 2005).

74. *See id.*

75. *See On Demand Mach. Corp. v. Ingram Indus.*, 442 F.3d 1331, 1345 (Fed. Cir. 2006).

demand book printing.⁷⁶ While the Federal Circuit reversed the lower court's findings of infringement on a claim construction issue, it issued dicta suggesting that it approved the "some connection" standard when it found no error in jury instructions: "[i]t is not necessary for the acts that constitute infringement to be performed by one person or entity. When infringement results from the participation and combined action(s) of more than one person or entity, they are all joint infringers and jointly liable for patent infringement."⁷⁷

In 2007, the Federal Circuit finally addressed these inconsistent decisions in *BMC Resources v. Paymentech, L.P.*, establishing a "control or direction" requirement for divided infringement that has largely remained the standard today.⁷⁸ *BMC* involved a method patent for processing banking transactions that required multiple actors—a bank account holder, a third-party billing processor, and a financial institution.⁷⁹ A single party, thus, could not carry out the method. In affirming the district court's grant of summary judgment on the grounds that the parties were not in an agency relationship and that none of the parties controlled or directed the activities of the others, the Federal Circuit held that in order to find joint liability, one party must exhibit "control or direction" over the others' actions.⁸⁰ In justifying its decision, the court pointed to its concern that a more relaxed relationship requirement under § 271(a) would encourage patentees to forgo filing indirect infringement cases—which require both direct infringement and knowledge of the patent—and seek relief under a strict liability theory of divided infringement under § 271(a) instead.⁸¹ While it acknowledged that this control or direction standard might allow some infringers to enter into arms-length agreements to avoid liability, the Federal Circuit believed that the negative ramifications from expanding the rules for direct infringement far outweighed these concerns.⁸² Because both forms of indirect liability require evidence of "specific intent" to induce or contribute to infringement, it is more work for plaintiffs to prove indirect infringement; if patentees could reach the independent conduct of multiple actors through direct infringement, then a patentee would rarely ever need to bring a claim for indirect

76. *Id.*

77. *Id.* at 1344–45.

78. *See BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1379–81 (Fed. Cir. 2007).

79. *See id.* at 1375–76.

80. *Id.* at 1380–81.

81. *Id.* at 1381.

82. *Id.*

infringement.⁸³ Any relationship standard lower than control or direction would subvert the statutory scheme for indirect infringement.⁸⁴ Furthermore, according to the *BMC* court, proper claim drafting could offset the concerns in their entirety.⁸⁵

Shortly after *BMC*, the Federal Circuit further elevated the relationship status standard in *Muniauction, Inc. v. Thomson Corp.* by requiring the control or direction exerted by one entity to exist to such a degree that the entity itself “can be said to have performed every step of the asserted claims.”⁸⁶ *Muniauction* involved a method patent for auctioning municipal bonds where an issuer offers the bonds to a bidder who then purchases the entire bond offering on an “integrated system” permitting issuers and bidders to run the auction using conventional web browsers without separate software.⁸⁷ The court held that the defendant Thomson, who ran a similar online bidding platform using a web browser rather than a proprietary computer network, did not perform every step of the claimed method, as the “inputting data associated with at least one bid . . . into said bidder’s computer” was performed by the bidder.⁸⁸ Citing *BMC*, the court noted that control or direction required a mastermind to whom every step in the method is attributable.⁸⁹ The court held that Thomson’s control over its system and instruction to bidders did not constitute the control or direction necessary to incur liability for direct infringement, as Thomson did not have another party perform steps on its behalf.⁹⁰

Post-*BMC* and *Muniauction*, patentees in lower courts applying the control or direction standard have found it difficult to prevail on infringement claims. Absent proof that defendants had either an agency relationship or contractual obligations with another party performing some of the infringing steps, courts are reluctant to find liability for divided infringement. In *Global Point Holdings, LLC v. Panthers BRHC LLC*, for example, the patentee sued for infringement of a patent for

83. *Id.*

84. *Id.*

85. *Id.*

86. *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329 (Fed. Cir. 2008).

87. *Id.* at 1322.

88. *Id.*

89. *Id.* at 1329 (citing *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1380–81 (Fed. Cir. 2007)).

90. *Id.* at 1330.

downloading material from a remote server in response to a query.⁹¹ The patentee argued that the defendant had asserted control over a website user by supplying the user with programs and web materials that allowed the user's machine to execute the defendant's program.⁹² The court found that this relationship failed to meet the control or direction requirement because the user was not contractually obligated to visit the website and submit queries.⁹³ Similarly, in *Emtel, Inc. v. LipidLabs, Inc.*, a court held that a defendant providing telemedicine through videoconferences did not infringe on a patent that required (1) an entity to provide and operate a videoconferencing system, (2) a physician, and (3) a remote medical care facility where there is a caregiver and a patient.⁹⁴ The patentee claimed that defendants contracted with individual doctors to perform the medical activities, thus meeting the control or direction requirement from *BMC* and *Muniauction*.⁹⁵ But the court found that simply "[c]ontrolling access to a system and providing instructions on using that system" failed to meet the control or direction requirement, as the physicians still retained discretion in diagnosis and treatment.⁹⁶

II. *LIMELIGHT V. AKAMAI*

The Federal Circuit once again found itself wrestling with the required relationship standard between accused parties under the doctrine of divided infringement in a consolidated case—*Akamai Technologies v. Limelight Networks* and *McKesson Technologies v. Epic Systems*—in its 2012 *en banc* decision.⁹⁷ The Federal Circuit *en banc* reversed prior panel opinions and introduced the "inducement-only" approach whereby a court can find a defendant liable for induced infringement under § 271(b) when the defendant carries out some steps in a method patent and then

91. *Global Patent Holdings, LLC v. Panthers BRHC LLC*, 586 F. Supp. 2d 1331 (S.D. Fla. 2008).

92. *See id.* at 1333.

93. *See id.* at 1335.

94. *See Emtel, Inc. v. Lipidlabs, Inc.*, 583 F. Supp. 2d 811, 827 (S.D. Tex. 2008).

95. *See id.* at 828.

96. *Id.* at 831.

97. *See generally* *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012), *rev'd*, 132 S. Ct. 2111 (2014). The Federal Circuit panels for the two cases affirmed the district courts' respective opinions and reinforced the agency requirement. *See* *McKesson Techs. Inc. v. Epic Sys. Corp.*, No. 2010-1291, 2011 U.S. App. LEXIS 7531, at *1-2 (Fed. Cir. Apr. 12, 2011); *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 629 F.3d 1311, 1319 (Fed. Cir. 2010).

encourages others to carry out the remaining steps, without first needing to hold a party liable for direct infringement under § 271(a).⁹⁸

A. FACTS AND PROCEDURAL HISTORY

In the late 1990s, Professors Tom Leighton and Daniel Lewin at the Massachusetts Institute of Technology conceived of a content delivery network (“CDN”) that would provide stable internet services to users during periods of high traffic.⁹⁹ They eventually founded Akamai Technologies (“Akamai”), an internet company utilizing thousands of servers to provide users access to files stored on its servers at increased speeds.¹⁰⁰ With thousands of servers distributed around the world, Akamai’s CDN reduces the time it takes to load a webpage by bringing the content of the webpage geographically closer to internet users.¹⁰¹ The patented method requires two parties, a CDN (Akamai) and a website owner, to work together.¹⁰² In order to move an object to a CDN, the website owner must first modify the object’s internet address through a process known as “tagging.”¹⁰³ This tagging identifies the content that the website owner wants the CDN to deliver to consumers.¹⁰⁴

Limelight Networks (“Limelight”), like Akamai, also maintains a CDN, and its content delivery service depends on performance of every step of the process disclosed in Akamai’s patent-in-suit. Similarly to Akamai, Limelight performs nearly every step of the process but requires its customers do their own tagging and provides technical assistance and necessary instructions regarding how to tag.¹⁰⁵

In 2006, Akamai sued Limelight for direct and induced infringement, and a jury in Massachusetts awarded Akamai over \$45 million in damages.¹⁰⁶ Shortly after this victory, however, the Federal Circuit decided *Muniauction, Inc. v. Thomson Corp.*, holding that a defendant was not liable for direct infringement because he did not exercise control or

98. *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1306 (Fed. Cir. 2012), *rev’d*, 132 S. Ct. 2111 (2014).

99. Brief for Respondents Akamai Techs., Inc. on Writ of Certiorari to the United States Court of Appeals for the Federal Circuit at 4–5, *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111 (2014).

100. *Limelight Networks, Inc. v. Akamai Techs.*, 134 S. Ct. 2111, 2115 (2014).

101. *Id.* at 2115.

102. *See* Brief for Respondents (Akamai Techs, Inc.), *supra* note 99, at 7.

103. *See id.*

104. *See id.*

105. *See Akamai*, 134 S. Ct. at 2115.

106. *See Akamai Techs., Inc. v. Limelight Networks, Inc.*, 614 F. Supp. 2d 90, 95 (D. Mass. 2009).

direction over his customers who performed the last step of the patent.¹⁰⁷ As a result of *Muniauction*, Limelight moved for reconsideration; the Massachusetts District Court granted the motion and then ruled in Limelight's favor.¹⁰⁸ The Federal Circuit panel affirmed, explaining that a defendant can be liable for direct infringement only "when there is an agency relationship between the parties who perform the method steps or when one party is contractually obligated to the other to perform the steps."¹⁰⁹ Akamai tried arguing that Limelight's customers were contractually obligated to tag files in order to implement Limelight's content delivery mechanism, but both courts found the argument unconvincing.¹¹⁰ Finding no material difference between Limelight's interactions with its customers and Thomson's interactions with its customers in *Muniauction*, the district court characterized the agreements between Limelight and its customers as a result of an arms-length cooperation, which does not give rise to direct infringement by any party.¹¹¹ Furthermore, the Federal Circuit reiterated that there is no indication that an agency relationship arises when one party merely provides another party with directions, even explicit ones.¹¹²

Before moving to the Federal Circuit's *en banc* decision, it is worth noting that the decision consolidated the case between Akamai Technologies and Limelight Networks with another case between McKesson Information Solutions and Epic Systems.¹¹³ In that case, McKesson patented a method of electronic communication between healthcare providers and their patients.¹¹⁴ Epic licensed similar software to healthcare providers and organizations, allowing healthcare providers to communicate electronically with their patients.¹¹⁵ Epic did not perform any steps of McKesson's patented method; instead, patients and their

107. *See* *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1330 (Fed. Cir. 2008).

108. *Akamai* (D. Mass.), 614 F. Supp. 2d at 122.

109. *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 629 F.3d 1311, 1319 (Fed. Cir. 2010).

110. *Akamai* (D. Mass.), 614 F. Supp. 2d at 120–122.

111. *Id.* (citing *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1381 (Fed. Cir. 2007)).

112. *Akamai* (Fed. Cir.), 629 F.3d 1311 at 1321 (citing *Meyer v. Holley*, 537 U.S. 280, 286 (2003) to illustrate that the agency relationship requires not only the right to direct or control but also consent by one entity to another that the other shall act on his behalf).

