
NOTES

CLEARING A PATH FOR DIGITAL DEVELOPMENT: TAKING PATENTS IN EMINENT DOMAIN THROUGH THE ADOPTION OF MANDATORY STANDARDS

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I. INTRODUCTION

Though largely unnoticed by the public, March 1, 2007, marked the transition from traditional analog television to digital broadcast television (“DTV”), a move some have characterized as the most significant change to the television broadcast industry since color replaced black and white.¹ On that date, Federal Communications Commission (“FCC”) regulations went into effect mandating that all televisions sold in the United States contain a digital tuner capable of receiving DTV broadcast signals.² If consumers are unaware of the change now, it will not escape their attention on February 17, 2009, when their old analog sets go dark as broadcasters

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1. Sue Doyle, *Television Switch to Digital Will Be Dramatic for Viewers*, DAILY NEWS OF L.A., Oct. 19, 2007, at N1 (“[T]he national switch to digital from analog transmissions is the biggest change in TV transmission standards since the birth of color broadcasting in 1953. . . . [N]early two-thirds of Americans have no idea about the upcoming change . . .”).

2. 47 C.F.R. § 15.117(i)(1)(i–iii) (2007) (“Responsible parties . . . are required to equip new TV broadcast receivers that are shipped in interstate commerce or imported from any foreign country into the United States . . . [with] DTV tuners effective March 1, 2007.”). Earlier regulations had mandated digital tuners in larger televisions, but the mandate was extended to all televisions on March 1, 2007.

comply with further FCC regulations mandating the cessation of all analog television broadcasts.³ Ultimately, the government intends to profit by auctioning off the additional frequency spectrum freed up by the more efficient digital use of the broadcast spectrum.⁴

In preparation for the digital transition, in 1993 the FCC encouraged the formation of an industry study group to examine technical options and create draft specifications.⁵ Electronics manufacturers Zenith and Thomson, both of whom had already made significant progress in the development of high-definition digital television (“HDTV”), participated in the consortium that became known as the Grand Alliance.⁶ For the purpose of developing a detailed DTV specification, the Grand Alliance formed the Advanced Television Systems Committee (“ATSC”), which eventually included fifty-four members from a number of industries: television networks, motion picture and television program producers, trade associations, television equipment manufacturers, and members of the academic community.⁷ The committee turned out a detailed DTV electrical and signal specification, and, in a somewhat surprising move, the FCC adopted the ATSC specification nearly wholesale into the regulations, citing the benefits to the American public of the digital rollout:

3. *See id.* § 15.117(k)(3). The subsection required the following alert:

This television receiver has only an analog broadcast tuner and will require a converter box after February 17, 2009, to receive over-the-air broadcasts with an antenna because of the Nation’s transition to digital broadcasting. Analog-only TVs should continue to work as before with cable and satellite TV services, gaming consoles, VCRs, DVD players, and similar products.

Id. This alert was designed to combat the problem that,

[a]s the deadline for analog draws near, it’s likely that lower-income, non-English-speaking and senior residents won’t even be aware of the change . . .

In fact, it’s estimated that about 16 million households will lose all TV reception when analog signals are cut off, according to a report from the Consumer Federation of America and Consumers Union.

Doyle, *supra* note 1.

4. Doyle, *supra* note 1. The switch from analog to digital will free 60 MHz of valuable airwave spectrum space that the government plans to auction off. Channels 52 to 69 in the UHF spectrum were sold off in 2008. “The government sold that section of airwaves for \$19 billion in the FCC’s most successful auction in history. Other parts of that spectrum will be used by paramedics, police and firefighters.” John Dunbar, *Airwave Concerns Prompt Proposal to Ban Some Wireless Microphones*, WASH. POST, Aug. 22, 2008, at D02.

5. Karl Vick, *Government Puts Off HDTV*, ST. PETERSBURG TIMES (Fla.), Feb. 25, 1993, at 6A (“I happen to prefer and recommend to you the grand alliance, if we can pull it off.” (quoting former FCC chairman Richard Wiley on the strategy for developing a DTV standard)).

6. *Id.* Ironically, given what has transpired, one of the rationales for forming the Grand Alliance was that “an alliance would save some of the time and expense of tests while removing the threat of a loser suing.” *Id.* *See also infra* note 10 and accompanying text.

7. Matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, Fourth Report and Order, 11 F.C.C.R. 17,771, 17,772 n.2 (1996) [hereinafter Fourth Report and Order].

This Report and Order is one of the crucial milestones in our effort to ensure that the benefits of digital technology are available to terrestrial television broadcasting and to the American public. We believe that the course we are taking will provide the certainty that many broadcasters, equipment manufacturers and consumers need to invest with confidence in new technology while at the same time preserving the flexibility to accommodate innovation and experimentation. In doing so, we believe our decision will provide many benefits to American consumers. . . . Accordingly, we will incorporate into our Rules, by reference, the ATSC Digital Television Standard [with minor modifications].⁸

The FCC's action, coupled with the mandate that all televisions sold in the United States contain a digital tuner, effectively gave the ATSC-DTV electrical specification the force of law—an action that was particularly surprising given the FCC's awareness that much of the specification was covered by patents held by members of the Grand Alliance.⁹ Thus, the FCC in effect informed every television manufacturer hoping to sell televisions in the United States that it was required to infringe multiple patents and would have to pay whatever licensing fee the patent holder demanded as a condition for remaining in the television manufacturing business. Indeed, as the March 1, 2007, deadline approached, the fortunate holders of patents reading on the ATSC-DTV standard wasted no time in filing suit for patent infringement.¹⁰ Concerned

8. *Id.* at 17,796–97 (emphasis omitted).

9. *Id.* at 17,794. Further:

In earlier phases of this proceeding we indicated that, in order for DTV to be successfully implemented, the patents on the technology would have to be licensed to other manufacturing companies on reasonable and nondiscriminatory terms. . . . The proponents agreed to make any relevant patents that they owned available either free of charge or on a reasonable, nondiscriminatory basis and we stated that we intended to condition selection of a DTV system on such commitments.

Id. (footnote omitted).

10. See, e.g., *HDTV Maker Will Fight Foreign Patent Lawsuit*, ARIZ. REPUBLIC, Mar. 21, 2007, at D3 (reporting that Funai Electric filed infringement suits in early March 2007 in U.S. District Court against television makers Syntax-Brilliant, Vizio, and Petters Group Worldwide); Jeff Pao, *TCL, Europe Unit Sued for Infringing TV Patents*, S. CHINA MORNING POST, Feb. 13, 2007, at 4 (reporting that Korean manufacturer LG Electronics (the parent corporation of Zenith) filed suit against TCL Multimedia Technology Holdings and its European subsidiary Thomson TCL Electronics for infringement of four DTV patents, and that, Funai Electric had already filed suit on January 10, 2007, against Taiwan-based TPV Technology, the largest manufacturer of computer monitors, for infringing DTV patents); Greg Tarr, *Zenith Files 8-VSB Suits*, TWICE, Apr. 23, 2007, <http://www.twice.com/article/CA6435588.html> (reporting that Zenith filed patent infringement suits on April 4, 2007, naming as defendants Vizio, Westinghouse Digital, Funai, Syntax-Brilliant, Polaroid, Petters Group, APH USA and Akai Electric and claimed that each party infringed “some or a portion of a dozen separate patents used in its 8-VSB system,” which is used to tune digital receivers compliant with the ATSC-DTV standards).

that the court system would not move quickly enough, at least one manufacturer, Funai Electric, filed an additional complaint with the U.S. International Trade Commission (“ITC”), seeking an injunction against fourteen television manufacturers to prevent the importation of televisions and related products alleged to infringe its DTV patents.¹¹

This litigation is not yet resolved, but it raises compelling legal questions about the defenses available to a business accused of patent infringement when it attempts to comply with government regulations. Indeed, television manufacturers now find themselves in the position of choosing between accepting licensing terms offered by ATSC-DTV patent holders and forfeiting the right to sell televisions in the United States. Not surprisingly, this type of situation, in which the government mandates compliance with regulations that infringe patents, does not arise frequently, and there is little in the historical record that offers guidance. Two other examples, however, raise many of the same issues and are instructive to examine in some detail.

The first example concerns a regulation promulgated by the California Air Resources Board (“CARB”) in 1991 directing California gasoline suppliers to sell only clean-burning formulations designed to reduce air pollution.¹² Just prior to the adoption of the CARB regulations, the Union Oil Company of California (“Unocal”) obtained a patent that it had filed in 1990.¹³ Unocal’s patent for clean fuels quite “literally ‘read on’ the CARB standard,” such that any refiner of gasoline complying with the CARB regulations was likely infringing Unocal’s patent.¹⁴

The second example concerns the enactment of the Telecommunications Act of 1996, requiring that all televisions sold in the United States be equipped with a V-chip (alternatively known as a “family-values chip” or a “violence chip”) that would enable parents to filter out objectionable broadcast programming.¹⁵ Soundview Technologies asserted a patent on the V-chip technology against a number of television manufacturers, claiming that there was no way to comply with the regulations without infringing its patent.¹⁶

11. *Funai Files ITC Complaint on Digital TV Patent Infringements*, JIJI PRESS TICKER SERVICE, Oct. 16, 2007, 2007 WLNR 20328185.

12. Janice M. Mueller, *Patenting Industry Standards*, 34 J. MARSHALL L. REV. 897, 897–98 (2001).

13. *Id.*

14. *Id.* at 898.

15. Telecommunications Act of 1996, Pub. L. No. 104, § 551, 110 Stat. 56, 141 (1996) (codified as amended at 47 U.S.C. § 303(x) (2006)).

16. *See Sony Elecs., Inc. v. Soundview Techs., Inc.*, 157 F. Supp. 2d 172, 174–75 (D. Conn.

Part II of this Note discusses a number of traditional defenses to patent infringement, including implied licensing and equitable estoppel. The rules governing parties engaged as members of standard-setting organizations (“SSOs”) are given particular attention, and the additional contractual and fraud-based remedies that are available in that context are explored.

Part III applies these traditional infringement defenses and contractual remedies to the examples described above in which the government mandates the use of a standard that infringes patents. In each case, such remedies have proved largely ineffective.

Part IV presents an alternative defense theory and argues that when the government mandates infringement of a patent, it has in effect exercised its power of eminent domain to take intellectual property for public use. As such, the patent holder is entitled to compensation from the government for the fair value of the property taken but has no right to extract license fees or to enjoin competitors from using the patented methods. The statutory underpinnings of such an interpretation are examined in light of 28 U.S.C. § 1498, a statute authorizing the government to infringe a patent in the national interest.¹⁷ New legislation is proposed that would waive the government’s sovereign immunity in such cases and create an exclusive remedy entitling the patent holder to compensation for the value of the property taken in an action filed in the Federal Court of Claims. Finally, the problem of placing a value on the intellectual property taken in eminent domain when the government exercises this power is discussed.

