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INTELLECTUAL PROPERTY IN STANDARDS:

DOES ANTITRUST LAW IMPOSE A DUTY TO DISCLOSE (EVEN IF THE STANDARDS-SETTING ORGANIZATION DOES NOT)?

Krista S. Jacobsen†

Abstract

An engineer sits quietly in a standards-setting organization (SSO) meeting at which technical proposals for a new high-speed digital subscriber line (DSL) modem are presented and discussed as part of the process of generating a new standard. He watches as one of his company’s fiercest rivals makes a proposal for how the modem at the customer’s premises will send diagnostic information to the modem at the telephone company’s central office. To his surprise, the proposal incorporates the very data protocol for which he and a colleague filed a patent application three months earlier. The proposal is well received by the other attendees, and after a short discussion, the group agrees to include in the standard the proposal that uses the method disclosed in the engineer’s patent application. As the editor of the standard records the agreement on the issues list, the engineer smiles, knowing that implementation of his soon-to-be-patented invention will be essential for anyone who wishes to build modems compliant with the standard.

Does he have to say anything to the other SSO participants?

Courts have found that if an SSO has a policy requiring its members to disclose information about their existing patents and pending patent applications, thus creating an obligation to speak,* a

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* Most SSOs impose intellectual property (IP) disclosure requirements on their participants, but sometimes the policies are not entirely clear. See, e.g., Rambus, Inc. v. Infineon Tech., AG, 318 F.3d 1081, 1097-98 (Fed. Cir. 2003) (finding a patent policy that said,
patent holder who remains silent can be estopped from enforcing its patents against those who wish to implement the standard.** But what if the SSO has no policy requiring its members to disclose information about their intellectual property (IP) rights? Does the engineer who attends the SSO meeting and knows that the SSO is incorporating his invention in the standard still have an obligation to tell the other SSO participants about the pending patent? If he says nothing, and the standard that eventually issues does indeed contain his innovation, can he refuse to license the patent to those who wish to build standard-compliant equipment? If he agrees to license the patent, can he demand higher royalties than he would be able to collect for that patent absent the standard? This paper considers these questions.

INTRODUCTION

Antitrust law "protects competition and the competitive process by preventing certain types of conduct that threaten a free market." The primary objective is "to maximize consumer welfare by promoting competition among firms." Antitrust law protects competition by prohibiting competitors from agreeing on the prices they will charge consumers, prohibiting "predatory" practices that exclude competitors from the market, and limiting the behavior of companies with market power.

Most cases considering whether antitrust law imposes a duty to disclose IP to SSOs concern instances of non-disclosure or misleading


2. Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 308 (3rd Cir. 2007) (citing PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 100a (Aspen Publishers 2006)).
3. Lemley, supra note 1, at 241.
disclosure to SSOs that have disclosure policies. Likewise, most commentators considering the problem either presume the SSO imposes a duty or they recommend that SSOs implement disclosure policies. In contrast, this paper considers whether antitrust law itself imposes a duty to disclose one's IP to a standards-setting organization, even if the SSO does not have any policy requiring such a disclosure. In particular, the paper examines whether a failure to disclose IP to an SSO can ever constitute a Sherman Act violation. The paper concludes that a patent holder's failure to disclose its essential patents, followed by its refusal to license those essential patents to other parties, can constitute a violation of Section 2 of the Sherman Act if the patent holder is the only holder of essential IP who refuses to license. The paper then proposes the essential facilities doctrine as a remedy for such a Section 2 violation.

STANDARDS-SETTING ORGANIZATIONS

A standard is a set of rules for implementing a technology. A standards-setting organization is an official body, such as a government agency, an industry working group, or an academic consortium, that promulgates standards. Participants in SSOs are typically engineers and scientists working in government or private industry. Companies who send representatives to SSO meetings


7. The International Telecommunications Union (ITU), which is under the auspices of the United Nations, is an example of a governmental standards body. See International Telecommunications Union, About, http://www.itu.int/net/about/index.aspx (last visited May 12, 2010).