113. *See generally* *Akamai, Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012), *rev'd*, 132 S. Ct. 2111 (2014).

114. *See id.* at 1306.

115. *Id.*

physicians each completed a portion of the patented method, with patients initiating conversations and physicians responding.¹¹⁶ Relying on *Muniauction* and *BMC*, the District Court for the Northern District of Georgia granted summary judgment of noninfringement on the grounds that the patients, who were not Epic's direct customers, initiated the first steps of infringement.¹¹⁷ A split panel at the Federal Circuit affirmed this decision.¹¹⁸ As this case has since settled, this Note will not further discuss *McKesson Information Solutions LLC v. Epic Systems Corp.*¹¹⁹

B. FEDERAL CIRCUIT DECISION *EN BANC*

Upon rehearing the case *en banc*, the Federal Circuit reversed and remanded the district court's decision in *Akamai*, writing that liability under § 271(b) can arise when a defendant carries out some steps of a method patent and then encourages others to carry out the remaining steps, even if no one party would be liable as a direct infringer, and even when the parties performing the steps are not the agents of or under the control or direction of the defendant.¹²⁰

In its decision, the Federal Circuit considered statutory interpretation, precedent, and patent policy to conclude that the previous interpretation of § 271(b) in *BMC* was incorrect. It first noted that its decision would not be predicated on the doctrine of direct infringement under § 271(a), where one party must commit all the necessary acts to infringe the patent, either personally or vicariously, in order to be liable for direct infringement.¹²¹ Because direct infringement is a strict liability tort, the court observed that direct infringement had not been extended to cases in which multiple independent parties share the steps of the method claim for fear of ensnaring actors who had no way of knowing that others acted in a way such that their collective conduct infringed a patent, and who did

116. *Id.*

117. *McKesson Info. Solutions LLC v. Epic Sys. Corp.*, No. 1:06-CV-2965-JTC, 2009 U.S. Dist. LEXIS 881582009 WL 2915778, at *1 (N.D. Ga. Sept. 8, 2009).

118. *McKesson Techs. Inc. v. Epic Sys. Corp.*, 2011 U.S. App. LEXIS 7531, at *1 (Fed. Cir. Apr. 12, 2011).

119. Kris Fortner, *McKesson and Epic Settle Patent Infringement Litigation*, MCKESSON (Mar. 4, 2013), <http://www.mckesson.com/about-mckesson/newsroom/press-releases/2013/mckesson-and-epic-settle-patent-infringement-litigation/>. McKesson agreed to grant Epic a license to the patent for the benefit of Epic and its customers. In exchange, Epic agreed that it would no longer contest the validity of the patent. *Id.*

120. *See Akamai*, 692 F.3d at 1306.

121. *Id.* at 1307 (citing *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek*, 424 F.3d 1293, 1311 (Fed. Cir. 2005)).

not commit all necessary acts to constitute infringement.¹²² And because no agency relationship between Limelight and its customers existed, the *en banc* court decided that the application of § 271(b)—which extends liability to those who advise, encourage, or otherwise induce others to engage in infringing conduct and is not a strict liability tort—¹²³ was better suited to resolve the case.¹²⁴

Turning to statutory analysis, the Federal Circuit noted that the legislative history of the Patent Act of 1952 demonstrated intent for divided infringement to be addressed under the broad scope of § 271(b) in cases where no single entity is liable for direct infringement.¹²⁵ Section 271(b), according to the Federal Circuit, set forth a type of infringement separate from that defined in § 271(a) and “nothing in the text of either subsection suggest[ed] that the act of ‘infringement’ required for inducement under section 271(b) must qualify as an act that would make a person liable as an infringer under section 271(a).”¹²⁶ Furthermore, nothing in the text of § 271(b), the court concluded, indicated “that the term ‘infringement’ in section 271(b) is limited to ‘infringement’ by a single entity.”¹²⁷ The court further reasoned that it would be bizarre to hold someone liable for inducing another to perform all the steps of a method claim but to hold another harmless when he goes further by actually performing some of the steps himself.¹²⁸ If anything, the party who actually participated in performing the infringing method was more culpable than one who did not perform any of the steps at all.¹²⁹

The Federal Circuit *en banc* also referred both to the Federal Criminal Code’s provisions for aiding and abetting as well as to tort law to illustrate that holding an inducing party liable for an innocent party’s underlying acts is not a concept unique to patent law.¹³⁰ In criminal law, a defendant can be liable for causing an intermediary to commit a criminal act, even

122. *Id.* (citing *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (*en banc*) (“Because patent infringement is a strict liability offense, the nature of the offense is only relevant in determining whether enhanced damages are warranted.”)).

123. *See* *Global-Tech Appliances, Inc. v. SEB S.A.*, 131 S. Ct. 2060, 2068 (2011) (noting that inducement requires intent).

124. *See Akamai*, 692 F.3d at 1307.

125. *Contributory Infringement in Patents: Hearings Before the Subcomm. On Patents, Trade-marks, and Copyrights of the H. Comm. on Judiciary*, 80th Cong. 5 (1948) (statement of Giles Rich on behalf of the New York Patent Law Association).

126. *See Akamai*, 692 F.3d at 1314.

127. *Id.* at 1309.

128. *Id.*

129. *Id.*

130. *Id.* at 1311.

though the intermediary committing the act has no criminal intent and thus cannot be charged with the substantive crime.¹³¹ And in tort law, a defendant can be found liable for tortious conduct if he orders or induces the conduct, provided that he knows or should have known of circumstances that would make the conduct tortious if it were his own.¹³² Because the principle of indirect infringement in the Patent Act of 1952 was based on the principles of joint tortfeasance, the Federal Circuit placed great weight on these parallels.¹³³ The implication of the principle of joint tortfeasance, as applied in a divided infringement context, was that a party could be liable for inducing infringement even if none of the individuals whose actions constituted infringement would be liable as direct infringers.¹³⁴

And finally, the *en banc* court addressed the dissent's reliance on precedent in *BMC* and the Supreme Court decision *Aro Manufacturing Co. v. Convertible Top Replacement Co.*¹³⁵ to support the single-entity rule, concluding that these cases do not in fact support the proposition that a single actor must commit all the acts necessary to constitute infringement before there can be a finding of induced infringement.¹³⁶ In reaching the proposition that indirect infringement first requires a single entity to have committed direct infringement, the Federal Circuit in *BMC* cited its prior decision in *Dynacore Holdings Corp. v. U.S. Philips Corp.*¹³⁷ The decision in *Dynacore* only supported the proposition that indirect infringement first requires direct infringement.¹³⁸ It did not, however, enhance the burden of showing direct infringement to prove that a single entity had infringed.¹³⁹ The Supreme Court's decision in *Aro* likewise also required a finding of direct infringement as a prerequisite for a finding of indirect infringement but never expressly or implicitly imposed a single entity requirement.¹⁴⁰ In

131. *Id.* (citing *United States v. Tobon-Builes*, 706 F.2d 1092, 1099 (11th Cir. 1983)).

132. *Id.* at 1312 (citing RESTATEMENT (SECOND) OF TORTS § 877(a) (1979)).

133. *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1469 (Fed. Cir. 1990).

134. *See Akamai*, 692 F.3d at 1313.

135. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 341 (1961).

136. *See Akamai*, 692 F.3d at 1315–16.

137. *Dynacore Holdings Corp. v. U.S. Philips Corp.*, 363 F.3d 1263, 1272 (Fed. Cir. 2004).

138. *See id.* at 1272. The *Dynacore* patent-in-suit dealt with a local area network. *Id.* at 1266. The court addressed whether manufacturers of networking equipment capable of infringing the network were liable for indirect infringement when there was no proof of actual indirect infringement. *Id.* at 1272.

139. *See Akamai*, 692 F.3d at 1315 n.6.

140. *See Aro Mfg.*, 365 U.S. at 341.

fact, the *Aro* decision involved a product claim that did not even implicate the same divided infringement issue raised in *Akamai*.¹⁴¹ Unlike with method claims, whenever a product is made, there is always the potential for a direct infringer.¹⁴² Furthermore, in *Aro*, the Court concluded that there was no contributory infringement because the elements of the patent had not all been performed in an infringing manner, whether by one actor or by multiple actors.¹⁴³ Therefore the *Aro* decision did not stand for the proposition that a single entity must be responsible for infringing conduct in order for a finding of induced infringement.¹⁴⁴

In summary, based on legislative history, general tort principles, and prior caselaw, the Federal Circuit's *en banc* majority explicitly overturned the 2007 *BMC* decision, noting that while all the steps of a claimed method must be performed, it is not necessary that they all be committed by a single entity in order for the court to find induced infringement.¹⁴⁵ The court then remanded *Akamai* back to the district court for a determination on the merits of the case under the newly revised doctrine of induced infringement.¹⁴⁶

C. SUPREME COURT

The Supreme Court, disapproving of the Federal Circuit's analysis as "fundamentally misunderstanding what it means to infringe a method patent," reversed the decision and remanded it for further proceedings.¹⁴⁷ Writing for the unanimous Court, Justice Alito first noted that there was no dispute with the Federal Circuit that there must be direct infringement in order to find liability for inducement.¹⁴⁸ Instead the disagreement concerned the definition of direct infringement, specifically whether one actor must carry out all the steps of a method patent in order for a court to find direct infringement. Citing the Federal Circuit's decision in *Muniauction*, the Court disagreed with the Federal Circuit's premise that

141. *Akamai*, 692 F.3d at 1315.

142. *Id.*

143. *Id.* The *Aro* claim involved convertible tops on cars, and the Court held that replacing fabric on a convertible car was permissible repair and not an act of infringing reconstruction. *Id.*

144. *Id.*

145. *Id.* at 1306.

146. *Id.* at 1318–19.

147. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111, 2117 (2014).

148. *See id.*

direct infringement could even be found if no single entity were liable under § 271(a).¹⁴⁹ The Court repeatedly pointed to the Federal Circuit's own holding in *Muniauction* that a "method's steps have not all been performed as claimed by the patent unless they are all attributable to the same defendant, either because the defendant actually performed those steps or because he directed or controlled others who performed them."¹⁵⁰ Thus if there is no direct infringement by a single entity under § 271(a), then there can be no inducement of infringement under § 271(b).¹⁵¹

Any other position regarding inducement, the Court observed, "would deprive § 271(b) of ascertainable standards."¹⁵² Justice Alito understood the Federal Circuit's *en banc* decision in *Akamai* to hold a defendant liable for conduct that by itself does not constitute infringement, and he reasoned that this standard would make it difficult for courts to assess whether a patent holder's rights have been violated or not in future cases.¹⁵³ Justice Alito raised a hypothetical example wherein a defendant pays another to perform just one step, albeit the most important step, of a twelve-step method claim, and no one performs the other eleven steps.¹⁵⁴ In that scenario, while the defendant had not induced infringement and no infringement had occurred, Justice Alito noted that "no principled reason prevents him [the defendant] from being held liable for inducement under the Federal Circuit's reasoning, which permits inducement liability when fewer than all of the method's steps have been performed."¹⁵⁵ Even in the situation, as in *Akamai*, where all of the claimed method steps were completed, the Court still held that the standard set forth in *Muniauction* applied.¹⁵⁶

Moreover, parallels with tort law and the criminal code failed to persuade the Court to accept the Federal Circuit's inducement-only approach. Under tort law, a defendant could be found liable for harming another through a third party, even if the third party himself would not be liable.¹⁵⁷ But the Court reasoned in *Akamai* that there was no induced infringement because no direct infringement occurred; thus it was

149. *Id.*

150. *Id.* (citing *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329–1330 (Fed. Cir. 2008)).