II. TRADITIONAL PATENT INFRINGEMENT DEFENSES

In each of the examples discussed in Part I, conflict over intellectual property arose in the context of a standard developed by industry and/or university partners that was then adopted by the government as a mandatory regulation. Thus, it is instructive to examine the dynamics of private SSOs and their approaches to handling intellectual property rights. In particular, it is useful to examine the traditional patent defenses of implied licensing and equitable estoppel and to examine contractual defenses arising from SSO bylaws, including breach of contract and fraudulent conduct. Mark Lemley has observed that the analysis of standards imposed by private SSOs differs significantly from the analysis of standards imposed by the government because of the issues of state

2001).

17. 28 U.S.C. § 1498 (2006).

action and petitioning immunity that arise.¹⁸ In addition, he notes that situations in which the government requires patent infringement by adopting mandatory regulations are rare.¹⁹ Nevertheless, the analytical differences that come about as a result of the concepts of state action and petitioning immunity add dimensions to this problem (and are explored more fully in Part IV); they do not make irrelevant the issues that arise in the context of private SSOs. Indeed, patent-infringement defendants in the context of government-imposed regulations tend to look first at the traditional defenses that would be raised in the context of private SSOs.²⁰ Thus, it is instructive to examine these traditional infringement defenses, and it is particularly interesting to note that they have largely been unsuccessful in the context of infringement claims by government mandate.

A. IMPLIED LICENSE AND EQUITABLE ESTOPPEL

One of the key rights conferred with the issuance of a patent is the right to prevent others from manufacturing, selling, or using the patented invention.²¹ A patent holder may grant a license to another party to allow that party to practice the patented invention, and that license is simply a contractual promise not to sue for infringement.²² Such a license agreement may be express or implied, “and an implied license, like an express license, is a defense to patent infringement.”²³

The circumstances under which a judicially implied license might arise are quite narrow and tend to come up in situations in which a patent holder sells a product for which the only use is to infringe the holder’s patent. For example, in *Carborundum Co. v. Molten Metal Equipment Innovations, Inc.*, Carborundum owned a patent (“the ‘584 patent”) on a

18. Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1900 (2002) (“Government-set standards also present a very different set of issues, in part because of the state-action and petitioning-immunity doctrines. Government standard setting is also on the wane, as more and more responsibility for standardization devolves upon the private sector.” (footnote omitted)).

19. *Id.* at 1898 n.20.

20. See, e.g., *Sony Elecs.*, 157 F. Supp. 2d at 175 (denying summary judgment to defendants who raised defenses of implied licensing and equitable estoppel based on the plaintiff’s conduct before the standard-setting organization).

21. 35 U.S.C. § 154(a)(1) (2006).

22. *Spindelfabrik Suessen-Schurr Stahlecker & Grill GmbH v. Schubert & Salzer Maschinenfabrik Aktiengesellschaft*, 829 F.2d 1075, 1081 (Fed. Cir. 1987) (“[A] patent license agreement is in essence nothing more than a promise by the licensor not to sue the licensee.”).

23. *Carborundum Co. v. Molten Metal Equip. Innovations, Inc.*, 72 F.3d 872, 878 (Fed. Cir. 1995).

process for the purification of molten metal.²⁴ The company sold an unpatented pump specifically designed to operate in a system practicing the method covered by the '584 patent, and Carborundum admitted that the pump had no use other than to practice the patented method.²⁵ An implied license thus arose at the time of the sale of the pump to allow the purchaser to practice the method covered by the '584 patent; indeed, the defendant's theory was that the purchase price of the unpatented pump included a one-time royalty payment to Carborundum as a licensing fee for use of the '584 patent.²⁶ Carborundum did not dispute this finding of an implied license; rather, the issue before the court was the scope of the implied license.²⁷ Competitor Molten Metal Equipment Innovations ("MMEI") also produced pumps capable of pumping molten metal and began selling replacement pumps to former customers of Carborundum whose pumps had worn out.²⁸ Carborundum thus sued MMEI for contributory infringement, arguing that the implied license held by its customers was limited to the lifetime of the Carborundum pump and did not extend for the lifetime of the '584 patent.²⁹ MMEI countered that the implied license conferred with the sale of the pump gave Carborundum's customers the right to repair and upgrade their metal purification systems through the replacement of individual unpatented parts, such as the pump.³⁰ The Federal Circuit agreed: "The law is well settled that an authorized sale of a patented product places that product beyond the reach of the patent"³¹ and that "[s]uch a sale would also have provided the right to repair the apparatus."³² Nevertheless, because Carborundum chose to sell only the pump and not the entire apparatus used to practice the '584 patent, the court refused to find the existence of an implied license that would allow customers to continue to practice the '584 patent once the original Carborundum pump wore out (unless, presumably, the customer purchased a new pump from Carborundum).³³

Thus, the implied-license defense is narrow and relies on a relatively fact-intensive inquiry as to the understanding between, and the reasonable expectations of, the parties. In this sense, it is aligned closely with the

24. *Id.* at 875–76.

25. *Id.*

26. *Id.* at 878–79.

27. *Id.* at 878.

28. *Id.* at 876.

29. *Id.* at 878–79.

30. *Id.* at 877.

31. *Id.* at 879 (quoting *Intel Corp. v. ULSI Sys. Tech., Inc.*, 995 F.2d 1566, 1568 (Fed. Cir. 1993)).

32. *Id.*

33. *Id.* at 880.

concept of equitable estoppel in which a party making representations upon which another relies to its detriment is estopped from challenging the actions based on those representations. Indeed, the Federal Circuit has noted that theories of estoppel might not be defenses to patent infringement in their own right, but rather justifications for the finding of an implied license:

[C]ourts and commentators relate that implied licenses arise by acquiescence, by conduct, by equitable estoppel (estoppel in pais), or by legal estoppel. These labels describe not different kinds of licenses, but rather different categories of conduct which lead to the same conclusion: an implied license. The label denotes the rationale for reaching the legal result.³⁴

Nevertheless, “judicially implied licenses are rare under any doctrine.”³⁵ In explaining its rationale for finding the existence of an implied license in one such rare case, the Federal Circuit emphasized the reliance of the accused infringer on the patent holder’s entire course of conduct throughout a six-year period:

The record shows that Wang [patent holder] tried to coax Mitsubishi [accused infringer] into the SIMM [memory chip] market, that Wang provided designs, suggestions, and samples to Mitsubishi, and that Wang eventually purchased SIMMs from Mitsubishi, before accusing Mitsubishi years later of infringement. We hold, as a matter of law, that Mitsubishi properly inferred consent to its use of the invention of Wang’s patents.³⁶

By contrast, when it cannot be shown that the patent holder specifically procured the actions of the accused infringer, an implied license cannot be found on the basis of equitable estoppel.³⁷ In *Bandag, Inc. v. Al Bolser’s Tire Stores, Inc.*, even though a patent holder’s actions may have signaled an intent to license the patent, the fact that the alleged infringer was not aware of those actions ruled out a finding of detrimental reliance.³⁸ The court noted that

the relatively few instances where implied licenses have been found rely on the doctrine of equitable estoppel One common thread in cases in which equitable estoppel applies is that the actor committed himself to act, and indeed acted, as a direct consequence of another’s conduct.

34. Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc., 103 F.3d 1571, 1580 (Fed. Cir. 1997) (citations omitted).

35. *Id.* at 1581.

36. *Id.* at 1582.

37. See *Bandag, Inc. v. Al Bolser’s Tire Stores, Inc.*, 750 F.2d 903, 925 (Fed. Cir. 1984).

38. *Id.*

Thus, an implied license cannot arise out of the unilateral expectations or even reasonable hopes of one party. One must have been led to take action by the conduct of the other party.³⁹

The burden is thus placed on the defendant to establish not only that a patentee's actions or representations suggested that it would not enforce its patent, but also that the defendant relied to his detriment on that conduct. This sets a high bar that is rarely met.

B. SSOs AND INTELLECTUAL PROPERTY AGREEMENTS

Implied-license defenses arise in the context of SSOs, but agreements and bylaws governing the members provide additional potential defenses to claims of patent infringement asserted by one SSO member against another. While standards set by private SSOs are not technically mandatory, in practice, they often become so, and thus could be considered *de facto* mandatory standards. Examples might include the Microsoft Windows operating system and the VHS video tape format.⁴⁰ Generally, standards benefit consumers and industry alike; arguably, many industries could not have developed without them. Appreciating the benefits that SSOs can bestow, Lemley has urged that the government defer to their decisions and enforce the intellectual property rights agreements they devise:

SSOs are a species of private ordering that may help solve one of the fundamental dilemmas of IP law: the fact that intellectual property rights seem to promote innovation in some industries but harm innovation in others. SSOs may serve to ameliorate the problems of overlapping IP rights in those industries in which IP is most problematic for innovation, particularly in the semiconductor, software, and telecommunications fields. The best thing the government can do is to enforce these private ordering agreements and avoid unduly restricting SSOs by overzealous antitrust scrutiny.⁴¹

In the majority of cases, what Lemley proposes is likely the best solution. Industry players are in the best position to determine the fastest and most efficient way to get technologies to market and are in the best position to decide of what those technologies should comprise. Thus, enforcing SSO bylaws and contractual intellectual property agreements entered into by SSO members should theoretically produce the overall best

39. *Id.* (quoting *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1559 (Fed. Cir. 1983)) (alterations in original).

40. Lemley, *supra* note 18, at 1899.

41. *Id.* at 1891–92 (emphasis omitted).

results for the American consumer (as long as antitrust concerns are not ignored). Difficulties arise in practice, however, and even well-drafted intellectual property agreements often end up in litigation, requiring the parties to fall back on background intellectual property law, and thus, relying particularly on the defenses of implied licensing, estoppel, and fraud.

The goal of an SSO is to set industry-wide standards to promote compatibility, reduce duplication of effort, and smooth the transition to market of the targeted technology.⁴² To reduce the risk of blocking patents, typical SSO agreements require all participants to disclose and license both patents and sometimes pending patents to ensure that all members are aware of each other's intellectual property positions before voting to adopt a standard.⁴³ When an SSO member fails to disclose, others should be able to recover in contract. In practice, however, things are rarely that simple. First of all, SSO agreements can bind only members of the SSO, and thus, do not ensure that the adopted standards are not encumbered by patents held by parties outside of the SSO.⁴⁴ Further, because third parties are not bound by SSO bylaws, an outside company that acquires a patent from an SSO member may not be bound by promises to license that the member may have made.⁴⁵

Second, a participant might withdraw from the SSO, terminating the contract. In this case, it is not clear whether contractual obligations of patent disclosure would continue to apply, raising the possibility that a participant could take part in discussions of a standard, withdraw from the standards body, and then acquire a patent reading on the standard.⁴⁶ Similarly, promises made by an SSO member to license pending patents might not apply to patents acquired after the member has withdrawn from the SSO.⁴⁷

Third, the patent regulations providing for the filing of continuation, continuation-in-part, and divisional applications create a possibility for

42. *See id.* at 1896–98.