8. The Institute of Electrical and Electronics Engineers (IEEE) is an example of an industry standards body. See IEEE, IEEE Standards, http://standards.ieee.org/resources/development/index.html (last visited May 12, 2010).


tend to be those whose business interests overlap with the focus of the
standardization effort.11 Many of these companies are competitors.12

To generate a standard, interested parties meet regularly, in
many cases four to six times a year for several years, to debate the
merits and disadvantages of various proposed technical solutions to a
particular problem.13 SSOs strive to create industry standards that will
be widely adopted.14 The standards promulgated by an SSO may
enhance public health and safety, or they may be so-called
interoperability standards, which ensure equipment manufactured by
different producers is compatible.15

THE EFFECT OF A STANDARD ON COMPETITION

In the absence of a standard, competing companies have the
freedom to produce exactly the products they believe consumers will
want. For example, in the field of digital televisions,16 one company
may choose to make televisions that use liquid crystal display (LCD)
technology, another may build televisions that use plasma displays,
and yet another may choose to build projection systems using digital
light processor (DLP®) technology. A company’s eventual success
with its digital television in the consumer market will depend on a
number of variables, including price, picture quality, size, technology,
features, and design. Thus, companies making products that do not
incorporate standards compete entirely in the consumer market. Their
success or failure results directly from the choices they make in their
product offerings.

11. See, e.g., Alliance for Telecommunications Industry Solutions, ATIS Members,
12. See id., e.g., the list of members of the Alliance for Telecommunications Industry
13. See, e.g., Rambus, 318 F.3d at 1085 (describing Rambus’ participation in the
generation of the SDRAM standard).
15. Mueller, supra note 6, at 632-33. The standard at issue in Allied Tube & Conduit
Corp. v. Indian Head, Inc., 486 U.S. 492, 495 (1988) was a type of safety standard because it
“established product and performance requirements for the design and installation of electrical
wiring systems.” On the other hand, the standard for a mechanism to transfer instructions from a
computer’s central processing unit to peripherals at issue in Dell Computer Corp., 121 F.T.C.
616, 621 (Fed. Trade Comm’n May 20, 1996), was an interoperability standard, as was the
standard for computer memory at issue in Rambus, Inc., No. 9302, at 8 (Fed. Trade Comm’n
16. Certain aspects of digital televisions are, of course, standardized. For example, the
video and audio signals are standardized. See Advanced Television Systems Committee, About
Us, http://www.atsc.org/cms/index.php/component/content/article/195 (last visited May 12,
2010). Display technology, however, is not standardized.
When a product incorporates a standardized technology, the competition model differs somewhat. Instead of having only one phase of competition that takes place entirely in the consumer market and requires companies to compete simultaneously on all the merits of their products, a standard adds an earlier phase of competition that concerns only a subset of the merits of competing solutions. During this phase of competition, which takes place away from consumers and generally occurs without their knowledge, candidate solutions compete on the basis of technical merit and cost, and a group of technical experts chooses a standard. In the subsequent consumer-market phase of competition, competing companies’ standard-compliant products compete on the remaining merits, such as price, quality, design, and the like.

Figure 1 illustrates the two phases of competition that result when a product incorporates a standard.

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**Phase I**

- Solution X
- Solution Y
- Solution Z

SSO

Standard W

**Phase II**

Product “W-A”
By Company A

Product “W-B”
By Company B

Product “W-C”
By Company C

Product “W-D”
By Company D

Consumer Market

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**Figure 1: Two phases of competition resulting from standardization**

In the first phase, denoted as Phase I, participants in an SSO submit Solutions X, Y, and Z to the SSO. These solutions could be complete in that any one solution by itself could constitute the standard, or, more commonly, they could be solutions to specific problems within
the scope of standardization. The SSO considers each of these solutions in its process of writing the standard and eventually issues Standard W, which is generally an amalgam of elements of Solutions X, Y, and Z. After Standard W is complete, Companies A, B, C, and D build standard-compliant equipment, which they then put into the consumer market in the second phase of competition, denoted as Phase II.