151. *Id.*

152. *Id.*

153. *Id.* at 2118.

154. *Id.*

155. *Id.*

156. *Id.*

157. RESTATEMENT (FIRST) OF TORTS § 876 (1939).

unnecessary to broach the topic of third-party liability.¹⁵⁸ The Court pointed out that the attorneys for Akamai had failed to identify a single tort case holding a defendant liable for causing a third party to undertake an action that did not violate the legal rights of another.¹⁵⁹ In torts, the rationale for imposing liability when two or more defendants inflict injury on another stems from the principle that both defendants collectively violated the interests of another.¹⁶⁰ In the current case, the actions of Limelight and of its customers, each on their own, did not infringe the patent-in-suit and thus violate the interests of a patent holder.¹⁶¹ Likewise, the Court also deemed the analogy to the aiding and abetting statute in the criminal code unpersuasive, as the statute holds both abettors in and perpetrators of crimes liable as principals, which is unlikely something Congress relied upon when drafting § 271(b).¹⁶²

The Court's decision, however, did indicate that the Federal Circuit possibly erred in "too narrowly circumscribing the scope of § 271(a)" in its previous *Muniauction* decision but refused to interpret § 271(b) to impose liability for inducing infringement where direct infringement did not occur in order to correct the error.¹⁶³ Instead, it left the interpretation of § 271(a) for the Federal Circuit to address upon remand.¹⁶⁴

III. CHALLENGES FLOWING FROM THE SUPREME COURT DECISION

The Supreme Court's decision creates a loophole for would-be infringers to escape liability for patent infringement by dividing the performance of method patents with a party it neither directs nor controls.¹⁶⁵ This Part first discusses this loophole and then examines the effects of this gap in divided infringement law on three categories of interactive technologies: internet businesses and software, personalized medicine, and the Internet of Things (such as smart devices). It then urges the Federal Circuit, in light of the Supreme Court's recent decisions in *Mayo* and *Alice*, to broaden the current relationship requirement for a finding of divided infringement under § 271(a). This current requirement

158. See *Akamai*, 134 S. Ct. at 2119.

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.* at 2120.

165. *Id.* at 2119.

of an agency relationship or active inducement¹⁶⁶ poses a particular challenge for the field of personalized medicine in view of *Mayo*, as diagnostic tests now face both a patent eligibility challenge from *Mayo* and an enforcement bar from the Supreme Court's decision in *Akamai*. While the issue of divided infringement is becoming a more prominent concern in biotechnology, the decision in *Alice* has rendered it less relevant for software and business method patents. In raising the bar for patent eligibility for these types of patents, *Alice* has resolved some of the underlying policy concerns that have driven the evolution of divided infringement law. While it is still early, the immediate aftermath of the *Alice* decision indicates that courts may be able to dismiss business-method and low-quality software patents in litigation on 35 U.S.C. § 101 grounds, thus possibly discouraging owners of these patents from bringing suit.

A. DIVIDED INFRINGEMENT: DIFFICULTIES FACING § 271

Doctrinal problems with § 271 arise when two or more actors share the necessary acts to give rise to liability for direct infringement but do not have a close enough relationship for the acts of one to be attributable to the other. This is particularly problematic with method patents in two primary fact patterns: (1) a company performs all but the last step of a patented method and end users perform the last step, and (2) a company performs some of the steps a patented method and sells the resulting product to a buying company that performs the remaining steps.¹⁶⁷ In these scenarios, the law of indirect infringement under § 271(b) also fails to offer patent owners a remedy because a finding of indirect infringement is predicated upon first finding a single entity—under the standard set forth in *Muniauction*—responsible for direct infringement.¹⁶⁸ This opens up a loophole in the law of divided infringement whereby an actor can evade liability for infringement of a method patent by dividing up the performance of the steps of the method with another party it does not control or direct.

The Federal Circuit has two primary potential means of closing the loophole: § 271(a) or § 271(b). The Federal Circuit *en banc* in *Akamai* attempted to use the latter by holding that a party can be liable for induced infringement under § 271(b) even when no single party has committed

166. See *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329–30 (Fed. Cir. 2008).

167. See Kristin E. Gerdeman, *Subsequent Performance of Process Steps by Different Entities: Time to Close Another Loophole in U.S. Patent Law*, 53 EMORY L.J. 1987, 1987–88 (2004).

168. See *Akamai*, 132 S. Ct. at 2119.

direct infringement under § 271(a).¹⁶⁹ Despite legislative history indicating that Congress may have intended courts to address cases of divided infringement under § 271(b),¹⁷⁰ the Supreme Court's response clearly indicated that such an interpretation misconstrued § 271(b) and would result in problematic consequences, namely a "free-floating concept of 'infringement' both untethered to the statutory text and difficult for the lower courts to apply consistently" under § 271(b).¹⁷¹ Critics have also chimed in to note that such a free-floating § 271(b), untethered from the territorial limitations under § 271(a), runs contrary to both Congress's and the Supreme Court's long recognition of the strict territorial limits of patent law.¹⁷² While it refused to review the merits of *Muniauction* and its interpretation of § 271(a), the Court left the interpretation of § 271(a) to the Federal Circuit upon remand, indicating that relaxing the standards for divided infringement under § 271(a) may be a more appropriate means of closing the divided infringement loophole.¹⁷³

B. POTENTIAL EFFECT OF THE *AKAMAI* DECISION ON HIGH TECHNOLOGY

The absence of a more expansive divided infringement rule may render it more difficult for companies with patents that involve multiple actors to protect their technology. Two recent Supreme Court cases on the scope of

169. See *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1306 (Fed. Cir. 2012), *rev'd*, 132 S. Ct. 2111 (2014).

170. See H.R. REP. NO. 82-1923, 9 (1952).

171. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111, 2120 (2014).

172. See Timothy R. Holbrook, Brief of Ten Intellectual Property Law Professors as Amici Curiae in Support of Petitioner on the Issue of Extraterritoriality, *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 132 S. Ct. 2111 (2014), (No. 12-786). There is an express territorial limit for acts of direct infringement under § 271(a) but none for induced infringement under § 271(b). *Id.* at 3-4. Prior to the Federal Circuit's en banc decision, the absence of a territorial limit under § 271(b) was not an issue because an act of direct infringement under § 271(a) was a prerequisite for finding inducement infringement under § 271(b). *Id.* at 4. The territorial scope of § 271(a) thus also limited § 271(b). See, e.g., *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1318 (Fed. Cir. 2005). The en banc decision in *Akamai* effectively severs § 271(b) from § 271(a), thus removing the territorial limitation on § 271(b). See Holbrook, *supra*, at 4. This goes against the strong presumption against the extraterritorial application of U.S. patent law. See *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 527 (1972) (holding that it is not an infringement to make or use a patented product outside of the United States); *Brown v. Duchesne*, 60 U.S. 183, 195 (1856) (noting that rights granted to a patent owner are confined within the borders of the United States); *Microsoft Corp. v. AT & T Corp.*, 550 U.S. 437, 454-55 (2007) (interpreting Congress's answer to *Deepsouth*, 35 U.S.C. § 271(f), narrowly and finding in favor of the defendant who sold master copies of discs containing plaintiff's patented technology abroad).

173. See *Akamai*, 134 S. Ct. at 2120.

patentable subject matter, *Mayo* and *Alice*, further underscore the potential negative effects of the current divided infringement law on such companies. While amicus briefs in the *Akamai* case outlined the disparate positions the software and biotechnology industries held regarding the merits of the case, they also clearly demonstrated each industry's strong interest in this area of law.

Thus far, the cases from which the divided infringement standard has evolved have primarily centered on internet technologies, as evident in *BMC*, *Muniauction*, and *Akamai*. But in light of the nature of these technologies and the Supreme Court's recent decision in *Alice*, a divided infringement rule allowing for more types of potentially infringing conduct, based on the needs of industries in emerging technologies, would be more aligned with the goals of the patent system.¹⁷⁴ While there are many theories justifying the existence of a patent system, the primary justification for patent protection under U.S. law is utilitarian in nature. Namely, patents provide inventors with the incentive of a limited monopoly, thereby promoting research and development of beneficial technologies.¹⁷⁵ Patents can encourage innovation by providing ex-post incentives for inventors to maximize the value of their inventions¹⁷⁶ and ex-ante incentives that eliminate the free-rider problem, thereby enabling inventors to recoup their investment in research and development.¹⁷⁷

Because core industries likely to be affected by divided infringement include internet-based businesses and software, biotechnology, and the Internet of Things (smart devices), this Section first provides a brief description of these industries. It then argues that, in light of the recent Supreme Court decisions on § 101 patentable subject matter and the fundamental goals of patent law, the Federal Circuit should take the opportunity on remand to remedy the current loophole in divided infringement law.

174. See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1630–31 (2003).

175. *Id.* at 1597.

176. See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 265–271 (1977); Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 117–24 (2005).

177. See Burk & Lemley, *supra* note 173, at 1605; Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH. L.J. 667, 680–85 (2004).

1. *Internet-Based Businesses and Software Patents*

Divided infringement is a particular concern for internet-based businesses and software due to the interactive nature¹⁷⁸ of the technologies involved—ranging from internet retail and banking services to wireless technologies—and the frequency with which patent holders in these fields find themselves targets of infringement suits.¹⁷⁹ Internet businesses and software programs often require the participation of multiple entities. For instance, a credit card transaction today can involve multiple actors, including the online retailer, merchant processing providers, banks, and consumers,¹⁸⁰ while software programs involve the patent holder and at the very least one end user. Because partnering is often more efficient in this field, allowing each company to specialize and provide higher quality services to their customers, internet-based services will likely continue to involve multiple actors.¹⁸¹ Alongside the explosive growth that these industries have experienced in the past decade as they continue to become an increasingly integral part of the global economy, litigation has skyrocketed.¹⁸² Wireless carriers have been sued based on the methods that they use in operating their networks.¹⁸³ And internet retailers have faced liability for infringement based in part on their customers' activities.¹⁸⁴

178. W. Keith Robinson, *Economic Theory, Divided Infringement and Enforcing Interactive Patents*, __ FLA. L. REV. __ (forthcoming 2015).