43. *See id.* at 1904–05.

44. *Id.* at 1909–10.

[I]t is worth emphasizing that an SSO bylaw at most can bind those companies that are members of the SSO. Nonmembers aren't party to the contract, and will not be held to have agreed to the bylaws. So SSO IP rules do not guarantee that a standard is free of IP claims altogether, or that all IP owners have agreed to license their rights on reasonable and nondiscriminatory terms.

Id. (footnote omitted).

45. *See id.*

46. *See id.* at 1912.

47. *See id.*

abuse by SSO members.⁴⁸ During the time that a patent application is pending with the U.S. Patent and Trademark Office (“USPTO”), an applicant may file a continuation application claiming the benefit of the filing date of the original application as long as the new application introduces no new matter.⁴⁹ The claims, however, may be completely new as long as they are sufficiently supported by the original disclosure.⁵⁰ A continuation-in-part application is similar, but allows for the introduction of new matter; however, claims based on the new matter will not receive the benefit of the original filing date.⁵¹ Divisional applications, on the other hand, arise when the USPTO determines that an application contains more than one potentially patentable invention. In such a case, the USPTO will issue a restriction requirement whereby the applicant must elect one of the inventions for prosecution but is allowed to pursue the nonelected inventions in separate divisional applications that receive the benefit of the original filing date.⁵² Thus, a member of an SSO with an early filing date on a pending application might participate in standards discussions, secure adoption of that standard, and then file a continuation application claiming the benefit of the early priority date while drafting claims that read precisely on the adopted standards.

Alternatively, an SSO member may file an early broad application claiming an array of somewhat related inventions with the intention of drawing a restriction requirement from the USPTO. Multiple subsequent divisional applications might then be filed, claiming the benefit of the original filing date while giving the applicant ample opportunity to draft claims with the benefit of knowledge gained during standards discussions.

Lest these examples of circumventing SSO bylaws seem theoretical or academic, the *Rambus, Inc. v. Infineon Technologies AG*⁵³ litigation provides a striking example of just how such techniques are used in

48. See 35 U.S.C. § 120 (2006) (allowing a patent applicant to claim the priority date of an earlier-filed copending application if there is an inventor in common); 37 C.F.R. § 1.53(b) (2007) (granting an effective filing date to a continuation, continuation-in-part, or divisional application that is equivalent to that of an earlier-filed copending application as long as no new matter is introduced and the prior application is properly referenced as required by 35 U.S.C. § 120).

49. See 37 C.F.R. § 1.53(b) (noting that no new matter may be introduced after an application’s filing date).

50. See *id.* § 1.53(d)(2)(ii) (requiring that a continuing application claim only subject matter that is supported by the original specification).

51. See *id.*

52. 35 U.S.C. § 121 (granting the benefit of the original filing date to a divisional application that is submitted to claim an invention that was the subject of a restriction requirement by the USPTO).

53. *Rambus, Inc. v. Infineon Techs. AG*, 164 F. Supp. 2d 743 (E.D. Va. 2001), *rev’d*, 318 F.3d 1081 (Fed. Cir. 2003).

practice. Rambus, a company whose business model is the development and licensing of computer-memory-system intellectual property, and Infineon, a memory-chip manufacturer, were both members of the Joint Electron Devices Engineering Counsel (“JEDEC”).⁵⁴ JEDEC develops industry standards on, among other things, computer-memory interfaces.⁵⁵ The JEDEC bylaws explicitly required participants to disclose patents and, through an unwritten understanding, pending patents, to other members of the counsel.⁵⁶

In 1990, Rambus filed an early broad patent application (“the ’898 application”) covering dynamic-random-access memory (“DRAM”) technologies that drew an eleven-way restriction requirement from the USPTO, meaning that the patent was drawn on eleven potential separately patentable inventions.⁵⁷ Rambus then joined JEDEC in 1992 to participate in the development of DRAM and other memory standards.⁵⁸ Rambus’s first divisional application based on the ’898 application was issued as a patent in 1993, and Rambus disclosed this patent to JEDEC as per the SSO bylaws.⁵⁹ Rambus then continued to work with JEDEC on computer memory standards until it withdrew from the SSO in 1996.⁶⁰ Rambus immediately filed four additional divisional applications claiming the benefit of the ’898 application and reading on the memory standards it helped to set while a member of JEDEC.⁶¹ Once these subsequent patents issued, Rambus filed suit for infringement against memory-chip maker Infineon, a fellow member of JEDEC.⁶² Because Rambus was technically not a member of JEDEC at the time it filed the four applications on which it sued, and because the rules were not completely clear on what kind of disclosure was required under the bylaws, a purely contractual remedy was not available, though Infineon was able to convince a jury to find Rambus liable for constructive fraud in failing to disclose its intentions with respect to its early patent application.⁶³ The Federal Circuit later vacated and remanded large portions of the district court’s ruling,⁶⁴ setting off a string

54. *Rambus*, 318 F.3d at 1084–85.

55. *Id.*

56. *Id.* at 1085.

57. *Id.* at 1084.

58. *Id.* at 1085.

59. *Id.*

60. *Id.*

61. *Id.* at 1085–86.

62. *Id.* at 1086.

63. *Rambus, Inc. v. Infineon Techs. AG*, 164 F. Supp. 2d 743, 749 (E.D. Va. 2001), *rev’d*, 318 F.3d 1081 (Fed. Cir. 2003).

64. *Rambus*, 318 F.3d at 1105.

of subsequent appeals and countersuits that are still not settled.

III. APPLICATION OF TRADITIONAL INFRINGEMENT DEFENSES AND SSO CONTRACTUAL DEFENSES TO GOVERNMENT- MANDATED STANDARDS

Adding the government to the standard-setting process adds even more complications, as the standards adopted by the industry have not only the force of the market behind them, but also the force of law. A producer that disagrees with the standards adopted by a private SSO can always disregard those standards, gambling that if the SSO will not accept its way of doing things, perhaps the market will.⁶⁵ When the government steps in and mandates adoption of a standard for an entire industry, however, this option is gone, and all industry participants are required to either adopt the standard or exit the business altogether. When that standard is protected by patent, industry participants find themselves at the mercy of the patent holder.

A. UNOCAL AND CARB

It is illustrative to consider the actions of Unocal in its conduct before CARB to see the effect of this kind of government involvement in standard setting. In 1988, the California legislature authorized CARB to develop fuel-composition standards aimed at reducing vehicle emissions; in 1989, CARB initiated the formation of the Auto/Oil Air Quality Improvement Research Program (“Auto/Oil Group”), a cooperative research organization comprising the three major U.S. auto makers and fourteen oil refining companies, including Unocal.⁶⁶ The Auto/Oil Group adopted bylaws governing the handling of intellectual property:

The Auto/Oil Cooperative Agreement, signed in October of [1989], made explicit the pledge that results of the effort would be made public and that no participant would claim such results as proprietary. In part, the Agreement stated that, “No proprietary rights will be sought nor patent applications prosecuted on the basis of the work of the Program unless required for the purpose of ensuring that the results of the research by the Program will be freely available, without royalty, in the public domain.”⁶⁷

65. See Lemley, *supra* note 18, at 1945.

66. Scott H. Segal, *Fuel for Thought: Clean Gasoline and Dirty Patents*, 51 AM. U. L. REV. 49, 55–56 (2001).

67. *Id.* (footnote omitted) (quoting Auto/Oil Quality Improvement Research Program, Joint Research Agreement (Oct. 1989) (on file with Scott H. Segal)).

Concurrently with its participation in the Auto/Oil Group, Unocal was secretly researching clean-fuel compositions and filed a patent application based on this research in 1990.⁶⁸ During the prosecution of the patent application, Unocal continued to participate in the Auto/Oil Group discussions and make recommendations to CARB, all the while quietly amending its patent claims to read precisely on the standard CARB was preparing to adopt. As Scott Segal notes in his article,

Unocal officials understood the implications for CARB RFG [reformulated gasoline program] when they made the patent known *only after* the capital investments and refinery modifications were underway *and* the patent had been awarded. This fact is clearly indicated by Unocal Spokesman Barry Lane: “[w]e believe that almost any gasoline that would be practical to make and meet the state requirements would fall under the scope of our patent.”⁶⁹

Once CARB adopted the clean gasoline regulations, Unocal announced its intention to license its patent to gasoline refiners that hoped to sell gasoline in California and filed suits for infringement against refiners that refused to pay royalties.⁷⁰ Several oil refiners, including Atlantic Richfield, Exxon, and Chevron, counterclaimed in an array of lawsuits against Unocal, attacking the validity of the patent on the basis of insufficient disclosure and inequitable conduct before the USPTO, and arguing that Unocal’s representations before CARB had given rise to an implied license, equitably estopping Unocal from asserting its patent against the refiners.⁷¹ After a complex forty-nine-day jury trial involving over four hundred exhibits and seventeen expert witnesses, the refiners failed to invalidate Unocal’s patent on the basis of insufficient disclosure and lack of enablement.⁷² On the question of inequitable conduct, the district court concluded that Unocal’s conduct before the USPTO did not rise to the level of being “so culpable that the patent should not be enforced.”⁷³ On the issue of equitable estoppel and implied license, the refiners argued that “Unocal had lulled CARB and the defendants into

68. *Id.* at 58.

69. *Id.* at 61 (alteration in original).

70. See Janice M. Mueller, *Patent Misuse Through the Capture of Industry Standards*, 17 BERKELEY TECH. L.J. 623, 627 (2002) (noting the public outcry that resulted when Unocal announced it would seek royalties of 5.75 cents per gallon of gasoline sold, as 90 percent of the cost of royalties would be passed on to consumers).

71. See *Union Oil Co. of Cal. v. Chevron U.S.A., Inc.*, 34 F. Supp. 2d 1222, 1224 (C.D. Cal. 1998) (describing procedural history).