Thus, during the SSO process in Phase I, the competition is between various technical alternatives as the SSO members decide what to standardize. Ideally, in making this determination, the SSO carries out its work in an environment “free of distortion, bias, or manipulation by private interests,” which results in “the choice of a standard rest[ing] solely on a neutral evaluation of the costs and benefits of a proposed technical solution.” Therefore, under ideal circumstances, an SSO chooses the solution with the best performance-cost trade-off because that solution most benefits consumers.

Normally, when competitors take collective action, as they do when they participate in efforts to standardize a technical solution, antitrust concerns arise. For example, Section 1 of the Sherman Act forbids collective action among competitors by declaring unlawful “[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several

17. As an example, a DSL standard specifies exactly what the transmitter must do. Although conceivably a single proposal could specify all the requisite information, for various reasons the SSO would be unlikely to adopt it in its entirety. It is more common for proposals to suggest “smaller steps” toward standardization, such as a way to map data to signals, a procedure to initialize modems, or the ordering of data that will be sent by the receiver for error monitoring.


19. It should be noted, however, that SSO leaders often strongly discourage SSO participants, who are technical experts and not lawyers, from discussing the cost of a proposed solution out of concern that such discussions could lead to antitrust violations. In the author’s experience, neither the cost nor price, in dollars, of a solution was ever discussed at SSO meetings. Instead, meeting participants openly discussed only proxies for cost and price, such as the number of semiconductor gates required to implement a solution, because the other SSO participants understood that the number of gates in a chip is proportional to the cost of the chip, other variables being equal.

20. Schneck, supra note 5, at 655 (observing that “[a]ntitrust liability presents a major concern for participants in standard-setting organizations”).
states, or with foreign nations." SSO activities could conceivably fit into this category, but in reality "SSOs do not resemble a collection of horizontal competitors that conspires to raise price or to reduce output," which is the behavior Section 1 aims to prevent. Instead, companies participating in consensus standardization activities share technical information to produce a standard; they do not share sensitive business information in order to form a cartel. Furthermore, when a standard is complete, it is available to parties who did not participate in the SSO. Because any party can practice the resulting standard, the situation "differs from the typical case of collusion among competitors, where the excluded party receives no benefit from the arrangement." Finally, as Figure 1 illustrates, companies participating in SSOs do not avoid market competition; rather, they shift the focus of market competition from the size and nature of the market to the advantages and prices of individual companies' standard-compliant products. In other words, competitors who worked together to set a standard in Phase I compete in Phase II in the consumer market primarily on the price and quality, rather than on the technical features, of the standard-compliant products they produce. Thus, by participating in SSO activities, competitors delay, but do not avoid, competition amongst themselves.

The courts, the Federal Trade Commission (FTC), and the Department of Justice (DOJ) have recognized that standards can provide significant benefits for consumers, including interoperability of equipment; product uniformity; allegedly higher-quality products for consumers as a result of "expert" SSO comparisons of competing solutions; incentives for innovation; increased competition because of

23. Id.
24. Id. at 2032-33.
25. The ITU, ISO, and IEC specifically incorporate this concept into the groups' common Patent Policy. See ITU, Common Patent Policy for ITU-T/ITU-R/ISO/IEC, http://www.itu.int/ITU-T/dbase/patent/patent-policy.html (last visited May 12, 2010) (indicating that standards produced by the ITU, ISO, or the IEC "are non-binding; their objective is to ensure compatibility of technologies and systems on a worldwide basis. To meet this objective, which is in the common interests of all those participating, it must be ensured that [standards], their applications, use, etc. are accessible to everybody") [hereinafter Common Patent Policy].
27. AAI Amicus Brief, supra note 18, at 3.
lower barriers to enter a market with a standardized product; a longer product life; lower development costs for standards-based products; and lower marketing costs to bring products to a predefined, standardized market.\(^{28}\) Furthermore, “industry standards are widely acknowledged to be one of the engines of the modern economy” because they “can make products less costly for firms to produce and more valuable to consumers,” and they “can increase innovation, efficiency, and consumer choice; foster public health and safety; and serve as a ‘fundamental building block for international trade.’”\(^{29}\)