179. Brief of the Clearing House and the Financial Services Roundtable as Amici Curiae in Support of Limelight Networks, Inc. at 12, *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012) (en banc) (per curiam), *cert. granted*, 134 S. Ct. 895 (U.S. Jan. 10, 2014) (No. 12-786) (No. 2009-1372), 2011 WL 7730148.

180. *Id.*

181. Brief of CTIA—the Wireless Association and Metropcs Wireless, Inc. as Amici Curiae Supporting Petitioner at 5, *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012) (en banc) (per curiam), *cert. granted*, 134 S. Ct. 895 (U.S. Jan. 10, 2014) (No. 12-786) (No. 2010-1291), 2011 WL4071472.

182. See Brief of the Clearing House and the Financial Services Roundtable, *supra* note 179, at 12.

183. See Brief of CTIA, *supra* note 181, at 6.

184. Brief of Internet Retailers as Amici Curiae in Support of Defendant/Cross-Appellant's En Banc Response Brief at 2, *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012) (en banc) (per curiam), *cert. granted*, 134 S. Ct. 895 (U.S. Jan. 10, 2014) (No. 12-786) (No. 2009-1372), 2011 WL 3796786. In response to the patent troll problem, where companies or individuals use patents to "extort money" through litigation, multiple pieces of litigation have been proposed at both the federal and state level. Federal initiatives include the Innovation Act, H.R. 3309, 113th Cong. (2013); Patent Transparency and Improvements Act of 2013, S.1720, 113th Cong. (2013); and the Saving High-Tech Innovators from Egregious Legal Disputes Act of 2013 (SHIELD Act of 2013), H.R. 845 §2(d), 113th Cong. (2013). State legislations include Vermont's Bad Faith Assertions of Patent Infringements law, 9 V.S.A. §§ 4195–

Requiring patent owners to show an agency relationship or active inducement, and therefore construing patent rights narrowly, as in *BMC*, *Muniauction*, and *Akamai*, may have been a valid response to the concern that innocent parties (particularly customers performing the last step of a method patent) could be found liable for infringement. Innocent third-party liability and patent-troll concerns, however, may have been diminished by recent Supreme Court decisions, particularly *Alice*.¹⁸⁵ In that case, Alice Corporation owned several patents covering a computerized trading platform wherein trades between two parties are settled by a third party in a manner that eliminates “settlement risk,” the risk that only one party will pay its obligation.¹⁸⁶ CLS, a consortium of banks operating a global currency exchange network, sought to invalidate three of Alice’s patents.¹⁸⁷ The Supreme Court found for CLS, holding unanimously that Alice’s claims were ineligible for patent protection under § 101 because they constituted abstract ideas.¹⁸⁸ The Court found that the concept of using a third party to eliminate settlement risk is “a fundamental economic practice long prevalent in our system of commerce,” and that using generic computer functions to implement the idea was not enough to transform it into a patent-eligible invention.¹⁸⁹

In its decision, the Court announced a two-part framework for determining patent eligibility under § 101, adapted from its prior decision in *Mayo v. Prometheus*.¹⁹⁰ The inquiry involves first determining if the claim involves an abstract idea, and then examining the elements of the

4199 (2013), and Oregon’s Senate Bill 1540 (Ore. 2014). Thus far, however, no comprehensive federal legislation has been passed.

185. See *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014). Additionally, two cases relaxing the standard for fee shifting under § 285, *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014), and *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014), may also alleviate some of the patent troll problems. While some district courts have applied the relaxed standards from these cases to award attorneys’ fees, it is still too early to tell what effects the decision will ultimately have on the patent troll problem. See, e.g., *Intellect Wireless, Inc. v. Sharp Corp.*, No. 10 C 6763, 2014 WL 2443871 (N.D. Ill. May 30, 2014); *Precision Links Inc. v. USA Prods. Grp., Inc.*, No. 3:08-CV-00576-MR, 2014 WL 2861759 (W.D.N.C. June 24, 2014); *Classen Immunotherapies Inc. v. Biogen Idec*, No. CIV. WDQ-04-2607, 2014 WL 2069653 (D. Md. May 14, 2014); *AGSouth Genetics, LLC v. Georgia Farm Servs. LLC*, No. 1:09-CV-186 WLS, 2014 WL 2117451 (M.D. Ga. May 21, 2014).

186. See *Alice*, 134 S. Ct. at 2352–53.

187. See *id.* at 2353.

188. See *id.* at 2355.

189. *Id.* at 2356.

190. See *id.* at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012)).

claim to determine whether it contains an inventive concept sufficient to transform the abstract idea into a patent-eligible application.¹⁹¹ Claims that are broad and cover well-known practices will fail to pass muster under the first element, and the “inventive concept” element may now require new hardware or a non-conventional use of generic computer functions.¹⁹² The patents in the very cases establishing the current law of divided infringement, *BMC*, *Muniauction*, and *Akamai*, may now be invalid after *Alice*, thus signaling the need for a divided infringement rule that is more compatible with the interests of industries like biotechnology and the Internet of Things, in which actionable divided infringement is more prevalent.

While *Alice* does not render software in general unpatentable¹⁹³ and sets forth a heavily-debated framework, the latest United States Patent and Trademark Office (“PTO”) rejections and the line of Federal Circuit cases following *Alice*, with the exception of *DDR Holdings LLC v. National Leisure Group*,¹⁹⁴ forecast a fundamental change in software

191. *Id.*

192. See Robert Merges, *Symposium: Go ask Alice—what can you patent after Alice v. CLS Bank?*, SCOTUSBLOG (June 20, 2014, 12:04 PM), available at <http://www.scotusblog.com/2014/06/symposium-go-ask-alice-what-can-you-patent-after-alice-v-cls-bank/>.

193. The most recent USPTO guidelines on subject matter patentability post-*Alice*, published December 16, 2014, indicates that software can still be patented. *Alice* did not create a per se excluded category of subject matter. See *2014 Interim Guidance on Patent Subject Matter Eligibility*, 79 (241) FED. REGISTER 74619 (2014), available at <https://www.federalregister.gov/articles/2014/12/16/2014-29414/2014-interim-guidance-on-patent-subject-matter-eligibility>. And on January 27, 2015, the USPTO released eight examples of patents involving abstract ideas: four patent-eligible under *Alice* and four patent-ineligible under *Alice*, to provide additional guidance for the legal community. See *Examples: Abstract Ideas*, United States Patent and Trademark Office, available at http://www.uspto.gov/patents/law/exam/abstract_idea_examples.pdf (last visited Jan. 29, 2015). These examples illustrated that, in order to qualify as eligible subject matter, an invention will likely need to have a component that improves the function of a computer, rather than simply using a computer to make an existing process—such as long-standing business practices—run more efficiently. Ryan Davis, *USPTO Examples Show What Passes Muster Under Alice*, LAW360 (Jan. 27, 2015, 8:18PM), available at http://www.law360.com/ip/articles/615550?nl_pk=c1c9ba92-f918-4983-9ceb-91bf74b3e5f1&utm_source=newsletter&utm_medium=email&utm_campaign=ip.

194. See *DDR Holdings, LLC v. Hotels.com, L.P.*, No. 2013-1505, 2014 WL 6845152, at *10 (Fed. Cir. Dec. 5, 2014) (distinguishing an e-commerce system and method of providing hosts with transparent, context sensitive e-commerce supported pages from the unpatentable technology in *Alice*). The court in *DDR Holdings* noted that

[T]he technology does not merely recite the performance of some business practice known from the pre-Internet world along with the

patentability.¹⁹⁵ For example, in *buySAFE, Inc. v. Google, Inc.*, the Federal Circuit invalidated a patent for safe online commercial transactions as an abstract idea.¹⁹⁶ And in *Digitech Image Technologies, LLC v. Electronics for Imaging*, a case with a large number of defendants including digital camera manufacturers, retailers, and laptop manufacturers, the Federal Circuit dismissed the case on summary judgment after declaring the plaintiff's patent for generating an "improved device profile" within a digital image processing program invalid under § 101.¹⁹⁷ Lower courts have also joined the Federal Circuit in invalidating business method and software patents,¹⁹⁸ with very few instances where a court has questioned or distinguished *Alice*.¹⁹⁹ One particularly notable district court case, *McRO, Inc. v. Activision Publishing, Inc.*, is one of the first major rejections of a non-business method case under *Alice*.²⁰⁰ The patent in *Activision*

requirement to perform it on the Internet. Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.

Id. Some commentators have tried to reconcile *DDR Holdings* with another e-commerce case, *Ultramercial v. Hulu*, which concerns a patent involving a business method for allowing consumers to access copyrighted content on the internet after watching an advertisement. 772 F.3d 709, 712 (Fed. Cir. 2014). One primary difference between the patent in *Ultramercial* and that in *DDR Holdings* is that the *Ultramercial* patent disclosed no software or computer technology and simply described a business method. See Bart Eppenauer, *DDR Holdings—Federal Circuit Forges a Sensible Path on Software Patents*, PATENTLY-O (Dec. 14, 2014), available at <http://patentlyo.com/patent/2014/12/holdings-sensible-software.html>.

195. Gene Quinn, *The Ramifications of Alice: A Conversation with Mark Lemley*, IPWATCHDOG (Sept. 4, 2014), <http://www.ipwatchdog.com/2014/09/04/the-ramifications-of-alice-a-conversation-with-mark-lemley/id=51023/>.

196. See *buySAFE Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014).

197. See *Digitech Image Techs, LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014).

198. See *Walker Digital, LLC v. Google, Inc.*, C.A. No. 11-318-LPS, 2014 WL 4365245, at *10 (D. Del. Sept. 3, 2014) (finding a data processing patent invalid as an abstract idea under § 101); see also *Ex parte Cote*, No. NTI-747CON6-1C1D (P.T.A.B. Sept. 3, 2014) (holding a computer method for 'phase shifting' design data invalid under 101).

199. See also *Genetic Techs. Ltd. v. Glaxosmithkline, LLC*, No. 1:12-CV-299, 2014 U.S. Dist. Lexis 156473, at *2 (M.D.N.C. Aug. 22, 2014) (denying a motion to dismiss because *Alice* concerned the computer implementation of an abstract idea, a completely different factual context, and arose under a different procedural context than the case in point).

200. *McRO, Inc. v. Activision Pub., Inc.*, No. CV 14-336-GW(FFMx), 2014 U.S. Dist. LEXIS 135152 (C.D. Cal. Sept. 22, 2014). In light of the more recent decision in *DDR Holdings*, it is very likely that this decision will be overturned on appeal. See *DDR Holdings, LLC v. Hotels.com, L.P.*, No. 2013-1505, 2014 WL 6845152, at *10 (Fed. Cir. Dec. 5, 2014).

concerned animation of lip synchronization and facial expression in video game characters.²⁰¹ While Judge Wu noted that the technology in suit resolved a long-standing problem in the video game industry, the solution as claimed in the patent remained ineligible for protection under § 101.²⁰²

Although the nebulous *Alice* framework will continue to be debated, the immediate aftermath of the decision indicates that courts may be able to dismiss business methods and low-quality software patents in litigation on § 101 grounds, thus possibly discouraging owners of these patents from bringing suit. As many of these technologies are no longer eligible for patent protection, *Alice* may have diminished the relevance of divided infringement in internet-based business method and software patents.