72. Mueller, *supra* note 70, at 626; Segal, *supra* note 66, at 66.

73. *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 34 F. Supp. 2d 1208, 1210 (C.D. Cal. 1998) (quoting *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178 (Fed. Cir. 1995)).

believing that Unocal did not intend to enforce its patent rights.”⁷⁴ But the court found that the refiners had not been able to demonstrate that they had relied to their detriment on any representations Unocal may have made before the board, and thus could not establish that Unocal’s activities had given rise to an implied license or that it should be equitably estopped from asserting its patent.⁷⁵ With the favorable judgments in hand, Unocal began to demand royalties of 5.75 cents per gallon, of which 90 percent was expected to be passed on to consumers.⁷⁶

Segal characterizes Unocal’s activities as follows: “Unocal participated in cooperative exercises with state and federal officials and fellow members of the industrial community. Thereafter, Unocal arguably manipulated its patents through amendments to capture the fruits of this joint labor.”⁷⁷ Yet the traditional defenses available to the accused infringers were ineffective in preventing Unocal from exacting hefty license fees from its competitors, who had no choice but to pay up or abandon the California gasoline market.⁷⁸ On the implied-license defense in particular, Janice Mueller notes: “A potential weakness of the implied license/equitable estoppel defense as applied in industry standards cases is its requirement that a defendant establish detrimental reliance on the patentee’s assertion that it would not enforce its patent.”⁷⁹ This was certainly a difficulty the refiners faced in *Unocal Oil Co. of California v. Chevron U.S.A., Inc.*,⁸⁰ and one that comes up often in the context of SSOs. When members of an SSO are not even aware that one of the parties is pursuing a patent, how can they possibly demonstrate detrimental reliance on representations that the patentee will not seek to enforce its rights?

B. A SECOND EXAMPLE: THE V-CHIP

The V-chip was first proposed in Congress by Representative Edward J. Markey of Massachusetts, with the enthusiastic backing of the Clinton administration.⁸¹ The V-chip was to be included in television receivers to

74. *Union Oil Co. of Cal. v. Chevron U.S.A., Inc.*, 34 F. Supp. 2d at 1224.

75. *See id.*

76. Mueller, *supra* note 70, at 627.

77. Segal, *supra* note 66, at 79.

78. *See* Mueller, *supra* note 70, at 625 (noting that “any unlicensed refiner selling gasoline in compliance with the state-mandated standards would literally infringe Unocal’s ’393 patent”).

79. *Id.* at 659.

80. *See* *Union Oil Co. of Cal. v. Chevron U.S.A., Inc.*, 34 F. Supp. 2d at 1224 (noting that defendants eventually abandoned their equitable estoppel claims when they could not develop facts showing detrimental reliance).

81. Edmund L. Andrews, *Panel Backs Bill Mandating Chip that Blocks Violent TV Shows*, N.Y.

decode broadcast program content rating information and to optionally block the display of certain programs that parents might find objectionable.⁸² A mandate to include V-chip technology in all new television sets was passed as part of the Telecommunications Act of 1996,⁸³ and the FCC organized an industry advisory group to propose standards that were ultimately incorporated by reference into the implementing regulations.⁸⁴ Soundview Technologies was involved in the industry advisory group and made recommendations to the FCC about which content-control standards to adopt while failing to disclose that it was pursuing a patent on the subject.⁸⁵ Once the FCC regulations requiring V-chips went into effect, Soundview sued a number of manufacturers, including Sony and Sharp, for infringement, essentially arguing that compliance with the standard adopted by the FCC necessarily infringed its patent.⁸⁶ Defendant Sharp countered that the court should find the existence of an implied license to practice Soundview's patent for two reasons:

[F]irst (what Sharp calls "legal estoppel"), the United States government granted it an implied license by virtue of its mandate in the 1996 Act that V-chip technology be incorporated into new television sets sold in this country; and second, that Soundview is equitably estopped from denying the existence of an implied license because it had a legal obligation to inform the FCC of its patent claims and of the license granted to the U.S. government.⁸⁷

Although the FCC had incorporated industry standards by reference directly into the regulations, the court was convinced that the regulations did not in fact compel the use of Soundview's specific patented technology.⁸⁸ Sharp had offered into evidence a letter written during licensing discussions in which Soundview's attorney had stated that the inventor's "technology is not explicitly required under the Telecommunications Act or FCC regulations."⁸⁹ Thus, the government had not mandated infringement of Soundview's patent, and no implied license

TIMES, Dec. 13, 1995, at A1.

82. *See id.*

83. *See* Telecommunications Act of 1996, Pub L. No. 104, § 551, 110 Stat. 56, 141 (1996) (codified as amended at 47 U.S.C. § 303(x) (2006)).

84. *See* 47 C.F.R. § 15.120 (2007); *Set Makers Say V-Chip for New TV Ratings Is No Problem*, CONSUMER ELECS. (Warren Publ'g, Wash., D.C.), July 21, 1997.

85. *See* Sony Elecs., Inc. v. Soundview Techs., Inc., 157 F. Supp. 2d 172, 178 (D. Conn. 2001).

86. *See id.* at 172, 175 (naming Sony Electronics as a party and referring to defendant Sharp Electronics); *id.* at 176 (noting Sharp's characterization of Soundview's position on infringement).

87. *Id.* at 175–76.

88. *Id.* at 176.

89. *Id.*

could be found on that basis.⁹⁰

As to the question of whether an implied license had arisen by equitable estoppel based on Soundview's conduct before the FCC, the court was similarly unwilling to find the existence of a license.⁹¹ In order to find that the patent holder is equitably estopped, the court said, the alleged infringer must prove the following: (1) that the patent holder represented that he would not enforce his patent; (2) that the alleged infringer relied on this representation; and (3) due to that reliance, the alleged infringer is materially prejudiced.⁹² Even if Soundview's conduct before the FCC was misleading, the court reasoned, Sharp had not been able to produce evidence that it had relied on Soundview's representations to its detriment, and without such evidence, the existence of an implied license could not be found.⁹³ Thus, just as in *Unocal Oil Co. of California v. Chevron U.S.A., Inc.*, the defense of implied license due to equitable estoppel failed when the alleged infringer could not produce evidence of reliance to its own detriment.⁹⁴ Yet this seems particularly difficult to do in the context of an SSO in which members of an industry are not negotiating to sell licenses to one another, but rather are working cooperatively to develop a standard. And certainly, third parties that were not part of the SSO would never be able to show detrimental reliance; if they later had to infringe a patent to comply with a regulation, they would not benefit even from an SSO participant's successful assertion of an equitable estoppel defense.⁹⁵

In subsequent proceedings, Sony, Sharp, and the other defendants were ultimately able to prevail against Soundview by getting a favorable construction of the patent claims and a decision that they did not in fact infringe Soundview's patent.⁹⁶ So in a sense, the argument that saved Soundview from an implied license—that infringement of its patent was not specifically required in order to comply with the FCC standard—came back to haunt it when the defendants were found not to have infringed Soundview's patent despite complying with the regulations.⁹⁷ Nevertheless,

90. *Id.* at 177–78.

91. *Id.* at 178.

92. *Id.*

93. *Id.* at 178–79.

94. *See id.* at 177.

95. *See* Mueller, *supra* note 70, at 659.

96. *Sony Elecs., Inc. v. Soundview Techs., Inc.*, 225 F. Supp. 2d 164 (D. Conn. 2002).

97. The story, however, did not end there. Soundview sold additional patents to Acacia Research, Inc. that covered a digital-television version of the V-chip technology that the FCC regulations also required. Eric Schumacher-Rasmussen, *Studio Streaming: Sinister Purpose*, EMEDIA, Oct. 1, 2004, at 12, available at <http://www.emedialive.com/Articles/ReadArticle.aspx?ArticleID=8939>. *See also* 47 C.F.R. § 15.120(d)(2) (2007). Acacia asserted its patents against television manufacturers complying

the *Sony Electronics, Inc. v. Soundview Technologies, Inc.* experience again exposed the weakness of the implied-license and equitable-estoppel defenses that might have put an end to the litigation with an early summary judgment.⁹⁸ Instead, the defendants were forced to dig into the details of the patents and painstakingly demonstrate noninfringement.⁹⁹ It is not surprising that many firms similarly situated would opt instead simply to pay a royalty to avoid litigation, and indeed, several companies have made extracting such royalties their primary business model.¹⁰⁰

Canadian Tri-Vision International, Ltd. is one such company. As owner of a patent covering a digital implementation of the V-chip that interfaces with the ATSC-DTV tuner, it joyfully announced the adoption of the FCC-DTV mandates in a Canadian press release:

Tri-Vision International . . . announced today that March 1st, 2007 marks the official date of the Federal Communication Commission (FCC) full mandate to include flexible V-Chip in digital television receivers with or without associated display in the United States.

As of today, all TV receivers and other broadcast reception devices (e.g. VCRs, set-top boxes, digital video recorders, etc.) require digital tuners known as "ATSC tuners" which are necessary to facilitate "open" V-chip software.¹⁰¹

The release went on to note that Tri-Vision had already signed forty-two companies to V-chip licenses and was pursuing the rest of the television suppliers to the U.S. market.¹⁰² Tri-Vision noted that it had been forced to resort to litigation only five times in the Canadian market, and each of those cases had "reached a favorable conclusion."¹⁰³

Less than a month after the FCC mandated the inclusion of the ATSC-DTV tuners, Tri-Vision, Ltd. had signed forty-two licensees and had

with the FCC regulations and this time met with some success:

Acacia doesn't create technology. Instead, it purchases the rights to patents that are the result of other people's work, then proceeds to collect licenses from anyone who's using the technology covered by the patent. The company first cashed in when it acquired Soundview Technologies, developers of the V-Chip TV-content screening device. By the time the FCC mandated the technology's installation in new sets, Soundview was running out of money and so sold the patent to Acacia, which went on to earn \$26 million in one-time licensing fees.

Schumacher-Rasmussen, *supra*.

98. See *Sony Elecs.*, 225 F. Supp. 2d at 164.

99. See *id.*

100. See, e.g., Schumacher-Rasmussen, *supra* note 97 (discussing Acacia's business model).

101. *Tri-Vision V-Chip Licensing Update FCC Mandate on Flexible V-Chip in Full Effect*, CNW GROUP (Can.), Mar. 1, 2007, <http://www.newswire.ca/en/releases/archive/March2007/01/c5444.html>.