Standards are exclusionary by nature, however, because alternatives not chosen by an SSO in the Phase I competition are likely to be at a competitive disadvantage in the Phase II consumer market.\(^{30}\) By preventing worthy products or technologies from competing meaningfully in the consumer market, standards can thus impede or even prevent competition.\(^{31}\) Depending on the SSO’s selection, a standard may also slow innovation by “locking-in” an inferior technology, and it may reduce consumer choice by reducing the number of differentiated but incompatible products.\(^{32}\) Furthermore, SSO activities “inherently are ‘rife with opportunities for anticompetitive activity.’”\(^{33}\) As the FTC has noted, “[e]ven under the best of circumstances, . . . the standard-setting process has a unique potential to skew the competitive process by aligning supply and demand in a prescribed direction.”\(^{34}\) Therefore, SSO activities are not immune from antitrust scrutiny.\(^{35}\) The courts, the FTC, and the DOJ evaluate SSO activities under the “rule of reason.”\(^{36}\)


\(^{30}\) AAI Amicus Brief, supra note 18, at 6.

\(^{31}\) Id. at 1-2.

\(^{32}\) Id. at 20-21.


\(^{35}\) Schneck, supra note 5, at 655 (noting that because “[s]tandardization involves agreements among horizontal competitors,” antitrust law can reach SSO activities).

\(^{36}\) Carrier, supra note 22, at 2032.
STANDARDS AND INTELLECTUAL PROPERTY

Because an industry standard will often "be built upon useful, novel, and nonobvious technological advances as opposed to whatever already exists in the public domain," sometimes the solution chosen by an SSO incorporates a patented item or process. Often an interoperability standard in fields such as semiconductors, telecommunications, and computer software will incorporate hundreds or even thousands of patented inventions.

An SSO may deliberately choose to incorporate patented technology in a standard or it may do so inadvertently. An SSO could inadvertently include patented technology in a standard in several ways. For example, the SSO could be unaware of a patent that claims a technology already being standardized. In addition, because patent applications in the United States generally remain confidential for a period of at least eighteen months after filing, an SSO, having no means to discover the content or existence of newer applications, could inadvertently incorporate a technical advance that is in fact disclosed in a filed but unpublished patent application.

When a standard incorporates one or more patented inventions, the owner of each patented technology can collect royalties for licensing his or her patent rights to those who wish to practice the standard. Many SSOs encourage or require their members to agree

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37. Mueller, supra note 6, at 649.
38. Carrier, supra note 22, at 2033.
39. See, e.g., Townshend v. Rockwell Int'l, 55 U.S.P.Q.2d 1011, 1014 (N.D. Cal. 2000) (finding that because Townshend lobbied the SSO to adopt its technology and made the SSO aware of its pending patents, the SSO had knowingly incorporated Townshend’s technology in a voice band modem standard).
40. See, e.g., In re Dell Computer Corp., 121 F.T.C. 616, 617 (FedTrade Comm’n May 20, 1996) (finding that the SSO had unwittingly adopted Dell’s patented technology because it relied on Dell’s representative’s certification in writing that to the best of his knowledge the pending standard did not infringe any of Dell’s patents).
41. Given the vast number of both United States and international patents and pending patents, it is unlikely that an SSO would ever have perfect knowledge of the universe of patented inventions and inventions disclosed in pending applications.
42. A United States resident-inventor who does not plan to file for patent protection in a foreign country can elect, at the time of filing a patent application in the United States, to prevent publication of that application. When the inventor makes this election, the fact that a patent is pending remains confidential, unless disclosed by the inventor. Furthermore, the invention itself remains secret until the patent issues. See 37 C.F.R. § 1.213 (West 2009) (providing that “[i]f the invention disclosed in an application has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the application will not be published” after the expiration of eighteen months).
43. Schneck, supra note 5, at 663.
that if a standard incorporates a patented invention, the SSO member who owns the essential IP will license its patent rights under fair, reasonable, and non-discriminatory (FRAND) terms.\textsuperscript{44} Although an SSO may wish to avoid standardizing a solution that requires those implementing it to pay royalties to a patent holder, the FTC has explicitly said that an SSO "must not refuse requests for inclusion of a specific technology into an industry standard solely because that technology is patented."\textsuperscript{45} Such \textit{per se} exclusion of a solution simply because it is patented would violate Section 5 of the Federal Trade Commission Act because it "would result in the exclusion of innovative products from market entry and mislead purchasers about the nature of the product that was not included in the standard."\textsuperscript{46}