2. *Biotechnology*

Biotechnology involves the use of a broad range of techniques and procedures for modifying living organisms with applications in engineering, manufacturing, food sciences, and most prominently medicine.²⁰³ The current divided infringement law, requiring either an agency relationship or active inducement,²⁰⁴ poses a particular challenge for the field of personalized medicine, which relies on diagnostic tests to obtain specific information about patients.²⁰⁵ Patentees wishing to protect their intellectual property in medical processes and diagnostics now face a barrier to patentability in light of the Supreme Court's recent decision in *Mayo* and, after the Court's decision in *Akamai*, a second barrier in enforcing their patents should they overcome the bar for patentability.²⁰⁶

In *Mayo*, the claims at issue covered a medical process for optimizing the therapeutic efficiency of the drug thiopurine based on the amount of the drug present in the patient's bloodstream.²⁰⁷ Prometheus's claims covered a method of: (1) administering a drug to a patient, (2) determining the metabolite levels of the drug in the patient's blood, and

201. *Id.* at *1.

202. *Id.* at *32–39.

203. *What is Biotechnology?*, BIOTECHNOLOGY INDUS. ORG. (June 20, 2012), <http://www.bio.org/node/517>.

204. *See* *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329–1330 (Fed. Cir. 2008).

205. Brief of Myriad Genetics, Inc. as Amicus Curiae in Support of Neither Party at 4, *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301 (Fed. Cir. 2012) *cert. granted*, 134 S. Ct. 895 (U.S. Jan. 10, 2014) (No. 12-786) (2009-1372), 2011 WL 3281836.

206. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

207. *Id.* at 1297–1298.

(3) informing a physician whether the metabolite levels indicated a need to increase or decrease the drug dosage.²⁰⁸ The Mayo Clinic initially bought a diagnostic test embodying the claims from Prometheus but decided in 2004 that it would begin using and selling a variation of the test.²⁰⁹ The Court found Prometheus's claims patent ineligible because they claimed a law of nature and did not contain an inventive application of that law.²¹⁰ The Court held that Prometheus's claims merely instructed doctors to gather data and draw inferences in light of a naturally occurring correlation and thus were not inventive.²¹¹

After *Mayo*, the purely diagnostic components of diagnostic tests, such as those that analyze a patient's DNA for the presence of a molecular variant using conventional DNA-analysis techniques, are no longer patent-eligible.²¹² The Federal Circuit's recent decision regarding the patent ineligibility of primers, single-stranded synthetic DNA molecules commonly used in diagnostic tests, further erodes patent protection for diagnostics, as the tools used in tests (the composition of matter) may no longer be patentable.²¹³ The PTO guidelines still permit diagnostic patents, provided that the claims significantly differ from laws of nature.²¹⁴ This requirement can be met by demonstrating that the claims include elements or steps in addition to a law of nature, ones that practically apply the law of nature.²¹⁵ Inventors wishing to patent diagnostic tests thus need to claim specific applications of these tests, which often involves dividing steps between several parties, including lab technicians and physicians, such that no single party is claimed to perform all of the steps alone.²¹⁶ A case illustrating this post-*Mayo* state of affairs is *Classen Immunotherapies*,

208. *Id.* at 1295.

209. *Id.* at 1296.

210. *Id.* at 1297.

211. *Id.* at 1288.

212. *Id.* at 1297.

213. *See* *In re BRCA1- and BRCA2-Based Hereditary Cancer Test Patent Litigation*, Nos. 2014-1361, 2014-1366, 2014 WL 7156722, at *1 (Fed. Cir. Dec. 17, 2014).

214. Memorandum of Andrew H. Hirshfeld, Deputy Commissioner for Patent Examination Policy, March 2014 Procedure For Subject Matter Eligibility Analysis Of Claims Reciting Or Involving Laws Of Nature/Natural Principles, Natural Phenomena, And/Or Natural Products at 3, *available at* http://www.uspto.gov/patents/law/exam/myriad-mayo_guidance.pdf.

215. *Id.*

216. Press Release, *Mayo Clinic and SV Bio Enter Strategic Relationship on Genome Diagnostics and Interpretation*, MAYO CLINIC (Jan. 21, 2013), *available at* <http://newsnetwork.mayoclinic.org/discussion/mayo-clinic-and-sv-bio-enter-strategic-relationship-on-genome-diagnostics-and-interpretation/>.

Inc. v. Biogen Idec, where the patent involved an infant immunization schedule that reduced the likelihood of causing immune-related disorders.²¹⁷ The patent contained three steps: (1) selecting two particular different immunization schedules, (2) comparing the effectiveness of the two schedules, and (3) immunizing more infants under the lower-risk schedule.²¹⁸ The District Court of Maryland distinguished *Classen* from *Mayo*, by pointing to the data gathering (comparing) step and the mandatory application (immunization) step as specific applications, in finding the claim patent eligible.²¹⁹ Under these circumstances, even though the patentable feature is a diagnostic itself, because neither the diagnostic testing party nor the physician is under the control or direction of the other party, the patent may be rendered unenforceable.²²⁰ In the method at issue in *Classen*, although research scientists are likely to complete the comparing step, physicians, nurses, and even possibly pharmacists could be responsible for the immunization step.

And while patent prosecutors will certainly explore creative claim-drafting strategies to avoid multiple actors, the *Mayo* decision has made their task significantly more challenging and uncertain.²²¹ A recent Bloomberg BNA survey into PTO examiner actions post-*Mayo* illustrates this fact.²²² The survey reviewed the prosecution histories of approximately one thousand biotechnology patents and found that 35 percent of the applications contained § 101 rejections based on *Mayo*.²²³ Furthermore, the applications rejected based on *Mayo* most often related the correlation of a health condition with a biological molecule, and when applicants followed the PTO examiner's suggestions to amend claims by adding practical steps, those amendments often imposed key limitations on enforcement.²²⁴

In personalized medicine, where research involves a substantial

217. See *Classen Immunotherapies, Inc. v. Biogen Idec*, No. CIV. WDQ-04-2607, 2012 WL 3264941, at *2 (D. Md. Aug. 9, 2012).

218. *Id.* at *1.

219. *Id.* at *5.

220. See Erik P. Harmon, Note, *Promoting the Progress of Personalized Medicine: Redefining Infringement Liability for Divided Performance of Patented Methods*, 42 HOFSTRA L. REV. 967, 970 (2014).

221. Joanna Liebes, *Akamai: A Cure for Medical Process Patent's Prometheus Ailment?*, 5 HASTINGS SCI. & TECH. L. J. 309, 309–10 (2013).

222. Matthew B. McFarlane, Tara Guffrey Sharp and John T. Aquino, *Stopped at the Threshold: The Practical Impact of the Supreme Court's Mayo and Myriad Decisions on Biotechnology Patent Practices*, BNA BLOOMBERG (BUREAU OF NAT'L AFFAIRS) (2014).

223. *Id.* at S-16.

224. *Id.* at S-5.

investment of capital and thus entails considerable financial risk, such uncertainty is likely to hamper progress.²²⁵ Molecular diagnostics are extremely costly to develop,²²⁶ due to the difficulty of performing research in the field and the complexity of molecular interactions.²²⁷ Additionally, even once a discovery is made and patented, there is a lengthy FDA approval process that increases development costs and decreases the inventor's monopoly period.²²⁸ The free-riding concern in personalized medicine and biotechnology generally is high because there is a larger gap between innovator and imitator costs in this industry than in others.²²⁹ Consequently, the industry has little incentive to invest without strong patent protections, which a more relaxed relationship standard in divided infringement law could confer on patent owners.

3. *Internet of Things (Smart Devices)*

The Internet of Things ("IoT") refers to the connection of physical things with the internet to give rise to synergistic services allowing individuals to access remote sensor data and control physical objects from afar.²³⁰ Divided infringement law is of particular interest for this industry, as the technology in the IoT is fundamentally interactive in nature.²³¹ A typical application of this technology involves using a smart device to collect data and transmit it to other devices or humans, thus forming a

225. See Jerel C. Davis et al., *The Microeconomics of Personalized Medicine: Today's Challenge and Tomorrow's Promise*, 8 NATURE REVIEWS DRUG DISCOVERY 279 (2009).

226. *Id.* at 282.

227. Geoffrey S. Ginsburg & Jeanette J. McCarthy, *Personalized Medicine: Revolutionizing Drug Discovery and Patient Care*, 19 TRENDS IN BIOTECHNOLOGY 491, 494–495 (2001).

228. See Davis, *supra* note 225, at 282–83.

229. By contrast, internet businesses and software firms do not require such strong monopoly protections to maintain adequate incentives to develop new technologies. Because business methods offer companies a competitive advantage, they will arguably be developed even in the absence of patent protection. See Burk & Lemley, *supra* note 174, at 1618. And due to the low research and development costs associated with internet business methods and software, these industries do not require strong patent rights to incentivize potential investors. See *id.* at 1617–19. While patentability of software varies worldwide, some legal regimes, such as the European Patent Office, have placed higher barriers on patentability. The European Patent Office does not grant patents for computer programs or computer-implemented business methods unless they make a technical contribution beyond the ordinary technical interactions between software and hardware. See *Patents for Software, European Law and Practice*, European Patent Office, <http://www.epo.org/news-issues/issues/software.html> (last visited Dec. 24, 2014).

230. Luigi Atzori, Anotnio Iera & Giacomo Morabito, *The Internet of Things: A Survey*, 54 COMPUTER NETWORKS 2787 (2010).

231. See Robinson, *supra* note 178, at 18.

complex interconnected web of physical objects and human beings, making it impossible to identify just one entity as an infringer when the network technology connecting various devices is replicated.²³² These smart devices are extremely versatile and can be used in many fields including nanotechnology, digital electronics, and electromechanical systems.²³³ Today, early applications are developing in e-health, enhanced learning, and home automation.²³⁴ Because of the astronomical number of possible applications, the IoT is poised to experience tremendous growth in the coming years. The number of connected devices already outnumbers the number of human beings on Earth and is projected to reach twenty-five billion by 2015.²³⁵ Stakeholders in these technologies, particularly network providers and service providers, will undoubtedly seek patent protection for their network innovations.²³⁶ And as these stakeholders make substantial investments in the hardware underlying the network of connected smart devices, much like the investments stakeholders in the biotechnology industry make, they would benefit from a stronger divided infringement rule offering protection against would-be infringers dividing performance of method claims.

IV. ALTERNATIVE APPROACHES TO DIVIDED INFRINGEMENT

In order to encourage continued innovation and offer stakeholders in high technology legal certainty, the Federal Circuit should expand the doctrine of divided infringement to cover patents that inherently involve multiple actors. The Federal Circuit's majority en banc decision generated two dissents by Judge Newman and Judge Linn, each advocating an alternative divided infringement rule from that set forth by the majority. Scholars have also proposed novel approaches, including the Last Step Rule and the "flexible," bifurcated divided infringement rule. This Part examines and evaluates these approaches, concluding with recommendations moving forward.