102. *Id.*

103. *Id.*

announced a merger with Wi-LAN, Inc.¹⁰⁴ The combined company estimated that “the existing licenses of Tri-Vision should yield approximately \$100 million in future revenues.”¹⁰⁵ And furthermore, “assuming the remainder of the Canadian and U.S. markets are signed at the same rates as existing Tri-Vision license agreements, Wi-LAN should be able to realize total revenues of approximately \$500 million over the next nine years.”¹⁰⁶ Most of these staggering revenues will come directly from consumers, which is particularly appalling given that many Americans do not even know that their television sets contain V-chips, let alone how to use them.¹⁰⁷

C. DIGITAL TELEVISION

Despite the experience with the V-chip, the FCC led industry, and ultimately consumers, into the same trap with digital-television-tuner mandates. Once again, it organized an industry study group to propose standards and then incorporated those standards by reference directly into the regulations.¹⁰⁸ The FCC was aware that portions of the standards were or would soon be covered by patents held by members of the industry study group, but believed that its guidelines would assure ready access to any proprietary intellectual property needed to implement the standards:

We have previously stated that in order for DTV implementation to be fully realized, the patents on a DTV standard would have to be licensed to other manufacturing companies on reasonable and nondiscriminatory terms. In response, the Advisory Committee’s testing procedures have required proponents of any DTV system to follow American National Standards Institute patent policies which require assurance that: (1) a license will be made available without compensation to applicants desiring to utilize the license for the purpose of implementing the standard; or (2) a license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination.¹⁰⁹

104. *Id.*

105. *Making the Watchlist: Merger Announced Between Wi-LAN and Tri-Vision*, M2 PRESSWIRE (Eng.), Mar. 28, 2007, 3/28/07 M2 Presswire 00:00:00 (Westlaw) (quoting Jim Skippen, President and CEO of Wi-Lan).

106. *Id.*

107. *See, e.g.*, Tom Jicha, *Lawmakers Don’t Get the TV Picture*, SUN-SENTINEL (Fort Lauderdale, Fla.), Apr. 23, 2005, at 1D.

108. Fourth Report and Order, *supra* note 7, at 17,796–97 (“Accordingly, we will incorporate into our Rules, by reference, the ATSC Digital Television Standard . . .”).

109. Matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, Fifth Further Notice of Proposed Rule Making, 11 F.C.C.R. 6235, 6260–61 (1996)

Yet it was clear that the television manufacturing industry viewed this with deep suspicion, and the FCC's decision to require DTV tuners was welcomed only by those manufacturers who saw that their patents on digital television technology were about to explode in value as a result of the government mandate:

The commission's decision came amid vehement objections from some television manufacturers

. . . .

Most television manufacturers—with the exception of Zenith and Thomson Multimedia, maker of RCA-brand televisions, oppose the new commission rule. Zenith, a unit of LG Electronics, and RCA own some of the patents behind the tuners and could earn royalties for every receiver sold.

Most of the manufacturers “don't want to do this,” said Alan Stillwell, a senior officer in the commission's Office of Engineering and Technology.¹¹⁰

Indeed, Zenith quickly filed a number of infringement suits against other television manufacturers for violating its patents reading on the ATSC-DTV standard.¹¹¹ It seems surprising that Zenith, a member of the ATSC and the Grand Alliance, having encouraged the FCC to adopt the ATSC-DTV standards, could sue other manufacturers for infringement based on implementing that very standard. But, as Zenith alleged in its complaint:

The Zenith Patents are related to the ATSC Standard. Zenith has complied with the ATSC's patent policy by disclosing its intention to protect its inventions and offering its inventions at reasonable and non-discriminatory (“RAND”) rates. Zenith has contacted and attempted to negotiate a reasonable and non-discriminatory license with the Defendants, but the Defendants have refused to take a license.¹¹²

Thus, Zenith argued that it had complied with FCC patent-licensing guidelines and was making its intellectual property available on reasonable terms, but that the defendants refused to pay for a license.¹¹³ Of course, this raises the question of what exactly “reasonable and non-discriminatory”

[hereinafter Fifth Further Notice of Proposed Rule Making] (footnote omitted).

110. Daniel Altman, *The F.C.C. Has Voted: A Digital Tuner for Every TV*, N.Y. TIMES, Aug. 9, 2002, at C5.

111. Tarr, *supra* note 10.

112. Complaint at 36, *Zenith Elecs. Corp. v. Thomson, Inc.*, No. 5:06-CV-00017-PF (E.D. Tex. Jan. 30, 2006).

113. *Id.*

rates are, especially when the government has dramatically increased the value of the intellectual property by requiring compliance with the standard and, in this sense, transforming the patent into a somewhat inelastic commodity. Evidently, despite the language of the FCC mandate demanding a very open licensing policy, proving that Zenith's actions are predatory and in bad faith has not been easy. There are no published decisions yet in Zenith's infringement actions, but several defendants have settled: Zenith has signed patent licensing agreements with Vizio, Syntax-Brilliant, and Akai for the use of the RF-modulation technology at the core of the ATSC standard.¹¹⁴

This illustrates a fundamental weakness of infringement defenses based on alleged representations that the patent holder made before the regulating body as to its commitments to license its patents on reasonable and nondiscriminatory terms. The regulation itself substantially increases the economic value of such patents, and a determination that licenses are offered on reasonable terms becomes difficult because the patent holder will simply charge what the market will bear, notwithstanding that the price is inflated by the regulation. Digital-video-recorder maker TiVo complained of this very problem with regard to the digital V-chip technology licensed by Tri-Vision.¹¹⁵ For a license on its single V-chip patent, Tri-Vision offered TiVo license terms of \$1.25 per unit, and if TiVo did not sign up within a few months, an increase to \$1.55 per unit.¹¹⁶ If TiVo delayed longer, further increases would follow.¹¹⁷ By contrast, TiVo noted that it paid \$2.50 per unit for a license to the MPEG-2 patent pool which gave it access to 650 patents, as opposed to Tri-Vision's single patent.¹¹⁸ A reasonable rate, TiVo argued, would be a few cents per unit.¹¹⁹

Thomson, in the meantime, took a different tack and sold an exclusive license in some of its ATSC-DTV patents to Funai Electric, a company that was not part of the Grand Alliance and had thus made no representations

114. *LG's Zenith Signed a Licensing Agreement with Vizio, Settling . . .*, CONSUMER ELECS. DAILY, Dec. 20, 2007, 2007 WLNR 25445301. It is also interesting to note that Zenith, a one-time giant in the American television industry, is now a wholly owned subsidiary of the Korean company LG and has only fifty employees, all engaged in managing its patent portfolio. *Id.* In other words, Zenith's business model is now purely patent licensing and is likely driven primarily by the FCC digital television tuner mandates. *See id.*

115. *Deny V-Chip Licensor Undeserved "Windfall," TiVo Urges FCC*, CONSUMER ELECS. DAILY, Jan. 3, 2005, <http://www.warren-news.com/CEservices.htm>, available at LEXIS.

116. *Id.*

117. *Id.*

118. *Id.* In fact, Tri-Vision was offering a license to both its U.S. patent and its Canadian counterpart.

119. *Id.*

before the FCC itself.¹²⁰ Funai then sued a number of television manufacturers on the Thomson-ATSC-DTV patents.¹²¹ There are no published decisions yet on the outcome of this litigation either. But as a third party, Funai will likely now deny that it is bound by any representations made by Thomson before the FCC. Furthermore, any defendant seeking to invoke equitable estoppel will likely fail the requirement of showing detrimental reliance on Funai's representations because Funai, as a third party, could not have made representations on which any defendant might have relied. This strategy will likely result in a number of settlements in which manufacturers will take a license from Funai rather than incur the cost of litigation to attempt to invalidate the patents or to construe the claims and argue noninfringement. Thus, the traditional patent infringement defenses have proved largely ineffective in combating what many see as unfair conduct by holders of patents reading on standards mandated by the government.

Ironically, rather than promoting its stated goals of competition and innovation,¹²² the FCC's regulations seem primarily to have encouraged the business model of the "patent troll," or company that does not compete in the production of goods, but rather acquires and enforces patents against those companies that actually develop and manufacture goods.¹²³ Another example of such a company is Rembrandt Technologies, which acquired patents from a division of AT&T Bell Labs, an original member of the digital television Grand Alliance.¹²⁴ Rembrandt has filed infringement suits against major cable television providers, including Charter, Cox, Cablevision, Comcast, and Time Warner, alleging that "by offering digital cable programs, those companies infringe a portfolio of Rembrandt's patents related to the reception and transmission of signals based on the U.S. digital HDTV standard."¹²⁵ If anything, the proliferation of such lawsuits chills rather than encourages the timely availability of low-cost digital television to the American consumer, leading some to wonder if the promises by the Grand Alliance mean anything at all:

Rembrandt's complaints raise an unavoidable question: Where is the

120. *Thomson Enters into Business Alliance with Japanese Group, Funai Electric*, BUS. WIRE, Jan. 20, 2005, 1/20/05 Bus. Wire 08:20:00 (Westlaw).

121. *HDTV Maker Will Fight Foreign Patent Lawsuit*, *supra* note 10.

122. Fourth Report and Order, *supra* note 7, at 17,773.

123. Junko Yoshida, *Patent Troll Casts Shadow over Cable*, ELECTRICAL ENGINEERING TIMES, May 14, 2007, <http://www.eetimes.com/showArticle.jhtml;jsessionid=KJBDVEGWJZEU0QSNLPC KHSCJUNN2J VN?articleID=199501152>.

124. *Id.*

125. *Id.*

patent pool for the U.S. digital HDTV system? Although the mission of the Grand Alliance was to develop a spec by merging its members' best work, the group was unable to create a patent pool. The informal understanding at the time was that members would not assert any patents and would license them for a reasonable fee. Whether that agreement remains valid today has become a question in the minds of some of the defendants.¹²⁶

In short, the patent system is not working here, and the FCC's involvement in mandating compliance with industry-developed standards has only exacerbated the problem and led to abuse. A new tool is needed to ensure fairness and to more effectively achieve the government's purpose. As Part IV explains, this tool is one the government already possesses: the power of eminent domain.

IV. APPLYING EMINENT DOMAIN TO THE PROBLEM OF PATENTED STANDARDS MANDATED BY THE GOVERNMENT

When the FCC decided to mandate the inclusion of digital tuners in all televisions sold in the United States, it was trying to achieve the dual goals of freeing up additional broadcast spectrum for the benefit of the government and making high-quality television broadcast signals available to the public.¹²⁷ But rather than allowing market forces to drive the transition to digital television, Chairman Powell of the FCC acknowledged that the FCC was pursuing an interventionist "industrial policy" designed to force the transition.¹²⁸ In other words, the FCC believed that the public interest was best served by getting the old analog broadcasters and analog-television receivers out of the market to make way for the new digital-broadcast system. The problem was that patents held by private parties, or patents that private parties might subsequently obtain, could stand in the way of this transition. Indeed, the fundamental right of a patent holder is the right to exclude others from practicing the patented invention, and a patent holder unable to obtain satisfactory licensing agreements would be able to obtain an injunction against competitors.¹²⁹ Furthermore, patent

126. *Id.*

127. Fourth Report and Order, *supra* note 7, at 17,774, 17,787 (discussing the benefits of improved signal quality and the return to the government of the analog spectrum freed up by the proposed digital transition).