\section*{Antitrust and Standards}

Courts and the FTC have recognized that a party's conduct at an SSO meeting can violate the antitrust laws even if that conduct does not violate the SSO's own rules.\textsuperscript{47} For example, courts have imposed antitrust liability on SSO participants who have manipulated the standards process\textsuperscript{48} and on participants who have improperly used the resulting standard to gain a competitive advantage over a rival.\textsuperscript{49}

\begin{itemize}
\item \textsuperscript{44} See, e.g., Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 304 (3rd Cir. 2007) (noting that the European Telecommunications Standards Institute (ETSI) "requires a commitment from vendors whose technologies are included in standards to license their technologies on fair, reasonable, and non-discriminatory" terms); DOJ/FTC Report, \textit{supra} note 29, at 36 (noting that some SSOs require members to commit to license on reasonable and non-discriminatory terms any of their IP that is essential to practice a standard); Common Patent Policy, \textit{supra} note 25 (patent disclosure policy requiring those who know of patents or pending patent applications that read on the standard to elect to (1) "negotiate licences [sic] free of charge with other parties on a non-discriminatory basis on reasonable terms and conditions"; (2) "negotiate licences [sic] with other parties on a non-discriminatory basis on reasonable terms and conditions"; or (3) state that the patent holder is not willing to license its patents either free of charge or on reasonable terms and conditions, in which case the patented technology will be stripped from the standard).
\item \textsuperscript{45} Schneck, \textit{supra} note 5, at 647-48.
\item \textsuperscript{46} \textit{Id.}
\item \textsuperscript{47} Rambus, 330 F. Supp. 2d 679, 698 (E.D. Va. 2004) (citing Allied Tube & Conduit Corp. v. Indian Head, Inc., 486 U.S. 492, 509 (1988). \textit{See also} Rambus, Inc., No. 9302, at 35 (Fed. Trade Comm'n Aug. 2, 2006), 2006 WL 2330117, 18 (observing that even if an SSO does not require disclosure of IP rights, "SSO members still are not free to lie or to make affirmatively misleading representations").
\item \textsuperscript{48} \textit{See, e.g.,} \textit{Allied Tube}, 486 U.S. at 509-11 (finding a Sherman Act violation because a manufacturer of steel conduit packed a standards meeting with new members whose only function was to vote against the inclusion of poly-vinyl chloride (PVC) conduit in the standard).
\item \textsuperscript{49} \textit{See, e.g.,} Radiant Burners, Inc. v. Peoples Gas Light & Coke Co., 364 U.S. 656, 659-60 (1961) (finding a Section 1 Sherman Act violation following a refusal to provide gas for use in gas burners because those burners were not included in a standard).
\end{itemize}
addition, when an SSO participant "commandeers" a standard through its conduct, that party's actions may be reached by the antitrust laws.\textsuperscript{50} The risk of harm to competition from SSO activities "is heightened in the face of exclusionary conduct that does not constitute competition on the basis of efficiency and that interferes with the cooperative nature of the standard-setting process."\textsuperscript{51} The concern is greatest when an SSO carries out its work by consensus, ostensibly because "participants in the standard-setting process are likely to be less wary of deception; they are less likely to detect and take countermeasures to counteract it, and anticompetitive effects therefore are more likely to result."\textsuperscript{52}

CAN A FAILURE TO DISCLOSUE IP TO AN SSO CONSTITUTE A SHERMAN ACT VIOLATION?