232. See Oladayo Bello & Sherali Zeadally, *Intelligent Device-to-Device Communication in the Internet of Things*, IEEE SYSTEMS JOURNAL 1, 1 (2014).

233. See *id.* at 2.

234. See Atzori, *supra* note 230, at 2787.

235. See Oladayo, *supra* note 232, at 1.

236. See Peng-fei Fan & Guang-zhao Zhou, *Analysis of the Business Model Innovation of the Technology of Internet of Things in Postal Logistics*, IEEE 532 (2011).

A. JUDGE NEWMAN'S ALL-STEPS RULE

In her dissent to the Federal Circuit's en banc decision, Judge Newman criticized both the majority's "inducement-only" rule and Judge Linn's dissent upholding the single-entity rule, concluding that neither approach is in accord with reasonable infringement policy and the language of § 271.²³⁷ The majority's rule, Judge Newman argued, greatly enlarged liability grounds for an "inducer" since it held him solely liable for divided infringement even though two or more actors violated the patent rights in joint conduct.²³⁸ This approach was not only a significant departure from precedent but also contained vast potential for abuses and gamesmanship, allowing otherwise responsible parties to escape liability.²³⁹ Furthermore, the rule was inherently inconsistent because there could have been indirect infringement without any direct infringers.²⁴⁰ While Judge Newman found that majority's inducement-only rule opened too many possibilities for abuse, she found the status quo, where divided infringement is not actionable unless one participant exhibits control or direction over the others, plainly inadequate to protect the rights of patentees.²⁴¹ Referring to the district court's ruling in *McKesson*, Judge Newman noted that the single-entity rule leaves meritorious patentees without redress and feared that this inadequacy in infringement law would reduce the incentive for innovators to pursue multi-actor technologies.²⁴²

In lieu of these two approaches, Judge Newman proposed imposing liability whenever "all of the claimed steps are performed, whether by a single entity or more than one entity, whether by direction or control, or jointly" ("All-Steps rule").²⁴³ The language of § 271(a), she interpreted, supports her construction because the word "whoever" can be both singular and plural.²⁴⁴ The language in the statute thus does not lend support to the single-entity rule that one actor must carry out all the claims of the patent to find infringement.²⁴⁵ Under Judge Newman's All-Steps rule, after finding infringement, liability is assessed under traditional

237. See *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1321 (Fed. Cir. 2012) (Newman, J., dissenting), *rev'd*, 132 S. Ct. 2111 (2014).

238. *Id.* at 1319.

239. *Id.* at 1319–20.

240. *Id.* at 1321.

241. *Id.* at 1319.

242. *Id.* at 1322.

243. *Id.* at 1326.

244. *Id.* at 1322.

245. *Id.*

tort principles of apportionment.²⁴⁶ This assessment considers factors including an entity's relative contribution to the injury, the economic benefit the entity received from the infringement, and the entity's knowledge or culpability.²⁴⁷ Such apportionment, Judge Newman argued, is particularly suitable for cases of divided infringement as it allows judges to take into account the nuances of each situation.²⁴⁸

One of the major criticisms of Judge Newman's All-Steps approach is its broad reach, because it first imposes liability whenever all claimed steps of a patent are performed, without regard to the circumstances surrounding the infringement, and only later considers these circumstances at the remedies stage. This rule, Judge Linn pointed out, would ensnare innocent actors and place the burden on courts to absolve them.²⁴⁹ Judge Newman attempted to preempt this concern by observing that deep-pocket commercial participants, rather than the occasional customer, are generally the targets of suits.²⁵⁰ Moreover, any damages attributed to an innocent infringer would likely be negligible.²⁵¹

This observation, however, is not entirely true in cases of divided infringement. Mass patent assertions against small businesses and consumers are increasingly commonplace.²⁵² End-user patent litigation typically involves patent assertion entities suing vast numbers of consumers or small businesses who incorporate a patented technology in their businesses but who do not make, use, or sell the technology on their own.²⁵³ The expense of patent litigation weighs particularly heavily on

246. *Id.* at 1331.

247. *Id.* at 1331 (referring to RESTATEMENT (THIRD) OF TORTS § 8 cmt. c (2000), which elaborates on how to evaluate the nature of each person's risk-creating conduct by examining "how unreasonable the conduct was in the circumstances, the extent to which the conduct failed to meet the applicable legal standard, the circumstances surrounding the conduct, each person's abilities and disabilities, and each person's awareness, intent, or indifference with respect to risk.").

248. *Id.* at 1332.

249. *See Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1350 (Fed. Cir. 2012) (Linn, J., dissenting), *rev'd*, 132 S. Ct. 2111 (2014); W. Keith Robinson, *No "Direction" Home: An Alternative Approach to Joint Infringement*, 62 AM. U. L. REV. 59, 100 (2012).

250. *See Akamai*, 692 F.3d at 1332 (Newman, J., dissenting).

251. *See Robinson*, *supra* note 178, at 57.

252. *See Colleen Chien & Edward Reines, Why Technology Customers Are Being Sued En Masse for Patent Infringement & What Can Be Done*, 49 WAKE FOREST L. REV. 235 (2014).

253. Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 B.C. L. REV. 1443, 1443 (2014). End users are likely to become even more prevalent in patent litigation, as 3D printers become more popular, making it more likely that an individual

these individuals, as they often lack the technological expertise to challenge the validity of the patent and any infringement claims.²⁵⁴ In light of these expenses, end users typically prefer to avoid litigation and settle claims even against which they have strong defenses, making them a particularly lucrative target for patent owners.²⁵⁵ Consequently, Judge Newman's All-Steps rule may not be as benign for innocent parties as she envisioned.

Additionally, Judge Newman's All-Steps rule creates a further conflict in divided infringement law between methods and systems.²⁵⁶ Currently, if an end user or customer practices an element of a patented system claim such that they derive benefit from and make "use" of the entire system can be held liable for direct infringement under § 271(a).²⁵⁷ The manufacturer or creator of the system, which by itself is not infringing without input from the customer, is consequently liable under a theory of indirect infringement. But under Judge Newman's apportionment approach, however, both the end user *and* manufacturer would be liable for direct infringement.

Finally, Judge Newman's approach also blurs the lines between direct, induced, and contributory infringement.²⁵⁸ The All-Steps rule indirectly inserts a knowledge or intent standard, typically reserved for induced and contributory infringement, into § 271(a), during the remedies stage. Even though a finding of direct infringement would still occur under a strict

or small business will make an infringing item that will expose them to liability. *Id.* at 1446. An example of these suits involve Innovatio, which acquired patent rights to wireless internet technology and sent more than 8,000 infringement letters to businesses that use Wi-Fi technology. *See* *Motorola Solutions, Inc. v. Innovatio IP Ventures*, 921 F. Supp. 2d 903, 907 (N.D. Ill. 2013). Another entity, ArrivalStar, owned patents covering systems and methods that enable users to receive electronic vehicle or shipment information; it filed hundreds of lawsuits, particularly targeting public transportation systems. *See* Joe Mullin, *Patent Troll that Sues Public Transit Systems Get Hauled into Court*, ARS TECHNICA (June 26, 2013), <http://arstechnica.com/tech-policy/2013/06/patent-troll-that-sues-public-transit-systems-gets-hauled-into-court/>.

254. *See* Bernstein, *supra* note 253, at 1450.

255. *See id.*

256. *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1350 (Fed. Cir. 2012) (Linn, J., dissenting), *rev'd*, 132 S. Ct. 2111 (2014).

257. *See* *Centillion Data Sys., LLC v. Qwest Commc'ns Int'l, Inc.*, 631 F.3d 1279, 1285 (Fed. Cir. 2011). The Federal Circuit found that the customer had "used" the system—one for collecting, processing, and delivering information from service providers to customers—because its actions put the system into service. *Id.* The court, however, concluded that the service provider had not "used" the system, even when it runs the backend of the system, because it does not put the system into service. *Id.* at 1286. Therefore, the service provider could only be liable for indirect infringement.

258. *See Akamai*, 692 F.3d at 1350.

liability regime, Judge Newman's rule requires courts to inquire into the intent and knowledge of the parties in order to exonerate some and hold others accountable. Judge Linn provided an example of such line blurring, involving a patentee with an apparatus claim, parties X and Y who make the nuts and bolts for the apparatus, and party Z who assembles the apparatus.²⁵⁹ Under Judge Newman's All-Steps Rule, parties X, Y, and Z would all be liable as joint infringers, whereas under the current regime, party Z would be strictly liable as a direct infringer and parties X and Y would be liable as contributory infringers.²⁶⁰ Such a stark departure from the strict liability approach of § 271(a) would be better left for Congress, rather than the courts, to implement.

B. JUDGE LINN'S JOINT ENTERPRISE INTERPRETATION

In his dissent, Judge Linn defended the single-entity rule and the *BMC/Muniauction* approach to divided infringement, using many arguments similar to those appearing in the recent Supreme Court decision reversing the en banc decision.²⁶¹ Even though patent law may have had its origins in the common law, Judge Linn emphasized that Congress removed joint actor liability from the discretion of the courts by codifying it in 1952.²⁶² Consequently, §§ 271(b) and (c) describe the only ways in which individuals could be liable for actions short of direct infringement under § 271(a).²⁶³ In support of the single-entity rule, Judge Linn offered a different interpretation from Judge Newman's of the term "whoever"—the term indicates that more than one entity can be independently liable for direct patent infringement, so long as each entity separately practices all the elements of the claim.²⁶⁴ Furthermore, Judge Linn argued that Congress is perfectly capable of creating alternative forms of infringement and that it was aware of the Federal Circuit's interpretation of § 271(a) in both *BMC* and *Muniauction* when it enacted the Leahy-Smith America Invents Act.²⁶⁵ Congress's inaction thus signified that it had no wish to broaden the scope of indirect infringement liability by abrogating the single-entity rule for direct infringement.²⁶⁶

259. *Id.*

260. *Id.*

261. *Id.* at 1344.

262. *Id.* at 1337.

263. H.R. REP. NO. 82-1923, at 9 (1952).

264. *See Akamai*, 692 F.3d at 1338.

265. *Id.* at 1343; America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

266. *See Akamai*, 692 F.3d at 1343.