128. See *FCC Orders Set Manufacturers to Include DTV Tuner*, COMMS. DAILY, Aug. 9, 2002, 2002 WLNR 6451051.

129. See 35 U.S.C. § 283 (2006) (noting that courts "may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable").

holders would have a strong incentive to hold out for large license fees because the government mandate itself would dramatically increase the value of such patents over their premandate value. This situation is analogous to holdout owners of real property in the path of development whose property value increases dramatically as they find themselves able to hold up development until they receive their demanded compensation. The solution in the case of real property is that the government may exercise its power of eminent domain to institute condemnation proceedings, to take the property, and to compensate the owner of the property with an amount determined without consideration of the increase in value attributable to the development itself.¹³⁰

As applied to real property, the eminent domain power of the government to condemn property for “public use” is broad.¹³¹ Justice O’Connor’s dissent in *Kelo v. City of New London* points out just how far this power goes and how liberally “public use” is defined:

[T]he Court today significantly expands the meaning of public use. It holds that the sovereign may take private property currently put to ordinary private use, and give it over for new, ordinary private use, so long as the new use is predicted to generate some secondary benefit for the public—such as increased tax revenue, more jobs, maybe even esthetic pleasure.¹³²

In the case of patents, it is clear that the government could satisfy this broad definition of public use. Requiring clean-burning gasoline to improve air quality, providing parents with an effective method of controlling access to certain types of broadcast-television content, and making high-quality digital-broadcast signals available to the public would all qualify as public use. This would even be the case if the government chose to take property from one private owner and give it to another, as long as such action was expected to “generate some secondary benefit for the public.”¹³³ But does the power of eminent domain extend beyond tangible real property to reach intangible intellectual property?

130. See *City of N.Y. v. Sage*, 239 U.S. 57, 60–61 (1915) (holding that the property owner in an eminent domain action was not entitled to a share of any increase in the value of her property that came about as a result of the reservoir development that was the impetus for the eminent domain action).

131. See *Kelo v. City of New London*, 545 U.S. 469, 501 (2005) (O’Connor, J., dissenting) (noting the sweeping definition of “public use” the Supreme Court has adopted in the context of eminent domain).

132. *Id.*

133. *Id.*

A. MAY A PATENT BE TAKEN BY EMINENT DOMAIN?

A patent is clearly property, but differs significantly from real property in the context of eminent domain in that it cannot be physically occupied by the government the way real property can. Furthermore, intellectual property does not suffer from the problem of overuse by multiple users the way real property does: real property can accommodate only a finite number of users while intellectual property can theoretically accommodate an infinite number of users without impairing the usefulness of the property. The fact that a patent grants a right to exclude others does give the holder a right to fully occupy the property to the exclusion of others (though not physically), and thus renders the distinction regarding the number of simultaneous users somewhat moot. Further, some authors have argued that the government always intended the power of eminent domain to extend to patents: “[a]s early as 1881, the Supreme Court noted in dictum that patents were subject to eminent domain and that, although they were grants from the federal government, it was still necessary to pay compensation for taking a patent.”¹³⁴ And in 1848, the Supreme Court suggested that the distinction between real tangible property and intangible property should have no bearing on whether the power of eminent domain should apply.¹³⁵ Nevertheless, the government has not made use of eminent domain to take a patent outright, although it has done essentially that under the compulsory licensing provisions of 28 U.S.C. § 1498.

B. GOVERNMENT TAKING OF PATENTS UNDER 28 U.S.C. § 1498

The precursor to § 1498 was passed on June 25, 1910, and provides, in part, that:

[W]henever an invention described in and covered by a patent of the United States shall hereafter be used by the United States without license of the owner thereof or lawful right to use the same, such owner may recover reasonable compensation for such use by suit in the Court of Claims.¹³⁶

134. Max Stul Oppenheimer, *Harmonization Through Condemnation: Is New London the Key to World Patent Harmony?*, 40 VAND. J. TRANSNAT'L L. 445, 492 (2007) (citing *James v. Campbell*, 104 U.S. 356 (1882)).

135. *W. River Bridge Co. v. Dix*, 47 U.S. 507, 533–34 (1848). This case stated:

A distinction has been attempted, in argument, between the power of a government to appropriate for public uses property which is corporeal, or may be said to be in being, and the like power in the government to resume or extinguish a franchise. The distinction thus attempted we regard as a refinement which has no foundation in reason

Id. See also Oppenheimer, *supra* note 134, at 491 n.250.

136. Act of June 25, 1910, ch. 423, 36 Stat. 851, 851 (1910) (codified as amended at 28 U.S.C.

The Act of 1910 both grants a waiver of sovereign immunity to permit patent holders to sue the United States, and also confirms the right of the United States to use any patented invention “without license of the owner thereof.”¹³⁷ The Supreme Court discussed the government’s use of this power in *De Forest Radio Telephone & Telegraph Co. v. United States*.¹³⁸ In *De Forest*, the government ordered General Electric, a subsidiary of AT&T, to produce audions, vacuum tubes used in radio communications for which both AT&T and De Forest held licensing rights, in order to obtain sufficient quantities to meet the needs of the U.S. Army during the First World War.¹³⁹ AT&T complied with the government’s demands to turn over blueprints and manufacturing drawings to General Electric, but then De Forest sued, arguing that AT&T’s cooperation with the government did not relinquish De Forest’s right to sue for infringement of its patent.¹⁴⁰ The Supreme Court held, however, that AT&T had granted the government an implied license, and that this constituted a complete defense to De Forest’s claim of patent infringement.¹⁴¹

More recently, the Federal Circuit confirmed that § 1498 provides the sole remedy for claims of patent infringement by the government when it acts in eminent domain to take a compulsory license to the patent in question.¹⁴² In *Motorola, Inc. v. United States*, the U.S. Navy procured thirty radar beacons from Motorola, the holder of the relevant patent.¹⁴³ The Navy then issued a broad solicitation seeking additional radar beacons to be manufactured to a specification that infringed Motorola’s patent.¹⁴⁴ When the Navy awarded that contract to Vega Precision Laboratories, Inc., and then issued another solicitation for proposals, Motorola sued for infringement.¹⁴⁵ The court noted that Motorola’s cause of action did not come under title 35, the patent code, but rather under § 1498, which confers exclusive jurisdiction for government infringement of patents.¹⁴⁶ Under § 1498, the government is not an ordinary infringer, but instead has taken a compulsory license by eminent domain.¹⁴⁷ Accordingly, the Circuit Court

§ 1498 (2006).

137. *Id.*

138. *De Forest Radio Tel. & Tel. Co. v. United States*, 273 U.S. 236, 237 (1927).

139. *Id.* at 238–39.

140. *See id.* at 239–41.

141. *Id.* at 242.

142. *See Motorola, Inc. v. United States*, 729 F.2d 765, 772 (Fed. Cir. 1984).

143. *Id.* at 766–67.

144. *Id.* at 767.

145. *Id.*

146. *Id.* at 768.

147. *Id.*

remanded the case for determination of the just compensation owed to Motorola consistent with the Fifth Amendment takings clause of the Constitution.¹⁴⁸

It is useful to examine portions of the text of § 1498:

(a) Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture. . . .

. . . [T]he use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.¹⁴⁹

The text of the code section clearly indemnifies third-party infringers as well, as long as they act “with the authorization or consent of the Government.”¹⁵⁰ Indeed, the Federal Circuit confirmed that a private entity can raise § 1498 as an affirmative defense to an infringement claim.¹⁵¹ In *Crater Corp. v. Lucent Technologies*, Lucent contracted with the government to produce underwater couplers, but Crater held the product's patent.¹⁵² When Crater sued Lucent for infringement, the court dismissed the infringement claims, holding that § 1498 was a complete defense because Lucent's alleged infringement was authorized by the government.¹⁵³

Of course, the examples raised thus far discuss the applicability of § 1498 in the context of a government procurement in which it has specifically requested that one party infringe the patent of another. However, § 1498 has recently been applied more generally to activities performed in the government's interest and not necessarily in response to a direct, explicit request or procurement.¹⁵⁴ In *Madey v. Duke University*, a former professor sued Duke University for continuing to use laboratory methods for which he held patents.¹⁵⁵ The court concluded that a private

148. *See id.* at 772.

149. 28 U.S.C. § 1498 (2006).

150. *Id.*

151. *Crater Corp. v. Lucent Techs., Inc.*, 255 F.3d 1361, 1364 (Fed. Cir. 2001).

152. *Id.* at 1363–64.

153. *Id.* at 1369.

154. *See Madey v. Duke Univ.*, 413 F. Supp. 2d 601, 607 (M.D.N.C. 2006).

155. *Id.* at 603.

party can raise a § 1498 defense to infringement by showing that its use of a patent is (1) for the government, and (2) with the authorization or consent of the government.¹⁵⁶ Significantly, the court construed “for the Government” quite broadly as meaning “in furtherance and fulfillment of a stated Government policy,” and it also noted government authorization or consent need not be express but may be implied.¹⁵⁷ Implied consent may be found where the government has contracted for work to meet certain specifications that cannot be met without infringing a patent, and where the government is aware of the infringement.¹⁵⁸ Furthermore, the court stated:

[G]iven the purposes of § 1498, this authority should be broadly construed to allow the Government to consent to patent infringement in order to obtain desired goods, services, or research for the United States, with appropriate royalties paid to the patent holder in a suit against the Government in the Court of Federal Claims for this taking.¹⁵⁹

While Duke’s federal research grants did establish use “for the Government,” they were not, by themselves, sufficient to establish government authorization for infringement.¹⁶⁰ By analyzing the language of the grants and log books recording lab activities, however, the court was able to conclude that infringement of at least two patents was authorized by the government and that, with respect to those claims, § 1498 was a valid affirmative defense.¹⁶¹

Thus, a plausible reading of *Madey* is that an alleged infringer may raise a § 1498 defense when the following conditions are met: (1) the infringer has acted in furtherance and fulfillment of a stated government policy; (2) it was necessary to infringe a patent in order to engage in the activity; and (3) the government is aware that its stated policy requires infringement of the patent. This suggests that § 1498 may be available as a remedy to those that infringe a patent in order to comply with a mandatory government regulation.¹⁶²

C. SECTION 1498 APPLIED TO INFRINGEMENT BY GOVERNMENT MANDATE

Does § 1498 shield from liability defendants accused of infringing patents while complying with a government mandate? Insofar as such

156. *Id.* at 607.

157. *Id.*

158. *Id.* at 620.

159. *Id.* at 608.

160. *Id.* at 616.