Section 2 of the Sherman Act punishes "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several states, or with foreign nations . . . ."\textsuperscript{53} The Supreme Court has stated that a Section 2 violation has two elements: "(1) the possession of monopoly power in a relevant market and (2) the willful acquisition, maintenance, or use of that power by anticompetitive or exclusionary means or for anticompetitive or exclusionary purposes."\textsuperscript{54} This section examines whether the conduct

\textsuperscript{50} Rambus, 330 F. Supp. 2d at 698 (quoting Allied Tube, 486 U.S. at 511).


\textsuperscript{52} Id. In the author's experience, this characterization of SSO participants is inaccurate. At least in the SSO meetings the author attended over a span of approximately twelve years, participants were not naive technical experts with no consciousness of the possibility of deception or, in particular, the likelihood that IP was embedded in other participants' proposals. On the contrary, most SSO participants assumed that if another company submitted a proposal that appeared to be new, in that they had not seen it in another field or application, it likely was new, and therefore its proponent had almost certainly filed a patent application covering that proposal. Thus, the objective of most SSO participants was not so much to resist adopting another company's IP, but instead to ensure the standard would require a license to at least one of their own company's patents to preserve the possibility of a cross-license agreement, which would cost little or nothing, rather than a one-way licensing agreement, which could cost a lot.


\textsuperscript{54} Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 595-96 (1985) (citing United States v. Grinnell Corp., 384 U.S. 563, 570-71 (1966)). At note 19, the Court quoted the test from Grinnell, the second element of which differs slightly from the Court's test in Aspen Skiing Company. The second element of the Grinnell test is "the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."
of a patent holder who fails to disclose IP to an SSO can constitute a Section 2 Sherman Act violation.

**WHAT IS THE RELEVANT MARKET?**

The first step in considering a possible Sherman Act violation is to define the relevant market. The Supreme Court has said that the “outer boundaries of a relevant market are determined by reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it.” Products are interchangeable if “one product is roughly equivalent to another for the use to which it is put; while there may be some degree of preference for the one over the other, either would work effectively.” An assessment of reasonable interchangeability should take into account factors such as price, use, and quality.

At the outset, it is important to recognize that during Phase I, there is no relevant market because the competition is between candidate solutions. This competition takes place away from the public, and the issuance of the standard then creates a consumer market in Phase II. Thus, the task here is to define the relevant market in Phase II, after the standard has issued.

Two cases illustrate how courts determine whether products are reasonably interchangeable and thus what the relevant market is. In *Eastman Kodak Company v. Image Technical Services, Inc.*, a tying case, the Supreme Court considered whether a party’s lack of market power in a tying market precludes the possibility of market power in derivative aftermarkets. Kodak sold photocopiers and micrographic equipment, and it sold service and replacement parts for its equipment. The replacement parts were not compatible with other manufacturers’ equipment. Several independent service organizations (ISOs) began servicing Kodak’s equipment in the early 1980s; as compared to Kodak’s service, the ISOs’ service was significantly less expensive and, in some customers’ opinions, of

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55. See Queen City Pizza, Inc. v. Domino’s Pizza, Inc., 124 F.3d 430, 436 (3rd Cir. 1997).
58. Id. (citing Tunis Bros. Co., Inc. v. Ford Motor Co., 952 F.2d 715, 722 (3rd Cir. 1991)).
60. Id.
61. Id. at 457.
higher quality. In the mid-1980s, Kodak began selling replacement parts for its equipment only to buyers who used Kodak service or who repaired their own equipment. Kodak also limited ISOs’ access to other sources of Kodak parts. The ISOs subsequently had difficulty selling their services, and customers were forced to use Kodak service, even though some of them preferred ISO service. The ISOs sued, alleging Kodak had violated Section 2 of the Sherman Act by unlawfully monopolizing and attempting to monopolize the sale of service for Kodak equipment.