Instead of proposing a new rule for divided infringement, Judge Linn asserted that the current divided infringement rule, rooted in traditional principles of vicarious liability, offers patentees adequate protection.²⁶⁷ The decision in *BMC*, which held that an entity was liable for infringement where another's actions could be legally imputed to him,²⁶⁸ is congruent with the generally recognized notion that multiple actors can only infringe a patent together if one somehow controls the others.²⁶⁹ According to Judge Linn, it is undisputed that such application of traditional principles of vicarious liability and agency to direct infringement under § 271(a) is enough to protect patentees from masterminds who attempt to avoid infringement by contracting out the steps of a method patent to third parties.²⁷⁰

Judge Linn opined, however, that the current rule also reaches entities acting together as joint enterprises to infringe a patent.²⁷¹ A joint enterprise exists where there is:

- (1) an agreement, express or implied, among the members of the group; (2) a common purpose to be carried out by the group; (3) a community of pecuniary interest in that purpose, among the members; and (4) an equal right to a voice in the direction of the enterprise, which gives an equal right of control.²⁷²

Judge Linn found an example of such a joint enterprise in *Golden Hour Data Systems, Inc. v. emsCharts, Inc.*, a case where the defendants formed a strategic partnership allowing their programs to work together and even collaborated to sell the programs as a single unit.²⁷³ In *Golden Hour*, the Federal Circuit affirmed the district court's decision that there could be no direct infringement when the direction or control standard could not be established.²⁷⁴ Judge Newman heavily criticized the outcome of this case in her dissent, citing it as an example of why the Federal Circuit should

267. *Id.* at 1348.

268. *Id.* (citing *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1380–81 (Fed. Cir. 2007)).

269. *Id.* (citing *Mobil Oil Corp. v. Filtrol. Corp.*, 501 F.2d 282, 291–92 (9th Cir. 1974)).

270. *Id.* (citing *BMC Res.*, 498 F.3d at 1381).

271. *Id.* at 1349 (“All members of a joint venture may be jointly and severally liable to third persons for wrongful acts committed in furtherance of the joint enterprise.” 48A C.J.S. Joint Ventures § 60).

272. RESTATEMENT (SECOND) TORTS § 491 cmt. c. (1965).

273. *See Golden Hour Data Sys. Inc., v. emsCharts, Inc.*, 614 F.3d 1367, 1369–71 (Fed. Cir. 2010).

274. *See Akamai*, 692 F.3d at 1349 (citing *Golden Hour Data Sys.*, 614 F.3d at 1371).

adopt the All-Steps rule.²⁷⁵ Judge Linn agreed that the *Golden Hour* decision should be overturned but argued that it could be overturned under the Joint Enterprise interpretation of the current rule rather than requiring a new rule.²⁷⁶

While the interpretation of the control or direction test to include a joint enterprise could be used to overturn the *Golden Hour* decision, it would not affect cases such as *Akamai* and *McKesson*, where customers are unlikely to be in joint enterprises with product or service providers.²⁷⁷ It is also unlikely to address concerns from the biotechnology industry, as physicians and hospitals may share a common purpose and be in an agreement with diagnostic companies but will likely lack a voice in the direction of the enterprise necessary for a finding of a joint enterprise. This illustrates a shortcoming of Judge Linn's reliance on the codification of indirect infringement in 1952. Most of the technology that is the subject of divided infringement suits today, stemming from the advent of the internet and advances in biotechnology leading to personalized medicine, did not exist in 1952.²⁷⁸ The Patent Act of 1952 thus could not have taken into account the issues that have arisen with new technologies and the new manners in which multiple entities working together could infringe patents on these new technologies.²⁷⁹ The loophole allowing two or more parties to infringe a method patent absent a showing of an agency relationship, as the Federal Circuit acknowledged, still persists.²⁸⁰

C. ROBINSON'S FLEXIBLE BIFURCATED APPROACH

Responding to the limitations of both Judge Newman's All-Steps rule and Judge Linn's Joint Enterprise interpretation, Professor Keith Robinson has proposed a more flexible approach to divided infringement. Robinson identified three main scenarios in which divided infringement issues arise: (1) when the patentee has poorly drafted claims unnecessarily directed to more than one entity, (2) when single-entity claims are drafted as such but their nature allows for actors to split up performance, and (3) when claims are interactive in nature and require multiple actors.²⁸¹ While the first scenario could easily be addressed through better claim drafting, the second and third scenarios present a greater challenge for lawmakers.

275. *Id.*

276. *Id.*

277. See Robinson, *supra* note 249, at 98.

278. See *id.* at 99.

279. See *id.* at 100.

280. See *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1381 (Fed. Cir. 2007).

281. See Robinson, *supra* note 249, at 109–10.

Rather than propose one rule to address both scenarios, Robinson set forth two separate approaches to lower the enforcement hurdle for truly novel interactive patents, thus closing the current divided infringement loophole while still remaining narrowly tailored to protect innocent parties.

1. *Claims Addressed to a Single Infringer*

In this scenario, patent claims are written for performance by a single entity; however, multiple entities may split up performance of the claims, without evidence of control or direction, thus deriving the benefit of the patented invention without the risk of infringement.²⁸² In these instances, Professor Robinson's flexible bifurcated approach recommends that courts take into account five factors—collaboration, concerted action, benefit to be realized, nature of the activity, and intent—to determine divided infringement liability:²⁸³

Collaboration: Because requiring evidence of a legal relationship to establish collaboration between multiple parties leaves open the opportunity for gamesmanship, Robinson suggests examining evidence of joint sales activities, joint promotional activities, and any other joint activity, all of which weigh in favor of finding divided infringement.²⁸⁴

Concerted action: Evidence of parties acting in concert weighs in favor of a finding of divided infringement.²⁸⁵ Such evidence could include whether the parties acted with each other in pursuit of a common design.²⁸⁶ In *Golden Hour*, the two defendants enabled their programs to work together such that as a package, the programs would carry out all the elements of the asserted claims.²⁸⁷

Benefit: A finding that one or more entities commercially benefitted, either through gaining a competitive advantage or monetarily, weighs in favor of a finding of divided infringement. As one of the primary roles of patent law is to prevent infringers from stealing the benefit of an invention,²⁸⁸ an inquiry into

282. See *Golden Hour Data Sys. Inc., v. emsCharts, Inc.*, 614 F.3d 1367, 1369 (Fed. Cir. 2010) (discussing a data system where each component can be utilized by different parties).

283. See Robinson, *supra* note 249, at 110 (drawing the first three factors from *Golden Hour Data Sys. Inc., v. emsCharts, Inc.*, 614 F.3d 1367 (Fed. Cir. 2010)).

284. *Id.* at 111–12.

285. See *Wallace v. Holmes*, 29 F. Cas. 74, 80 (C.C.D. Conn. 1871).

286. RESTATEMENT (SECOND) OF TORTS § 876(a) (1979).

287. *Golden Hour*, 614 F.3d at 1383 (Newman, J., dissenting).

288. See *Royal Typewriter Co. v. Remington Rand, Inc.*, 168 F.2d 691, 692 (2d Cir. 1948) (defending the doctrine of equivalents as achieving this result).

whether an infringer benefitted from his actions is highly relevant.

Nature of the infringing activity: Performance of a claimed step for one's own personal benefit or private use (non-commercial) weighs against a finding of divided infringement.²⁸⁹ Conversely, a commercial step such as "tagging" in *Akamai*, weighs in favor of divided infringement since the step must be performed for any beneficial use of the method and could be performed by any party.²⁹⁰

Intent of the parties: As with induced and contributory infringement, Robinson proposes that this approach to divided infringement also consider the intent of the parties.²⁹¹ But because Robinson acknowledges that liability for direct infringement does not require a showing of intent,²⁹² this proposal only recommends that a showing of intent by one or more parties weigh in favor of a finding of divided infringement.²⁹³

Because this approach allows courts to take into account the totality of the circumstances surrounding each instance of infringement, Robinson believes that it closes any loopholes that a sophisticated patent infringer may exploit by dividing performance of method claims with additional parties. It remains unclear, however, just how the courts should take into account these five factors, whether they should conduct individual balancing tests, conduct one holistic balancing test, or employ a complex sliding-scale algorithm.

2. *Interactive Claims*

While better claim drafting could solve some of the issues arising from divided infringement, some method claims are interactive in nature and thus inherently require multiple actors. Robinson suggests a two-step analysis for these types of claims to determine joint liability

289. See Naoki Mizutani, *Remarks at Panel on Patent Infringement Suits in Global Network Age*, SOFTIC Symposium 2001: Information Distribution and Legal Protection in Cyberspace—In Search of a New System (Nov. 21, 2001), available at http://www.softic.or.jp/symposium/records/SOFTIC_10%82%94h_proceedings.pdf (distinguishing the impacts of personal versus commercial use).

290. See Robinson, *supra* note 249, at 114.

291. *Id.*

292. 35 U.S.C. § 271(a) (2006) has been interpreted to lack an intent requirement. See *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (en banc) ("Because patent infringement is a strict liability offense, the nature of the offense is only relevant in determining whether enhanced damages are warranted.").

293. See Robinson, *supra* note 249, at 114.

infringement.²⁹⁴ First, a patentee bears the burden of proving that his invention is premised upon interactivity. Second, courts apply a test based on the results of the interactivity inquiry.

In determining whether an invention is interactive in nature, Robinson suggests that courts look to whether there is a nexus between the interactive nature of the method claim and the patentability of the claim.²⁹⁵ Any evidence demonstrating that the interactive nature of the claim contributed to its novelty and non-obviousness during patent prosecution fulfills this nexus requirement.²⁹⁶ In other words, the nexus requirement is met when the claimed interactivity is “the reason for, reasonably related to, or substantially related to” the patentability of the claim.²⁹⁷ If such a nexus exists, then the inquiry turns to the five factors presented in Section IV.C.1—collaboration, concerted action, benefit to be realized, nature of the activity, and intent—and courts engage in the same analysis as with claims written for single entities.²⁹⁸ This broader approach for interactive claims, as with claims aimed at single actors, aims to provide a lower hurdle of enforcement for innovative interactive technologies. If, however, a court cannot identify such a nexus, suggesting that the claim has drafting issues and that the claim could have been written for performance by a single entity, the court engages in a similar analysis as the current control or direction test, examining the relationship between the actors.²⁹⁹ This more narrowly tailored approach would better protect innocent parties from poorly drafted claims.³⁰⁰

3. *Evaluating the Flexible Bifurcated Approach*

While this approach does attempt to address many of the issues currently facing divided infringement law, it also creates a complicated framework that could lead to inconsistent results. Robinson attempted to allay such concerns by pointing out that many of the Federal Circuit’s findings of no divided infringement would be upheld under this approach, as the interactive nature of the claims asserted in *BMC* and *Muniauction*

294. *See id.* at 115–16.

295. *Id.* at 116.

296. *Id.*

297. *Id.* at 117 (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 33 (1997)).

298. *Id.*

299. *Id.* (citing *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329–30 (Fed. Cir. 2008) and *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1381–82 (Fed. Cir. 2007)).

300. *Id.* at 18 (proposing that claims lacking a nexus between interactivity and patentability be subject to the rigid control or direction test).

was not central to their patentability, and thus the claims were subject to the direction or control test.³⁰¹ While this may be the case, Professor Robinson did not provide examples of interactive claims that would be able to meet the nexus requirement. Furthermore, his approach does not take into account the recent Supreme Court rulings in *Mayo* and *Alice*, which may force patentees to draft claims involving multiple parties in order to overcome the § 101 hurdle. It is unclear whether these claims would meet the nexus requirement and be subject to a more flexible test or if they would be subject to the status quo control or direction test.