161. *Id.* at 618–19.

162. *See id.* at 606–19.

action could be construed as contributory infringement on the part of the government—for example, encouraging third parties to infringe a patent—the answer, as of thirty years ago, was probably no.¹⁶³ The *Madey* decision, however, suggests a broader interpretation of § 1498. When the alleged infringement is “in furtherance and fulfillment of a stated Government policy,”¹⁶⁴ and the government has impliedly consented to the infringement by demonstrating an awareness of the existence of patents that will necessarily be infringed, § 1498 may be implicated,¹⁶⁵ thereby indemnifying the alleged infringer and limiting the patent holder’s remedy to just compensation from the government for the value of the property taken.¹⁶⁶

In the case of the FCC’s regulations governing digital-television tuners, there is little doubt that in adopting the regulations, the government was articulating a policy that it determined was in the interest of the American public. It stated as much in its implementing order:

We conclude that adoption of the DTV Standard will serve the public interest. It will bring many benefits to American consumers. By providing a requisite level of certainty to broadcasters, equipment manufacturers and consumers, the benefits of digital broadcasting will be realized more rapidly. The public will receive more choices in video programming with dramatically better visual and aural resolution. In addition, new and innovative services can be made available by the data transmission capabilities of the DTV Standard. Further, the DTV Standard will permit interoperability with computers and encourage innovation and competition.¹⁶⁷

The FCC was further aware that the incorporation by reference of the ATSC-digital-television standard would create conflicts with patents, both current and future, as evidenced by its attempts to secure an understanding

163. See *Decca Ltd. v. United States*, 640 F.2d 1156, 1167 (Ct. Cl. 1980), for further explanation: [S]ection 1498 is a waiver of sovereign immunity only with respect to a direct governmental infringement of a patent. Activities of the Government which fall short of direct infringement do not give rise to governmental liability because the Government has not waived its sovereign immunity with respect to such activities. Hence, the Government is not liable for its inducing infringement by others, for its conduct contributory to infringement of others, or for what, but for section 1498, would be contributory (rather than direct) infringement of its suppliers.

Id. (footnotes omitted).

164. *Madey*, 413 F. Supp. 2d at 607.

165. See *id.* at 617–18 (finding that a government research grant for work vital to the interests of the government had authorized infringement of a patent under § 1498).

166. 28 U.S.C. § 1498(a) (2000) (specifying that “the owner’s remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture”).

167. Fourth Report and Order, *supra* note 7, at 17,772–73.

regarding licensing:

Generally, commenting parties that addressed [the licensing technology] issue agree to the reasonable licensing of their relevant patents, including pending patents and intellectual property necessary for the successful construction of DTV equipment. ATSC indicates that it sought and obtained from each member of the Grand Alliance and from Dolby a written commitment to abide by this requirement. ATSC and the other commenting parties suggest that no further Commission action is required.¹⁶⁸

And in a subsequent notice of proposed rulemaking, the FCC reiterated:

We have previously stated that in order for DTV implementation to be fully realized, the patents on a DTV standard would have to be licensed to other manufacturing companies on reasonable and nondiscriminatory terms. In response, the Advisory Committee's testing procedures have required proponents of any DTV system to follow American National Standards Institute patent policies which require assurance that: (1) a license will be made available without compensation to applicants desiring to utilize the license for the purpose of implementing the standard; or (2) a license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination.¹⁶⁹

Thus, it is arguable that the FCC's regulations requiring the inclusion of digital tuners in all televisions fall within the purview of § 1498. A manufacturer who implements a digital tuner in a television set to comply with the FCC regulations may be said to be acting with the authorization and consent of the U.S. government, and in the language of the statute, the "manufacture of an invention . . . covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States."¹⁷⁰

Even if "for the Government" is construed more narrowly to apply only to infringement in the manufacture of items specifically procured by the government, and § 1498 is therefore inapplicable, § 1498 does not limit the government's power of eminent domain over patents. New legislation, more specifically tailored to takings that would result from the imposition

168. *Id.* at 17,784 (footnotes omitted).

169. Fifth Further Notice of Proposed Rule Making, *supra* note 109, at 6260–61 (footnotes omitted).

170. 28 U.S.C. § 1498(a) (2006).

of mandatory regulations, would be compatible with § 1498. In fact, even now, the government has the power to take a patent application covering an invention it has no intention of procuring: for example, the government may act under 35 U.S.C. § 181 or § 183 to prevent the public disclosure of a patent application when suppressing its publication would serve national security interests.¹⁷¹

Under § 181, all patent applications are subject to examination by the Atomic Energy Commission, the Secretary of Defense, or “the chief officer of any other department or agency of the Government designated by the President as a defense agency of the United States” to determine whether publishing the application presents a risk to national security.¹⁷² If so, the agency making such a determination can have the application suppressed and held secret.¹⁷³ Of course, under the patent rules, the right of limited monopoly granted to an inventor is given in exchange for the inventor’s agreement to fully disclose his invention to the world.¹⁷⁴ Without such a disclosure, no limited monopoly is granted. Indeed, an inventor cannot enforce his right to exclude without a published patent because potential infringers must be put on notice of the inventor’s right, and the grant and publication of a patent is deemed to put the world on constructive notice of the patentee’s rights. Thus, the procedure outlined in § 181 deprives the inventor of the entire value of his patent by taking away his right to exclude others.¹⁷⁵ The government recognizes that this is in fact an exercise of eminent domain by which the government has seized private property in furtherance of the public interest, and § 183 accordingly provides that such an inventor is compensated for the value of the property taken.¹⁷⁶

The section further gives the applicant the right to sue the government in the Court of Claims for compensation.¹⁷⁷ It also notes that the government may proceed as it would in response to an action brought

171. 35 U.S.C. §§ 181, 183 (2006).

172. *Id.* § 181.

173. *Id.*

174. *See id.* § 112.

175. *See, e.g.,* Honeywell Int’l, Inc. v. United States, 81 Fed. Cl. 514, 573 (Ct. Cl. 2008) (noting that the right to exclude arises when the “public receives knowledge of the preferred embodiments for practicing the claimed invention” (quoting *Eli Lilly & Co. v. Barr Labs.*, 251 F.3d 955, 963 (Fed. Cir. 2001))).

176. *See* 35 U.S.C. § 183.

177. *Id.* (“A claimant may bring suit against the United States in the United States Claims Court or in the District Court of the United States for the district in which such claimant is a resident for an amount which when added to the award shall constitute just compensation for the damage and/or use of the invention by the Government.”).

under § 1498.¹⁷⁸ Even though the government is not directing another party to infringe an applicant's patent nor directly infringing the patent itself, it is nonetheless taking the patent from the inventor in the interest of the United States, and this action is compatible with § 1498. Thus, imposing secrecy orders on patent applications establishes a precedent for government takings of patents outside of the realm of procurements or specifically authorized infringements, which arguably are the limits of the actions to which § 1498 applies.

D. IS LEGISLATION BEYOND § 1498 REQUIRED TO ADDRESS TAKINGS BY THE IMPOSITION OF MANDATORY GOVERNMENT REGULATIONS?

If the government's imposition of a mandatory regulation that necessarily infringes patents is to be construed as a Fifth Amendment taking, is new legislation specifically authorizing compensation required?¹⁷⁹ The answer may depend on whether § 1498 is construed as granting a waiver of sovereign immunity, allowing the government to be sued, or rather is construed as granting the government the power to effect such a taking. It may do both.

In *Decca, Ltd. v. United States*, the Court of Claims suggested that § 1498 codifies the government's authority to take a patent through its power of eminent domain:

Section 1498 of 28 U.S.C. (1976) authorizes the Government to take, through exercise of its power of eminent domain, a license in any United States patent. Section 1498 provides the sole remedy available to a patentee for an eminent domain taking of a license in his patent. The remedy is monetary and must be pursued by means of an action in [the Court of Claims].¹⁸⁰

But *Decca* also construed § 1498 as waiving the government's sovereign immunity only for direct infringement and not for contributory infringement, thus suggesting that the function of § 1498 is primarily a waiver of sovereign immunity:

[S]ection 1498 is a waiver of sovereign immunity only with respect to a direct governmental infringement of a patent. Activities of the Government which fall short of direct infringement do not give rise to governmental liability because the Government has not waived its

178. *Id.*

179. See Gordon Klancnik, Note, *A Proposal to Resolve Infringement Induced by Governmental Fiat*, 70 GEO. WASH. L. REV. 806, 828-29 (2002) (proposing an amendment to title 35 to specifically address infringement compelled by the government).

180. *Decca Ltd. v. United States*, 640 F.2d 1156, 1166 (Ct. Cl. 1980) (footnotes omitted).

sovereign immunity with respect to such activities. . . . In short, under section 1498, the Government has agreed to be sued only for its direct infringement of a patent.¹⁸¹

On the other hand, in *Constant v. United States*, the Court of Claims suggested that the power of eminent domain is not necessarily coterminous with statutes authorizing takings, such as 35 U.S.C. § 183.¹⁸² In that case, the court interpreted § 183 to provide certain administrative remedies that also “blanket[] considerable conduct outside the range of the Just Compensation clause of the Fifth Amendment.”¹⁸³ The plaintiff had also brought a separate cause of action under the Fifth Amendment, which had been dismissed.¹⁸⁴

Thus, even absent new legislation, nothing likely stops the government from instituting condemnation proceedings to explicitly take patents standing in the way of mandatory regulations. The government could continue to take subsequently issued patents that might interfere with its industrial policies (such as its policy of encouraging the wholesale replacement of analog television with digital television) or its health or safety policies.¹⁸⁵

Nevertheless, new legislation might be required to indemnify a third party who infringes a patent in order to comply with a mandatory government regulation and to grant the patent holder the right to sue the government for compensation, especially when the government has not explicitly instituted condemnation proceedings. Such legislation would be primarily jurisdictional and procedural in nature. Thus, it would likely belong in title 28, chapter 91 of the U.S. Code, which defines the jurisdiction of the U.S. Court of Federal Claims.¹⁸⁶ Without attempting to

181. *Id.* at 1167 (footnotes omitted).

182. *See* *Constant v. United States*, 617 F.2d 239, 240–41 (Ct. Cl. 1980).

183. *Id.* at 242.

184. *Id.* at 240 n.4.

185. *See* *Mueller*, *supra* note 70, at 653. Further:

The potential for unfair exploitation of users of government-mandated standards is significant, for these users *must* employ the patented technology and will be required to pay whatever the patentee demands in terms of royalties. Rather than creating a distinct set of patentability rules for dealing with patents on subject matter that is the subject of government standards, the better approach is to permit such patents to issue but to limit their enforcement. . . . [W]hen a technology standard is mandated by the federal government, the government should consider exercising its eminent domain power over patents that the owner refuses to license widely on commercially reasonable terms.