And like Judge Newman's All-Steps rule, this approach also blurs the lines between the strict liability standard of review under § 271(a) and the intent inquiry typically undertaken in §§ 271(b) and (c) analyses. Robinson acknowledged this and did not require, but merely recommended, that courts examine intent under the more flexible approach. Still, such a deviation from the established strict liability standard may best be left to Congress rather than the courts to implement.

Finally, this approach fails to remedy the current inconsistency in divided infringement law between system claims and method claims. It is currently much easier to prove direct infringement with split system claims, as the Federal Circuit's decision in *Centillion Data Systems, LLC v. Qwest Communications International, Inc.* holds an actor who "uses" the entire system liable for direct infringement under § 271(a),³⁰² than it is to prove direct infringement of split method claims.³⁰³ This is peculiar because prosecutors often draft system and method claims in parallel. Under the status quo, if an invention is claimed both as a system and a method, whoever uses the invention would likely be found liable for direct infringement of the system claim but could possibly avoid infringement of the method claim.³⁰⁴

301. *Id.*

302. *Centillion Data Sys., LLC v. Qwest Commc'ns Int'l, Inc.*, 631 F.3d 1279, 1285 (Fed. Cir. 2011). The court has also applied a fairly broad approach to the term "use" as evident in *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1322–23 (Fed. Cir. 2005). There, the court held that a Blackberry customer uses an entire system, even parts located outside of the United States, when it sends a text message within the United States. *Id.*

303. *See* *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111 (2014).

304. Stephen W. Moore, *A Last Step Rule for Direct Infringement of Process Claims: Clarifying Indirect Infringement and Narrowing Joint Infringement*, 61 CLEV. ST. L. REV. 827, 846 (2013).

D. MOORE'S LAST STEP RULE

In an effort to address the current inconsistency in divided infringement law between systems and methods, attorney Stephen Moore proposed the Last Step rule to harmonize the two regimes by holding whoever completes the method by performing its last step liable for direct infringement.³⁰⁵ The underlying premise of the last step rule treats method patents similarly to patented products and systems. Whereas a patented product is infringed when its components are combined, and whereas a patented system is infringed when one makes use of the system,³⁰⁶ patented methods are infringed by whoever puts the method into service and obtains benefit from it.³⁰⁷ This happens once the last step is completed, because but-for the completion of the method, the benefit would not be realized.

One of the benefits of this approach is its simplicity, as a finding of direct infringement only requires identifying who completed the last step. Generally, the last step is defined as that which completes the method.³⁰⁸ If performance of the steps overlaps, the last step is the one that chronologically finishes last.³⁰⁹ And in rare situations where actors simultaneously perform a step that both completes the method and finishes exactly at the same time, both steps could be recognized as last steps for the purposes of finding direct infringement.³¹⁰ In these rare scenarios, the actors would be jointly liable for direct infringement.³¹¹ And a remedy would then be apportioned between the joint infringers, similar to what Judge Newman proposed in her dissent to the en banc decision.³¹²

By holding whoever completes the last step liable for direct infringement, the court can then look to everyone else as a potential indirect infringer and determine whether any of them acted with the requisite intent to infringe. Considering how the Last Step rule would function in practice with the Akamai patents demonstrates that this approach would hold Limelight liable as a direct infringer. The last step of the method at issue, a content delivery system, is “returning to the client

305. *Id.* at 849.

306. *See Centillion*, 631 F.3d at 1285.

307. *See Moore, supra* note 304, at 850.

308. *See id.*

309. *Id.*

310. *Id.*

311. *Id.*

312. Judge Newman detailed how this might be done in her dissent in the *Akamai* en banc decision. *See Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1330–32 (Fed. Cir. 2012) (Newman, J., dissenting), *rev'd*, 132 S. Ct. 2111 (2014).

an IP address of a given one of the content servers within the given region that is likely to host the embedded object and that is not overloaded,” which Limelight performs.³¹³ End users then, could only be held liable for indirect infringement if it could be shown that they had knowledge of Akamai’s patented system.³¹⁴

As a result, this approach maintains the strict liability approach under § 271(a) and offers innocent infringers a measure of protection by inquiring into their intent, while eliminating the inconsistency between patented systems and methods post-*Centillion*. While it is a complete overhaul of the extant single entity and control or direction inquiries, the last step rule is supported by the statute, as it only requires a broad reading of the term “uses” under § 271(a), which is analogous to that already applied by the Federal Circuit for system claims.³¹⁵

This approach, however, is not without its own shortcomings. Because both the single-entity rule and the current approach to divided infringement for method patents stem from Federal Circuit decisions, it is unlikely that the Federal Circuit itself will engage in such an overhaul of its precedent. The Supreme Court, as illustrated by the *Akamai* decision, appears reticent to directly overturn previous Federal Circuit holdings in this area. Furthermore, this approach could subject innocent end users to liability for direct infringement. While the customers in *Akamai* did not perform the last step, it is possible to envision a method in which they do, particularly with respect to business method and software patents. With end-user patent litigation targeting small businesses and consumers on the rise, this could pose a very large problem.³¹⁶ And finally, as technology develops, particularly in the field of the IoTs, it may become increasingly difficult to identify the last step, as actors engage in complex, iterative interactions.

E. CLOSING THE DIVIDED INFRINGEMENT LOOPHOLE: PROPOSALS FOR MOVING FORWARD

The current proposals to closing the loophole in divided infringement law each have their benefits and drawbacks, some of which arise from constraints that the current language in § 271 places on any approach. While the All-Steps rule; flexible, bifurcated approach; joint enterprise

313. U.S. Patent No. 6,108,703 (filed Aug. 22, 2000).

314. See Moore, *supra* note 304, at 858.

315. See *Centillion Data Sys., LLC v. Qwest Commc’ns Int’l, Inc.*, 631 F.3d 1279, 1285 (Fed. Cir. 2011).

316. See Chien & Reines, *supra* note 252.

interpretation; and Last Step rule all seek to close the current loophole in divided infringement law in very different manners, these approaches share common goals and features.

First, these approaches all address the single-entity rule, either by relaxing it or completely abrogating it. Judge Linn's interpretation of direct infringement under § 271(a) to include joint enterprises and the approach for single-entity claims under the flexible, bifurcated approach both seek to relax the control or direction relationship standard currently required to hold two or more parties jointly liable for infringement under § 271(a). Judge Newman's All-Steps rule and the Last Step rule go further to eliminate the single-entity rule in its entirety. Both initially avoid an inquiry into the relationships between the parties and hold one actor (Last Step) or all the actors (All-Steps) liable for divided infringement under § 271(a). Judge Newman's All-Steps approach then examines culpability at the remedies stage to exonerate innocent parties, whereas the Last Step rule allows innocent direct infringers to cross-claim against other actors for indirect infringement—either contributory or induced.

Second, these approaches—with the exception of Judge Linn's joint enterprise interpretation, which is a variation of the current control or direction standard—all couple a relaxation or abrogation of the single-entity rule with the injection of some type of intent inquiry under § 271(a). Judge Newman's All-Steps rule does this indirectly by requiring that remedies be assessed under traditional tort principles of apportionment, which take into account culpability and economic benefit among other factors. The flexible, bifurcated approach recommends inquiring into the existence of collaboration, concerted action, benefit to be realized, the nature of the activity, and intent of the parties. And the Last Step rule ensures patentees that they can hold at least one actor—and possibly multiple actors—liable for direct infringement, which then allows courts to examine the intent of the other parties involved under theories of indirect infringement.

These attempts to imbue intent into direct infringement under § 271(a) suggest that the current statute is inadequate to address issues arising from divided infringement by multiple actors.³¹⁷ As demonstrated by the various proposals, an intent or knowledge standard is required in

317. Introducing an intent requirement under the § 271(a) analysis is problematic because it places a burden on the patentee to prove that a defendant acted with the intent to infringe, even in simple cases where one actor carried out all the steps in a method claim. This greatly increases the cost of enforcing intellectual property rights and considerably shifts the current system in favor of accused infringers.

order to truly protect innocent parties from being held liable for infringement. Yet under § 271(a), which is a strict liability regime, courts do not inquire into intent.³¹⁸ This may explain why the Federal Circuit en banc attempted to close the loophole with the inducement-only rule under § 271(b), which does have a knowledge or intent requirement. This approach, however, is itself limited by the statute, as there can be no finding of induced infringement unless there is a finding of direct infringement. The most appropriate solution to this inadequacy would be congressional action clarifying two forms of direct infringement under § 271(a): one that retains a strict liability approach when a single entity performs all the steps of a claimed method patent, and a second that inquires into the knowledge and intent of the participating parties where multiple entities share the performance of a patented method claim.

In the meantime, however, the Federal Circuit should take the opportunity on remand to relax the relationship standard under § 271(a), particularly in light of the recent cases on § 101, subject matter patentability, while maintaining the current strict liability standard. One possibility would be to change the control or direction standard to “some connection” or “common purpose.” This would not entirely abrogate the single-entity rule, but it would allow for more findings of infringement when parties divide performance of steps of a method patent absent a showing of an agency relationship and narrow the current gap in divided infringement law. Although a broader relationship standard, absent an inquiry into intent, does pose a small risk of entangling innocent third parties, these concerns have been greatly diminished by the Supreme Court’s decisions in *Alice* and *Mayo*, which in practice are likely to invalidate many of the patents for which courts would have been particularly concerned about innocent third-party liability. Relaxing the relationship standard thus would effectively shrink the current loophole, offering patentees greater protection until Congress acts.

V. CONCLUSION

The current statutory framework for patent infringement has proven to be imperfect and created a loophole in patent infringement law with respect to divided infringement of multi-actor patents. While the Federal Circuit attempted to close this loophole, concluding en banc in *Akamai* that a court can find induced infringement under § 271(b) absent a

318. Mark A. Lemley, *Inducing Patent Infringement*, 39 U.C. DAVIS L. REV. 225, 235 (2005).

finding of direct infringement under § 271(a), the Supreme Court's recent decision reversed the Federal Circuit's holding and reinforced the single-entity rule. The Court, however, did note in its decision that it may be receptive to imposing liability on multiple actors sharing performance of a patented method through a divided infringement approach under § 271(a). The Federal Circuit, particularly in light of the Supreme Court's recent decisions in *Mayo* and *Alice*, should act to broaden the current relationship requirement for a finding of divided infringement under § 271(a). This, however, is not a complete cure to the loophole in divided infringement, as no relationship standard can adequately address both the interest of patentees and innocent third parties.³¹⁹ Congressional action, establishing two forms of direct infringement, thus may be more appropriate. A new § 271(a) that maintains the strict liability approach for single entities and introduces an intent inquiry when multiple parties divide performance of a method claim will strike a better balance between protecting the interests of patentees and those of innocent third parties.

319. Relationship standards will likely either be underinclusive, allowing some individuals to game the system and infringe a patentee's intellectual property rights without consequences, or overinclusive, holding innocent parties who are unaware that their actions contributed to patent infringement liable.