Id.

186. *See, e.g.*, 28 U.S.C. § 1498 (2006) (limiting remedies for governmental use or manufacture of a patented device to a suit for money damages in the Court of Claims). Note that Gordon Klanclik suggested similar legislation as an amendment to title 35, implying that this situation should be analyzed more along the lines of a traditional infringement action. *See* Klanclik, *supra* note 179, at

draft the actual language of such an amendment to title 28, an outline of this legislation should include the following limitations, as suggested by *Madey*: When an accused infringer acts in furtherance of a stated government policy to comply with a regulation that necessarily requires infringement of a patent, and when the government is aware that the regulation infringes that patent, the accused infringer shall be indemnified by the government for any damages caused by the infringement.¹⁸⁷ Furthermore, the sole remedy of the patent holder shall be by action against the United States in the U.S. Court of Federal Claims for the recovery of reasonable and entire compensation.

E. THE PROBLEM OF VALUATION

Even with such legislation in place, however, the challenge of determining the value of reasonable and entire compensation will remain. First, it is necessary to determine whether the government's taking of a patent by imposing mandatory regulation is construed as an outright seizure of ownership or as the taking of a compulsory license in the patent. Either interpretation is possible, and both present challenging valuation problems. When courts have examined the problem of government takings of patents, however, they have generally held that the proper method of valuation is to construe the taking as a compulsory license and to calculate a reasonable royalty.¹⁸⁸

When the government infringes a patent by ordering a third party to produce a patented product,¹⁸⁹ the calculation of a reasonable royalty is relatively straightforward. In this case, the government takes a nonexclusive license for the production of the desired goods, and the patent holder presumably can continue to license its patent to others.¹⁹⁰ Though

828–29. Although he specifically includes language making an injunction (the traditional infringement remedy) unavailable, incorporating such legislation into title 28 might better emphasize the interpretation that the government is acting not as an ordinary infringer but rather is acting in eminent domain to take a patent.

187. See *supra* notes 154–61 and accompanying text.

188. See *Decca Ltd. v. United States*, 640 F.2d 1156, 1167 (Ct. Cl. 1980) (explaining that when the government takes a patent, the preferred method of valuation is the calculation of a reasonable royalty); *Leesona Corp. v. United States*, 599 F.2d 958, 968 (Ct. Cl. 1979) (noting that government infringement is generally interpreted as the taking of a compensable compulsory license and that just compensation is in most cases determined by the calculation of a reasonable royalty).

189. See for example, *supra* notes 142–53 and accompanying text, discussing *Motorola* and *Crater*, in which the government ordered competitors to produce products for the government that infringed patents.

190. See, e.g., *Motorola, Inc. v. United States*, 729 F.2d 765, 768 (Fed. Cir. 1984) (noting that under 28 U.S.C. § 1498, the government is in the position of a compulsory, nonexclusive licensee).

the government's taking of a license may affect the license's value, there is often data regarding licensing contracts made prior and subsequent to the government's action that can be used for comparison in setting a royalty rate.

In contrast, when the government adopts a mandatory regulation that infringes a patent, it has essentially taken an exclusive license that takes the patent off the market—the owner is no longer able to license it to other parties or to collect royalties from anyone other than the government. Thus, it is difficult to set a value by looking at the value of similar licenses offered in the marketplace. Furthermore, the government's adoption of the regulation dramatically increases the license's value, so looking at what others in the industry would be willing to pay after the regulation goes into effect would overvalue the patent. Indeed, Fifth Amendment takings jurisprudence has long held that the value of property is its market value at the time of the taking, not its enhanced value after the taking has occurred.¹⁹¹ On the other hand, for a patent reading on an industry standard in particular, the patent may have very little value at all without the mandatory adoption of that standard, so evaluating its market value just before adoption of the regulation would seem to undervalue it. Placing too low a value on such a patent would destroy the incentives for innovation the patent system seeks to promote.

A number of different theories are employed by courts to determine reasonable royalties in the case of patent infringement. One oft-employed technique is an analysis of lost profits—the patent holder's production volume, market share, and other factors are taken into account to estimate lost sales due to the infringement.¹⁹² In other cases, the court adopts an analysis set out in *Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers*, in which a reasonable royalty is determined by analyzing what a hypothetical willing buyer would have paid a willing seller for a license in the patent.¹⁹³ When a patent holder is actively producing devices under a patent that becomes implicated by a mandatory government regulation,

191. See *City of N.Y. v. Sage*, 239 U.S. 57, 60–61 (1915) (rejecting a suggestion that at least some of the enhanced value of a property taken for the construction of a reservoir be shared with the property owner).

192. See *Imperial Mach. & Foundry Corp. v. United States*, 69 Ct. Cl. 667, 669–70 (Ct. Cl. 1930) (concluding that infringement resulted in lost sales by the patent holder and setting compensation as the value of the lost profits from those sales).

193. *Georgia-Pac. Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295, 296–97 (2d Cir. 1971) (“This rule [for calculating a reasonable royalty] contemplates a suppositious meeting in advance of infringement between patent owner and potential infringer in order to work out a license agreement.”).

either the lost-profits method or the *Georgia-Pacific* method would likely result in an equitable valuation of a license in the patent. As previously discussed,¹⁹⁴ however, the favored business model in many of these cases seems to be that of the patent troll that never actually produces or sells the device covered by the patent in question, but rather seeks to extract royalties from manufacturers under the threat of an injunction. In such a case, neither of these methods of analysis would be effective because there are no actual sales to look to for comparison. In some sense, requiring a demonstration of lost profits might serve a policy goal of discouraging the patent troll business model. Others argue that so-called patent trolls actually serve a purpose as venture capitalists by paying cash for patents that the owner may not have the resources or expertise to enforce.¹⁹⁵

Thus, there is no simple formula for the valuation of patents taken by the imposition of mandatory regulations, and, at the cost of judicial efficiency, it is likely best to allow the courts considerable discretion in determining the value of a reasonable royalty. The Federal Court of Claims, in *Tektronix, Inc. v. United States*, summarized a number of considerations that might be looked to for guidance in setting a reasonable royalty in cases in which “it is necessary to adopt a method other than reliance on an established royalty for ascertaining what would be reasonable.”¹⁹⁶ In such cases,

[w]here no established royalty is found, one may be selected on the basis of royalty rates for related patents. A settlement rate may be considered, or other contracts between the parties may be used as a guide. Savings realized by the defendant as a result of the infringement are sometimes used as a measure of compensation, and lost profits have been awarded.¹⁹⁷

In other words, the court may consider the totality of the circumstances, including royalties paid for related patents, profits lost, and reasonable settlements. While this places a greater burden on the court, it likely results in the best balancing of incentives for innovation and furtherance of the government interest responsible for the taking.

V. CONCLUSION

When the government mandates the adoption of a standard that

194. See *supra* notes 123–26 and accompanying text.

195. See Yoshida, *supra* note 123.

196. *Tektronix, Inc. v. United States*, 552 F.2d 343, 348 (Ct. Cl. 1977).

197. *Id.* at 347 n.5 (citations omitted).

infringes issued or pending patents, it creates a potential for significant abuse. By limiting competition, increasing prices, and placing a larger burden on the very consumers the government is trying to protect, it not only unfairly enriches the abusers but also chills adoption of the very policies the government hopes to encourage. In such situations, the government should either (1) act explicitly under its power of eminent domain to condemn patents reading on the adopted standard, or (2) simply force patent holders to license their inventions free of charge and allow the patent holders to sue under the Fifth Amendment for compensation by the government for the taking.

Such an approach would have a number of benefits. First, it would reduce litigation among the potential suppliers of the technology subject to the regulation. Because licenses would be freely available, there would be no need to parse patents and construe claims to determine actual infringement. There would be no need to examine bylaws of SSOs engaged in advising the government to determine whether disclosure rules were violated, whether statements were made that could be construed as implied license agreements, or whether any member had relied on another's representations in a way that could give rise to equitable estoppel.

Second, the quality of the standards adopted would likely be higher. The motivation of the participants in the SSO would likely be focused more on adopting the technology that was the most cost effective and simplest to implement, and less on which technology would maximize or minimize their own proprietary interests.

Third, this approach would reduce the incentives for patent trolls, or companies that are not developing or producing technology, but rather gathering third-party patents to enforce against those who are. Though some so-called patent trolls characterize their business model as that of a venture capitalist,¹⁹⁸ the primary results of their activities are generally forcing manufacturers out of the market, reducing consumer choice, and raising prices. This is particularly damaging when the government has determined that efficient adoption of the standard is in the public interest.

Fourth, requiring the government to recognize that its action is an exercise of its eminent domain power and that by imposing such regulations it is effecting a constitutional taking would discourage unnecessary legislation and unnecessarily detailed regulations. In other words, when the government has to "put its money where its mouth is," it

198. See Yoshida, *supra* note 123.

may be far more wary of adopting a detailed electrical specification as law. In particular, it is likely that the government would have been more circumspect about adopting V-chip standards into the regulations if it had to pay just compensation for the takings of Soundview's and Tri-Visions's patents, given that the V-chip is used and valued by only a small minority of consumers.¹⁹⁹ Instead, the government would more carefully weigh the importance and public benefit of adopting such regulations and would do so only when the benefit was large enough to justify the expense of clearing the field of potential blocking patents through condemnation proceedings.

Finally, the limited monopolies granted by patents are far less important for incentivizing development when the government defines the market landscape by imposing mandatory regulations. Once the government has identified a technology that must be adopted for the benefit of the public, the strategy should be to encourage competition by allowing multiple businesses to offer compliant technology to consumers rather than giving a handful of patent holders a windfall at the expense of consumers. This is especially true when the value of those patents has been inflated far above market value by the government's adoption of the standard. Of course, as long as reasonable valuation standards are implemented, the patent system will continue to incentivize the development of technologies from which the government might choose mandatory standards. This is because holders of patents on such technologies would be compensated by the government if they were adopted as mandatory. Compensation would be based on a consideration of many factors, including potential lost profits, hypothetical willing-seller/willing-buyer negotiations, and examination of related patents in the industry.

As we approach the February 2009 deadline for conversion to a fully digital television broadcast system in the United States, consumers will face not only the burden of replacing their analog televisions, but also a television manufacturing industry in which reduced competition and hefty royalties are driving up prices, making the government's transition to digital even more painful than it need be. The government should step back in and correct the problem it created by taking digital-tuner patents through eminent domain, and Congress should pass legislation limiting the remedies of affected patent holders to compensation by the government for the value of the property taken.

199. See, e.g., Jicha, *supra* note 107.