The Court first observed that, for antitrust purposes, the relevant market for service of Kodak equipment was determined by the choices available to Kodak equipment owners. Because the parts and service for Kodak equipment were not interchangeable with parts and service for other manufacturers’ photocopy equipment, the Court found the relevant market comprised only those companies that provided service for Kodak machines. The Court found that in some circumstances, a single brand of product can constitute a separate market.

The case of Queen City Pizza, Inc. v. Domino’s Pizza, Inc. concerned a franchise agreement between Domino’s Pizza and its independent franchisees. Because “[t]he essence of a successful nationwide fast-food chain is product uniformity,” Domino’s required its franchisees to enter into a franchise agreement that obligated the franchisees to purchase only pizza ingredients, beverages, and packaging materials that conformed to standards set by Domino’s. The contract provided that Domino’s could, in its sole discretion,
require franchisees to purchase ingredients, supplies, and materials exclusively from Domino’s. Under the franchise agreement, Domino’s proceeded to sell approximately ninety percent of the ingredients and supplies used by its franchisees. The franchisees sued, alleging Domino’s had a monopoly in the market for sales of supplies to Domino’s franchisees, and that Domino’s “used its monopoly power to unreasonably restrain trade, limit competition, and extract supra-competitive profits.” Domino’s moved to dismiss the claim, arguing the franchisees had failed to allege a valid market, as required for Sherman Act claims. The district court granted the motion, finding that the franchisees were required to purchase supplies from Domino’s not because Domino’s dominated the market for supplies, but rather because the franchisees had entered a contract that allowed Domino’s to require the franchisees to purchase ingredients exclusively from Domino’s. The franchisees appealed.

The Third Circuit first examined whether the franchisees had defined a valid relevant market for their antitrust claims. Relying on Kodak, the franchisees had argued that the relevant market was the “ingredients, supplies, materials, and distribution services used by and in the operation of Domino’s pizza stores.” The court disagreed with the franchisees, observing that the relevant inquiry was “not whether a Domino’s franchisee may reasonably use both approved or non-approved products interchangeably . . . , but whether pizza makers in general might use such products interchangeably.” Because the ingredients and supplies used by Domino’s franchisees were interchangeable with the ingredients and supplies used by other pizza companies, the relevant market was comprised of both approved and non-approved ingredients and supplies. The court found the relevant market was all pizza makers, not just Domino’s pizza stores, because unlike the machines at issue in Kodak, which required unique parts,
pizza sold by Domino's pizza stores is not a unique product requiring ingredients that cannot be used by other pizza makers.82

These cases provide a basis to determine the relevant market for a product that is standardized. Although compliance with many standards is optional in the sense that a company may offer or sell a non-standard product,83 interoperability is critical in areas such as computers, telecommunications, and the Internet.84 For example, a computer with non-standard networking hardware, rather than standard-compliant Ethernet or IEEE 802.11 functionality, has limited networking utility.85 Thus, when a consumer wishes to use such a computer in an established network or with equipment that conforms to standards, the computer would have limited networking utility because it is not "roughly equivalent" to a computer with Ethernet or 802.11 capabilities. Consequently, standards in many industries are "effectively mandatory and must be used in order to participate in the market."86 A non-standard product in a standards-based industry might not work for its intended purpose and thus cannot be considered "reasonably interchangeable" with a standard-compliant product.

What about when two standards provide similar, but not identical, functionality? As an example, consider broadband. Both cable modem technology and DSL are standardized.87 Are DSL modems and cable modems "reasonably interchangeable" for antitrust purposes? Although a consumer might be fortunate enough to have a choice between cable modem service and DSL service, many consumers have only one broadband alternative.88 A consumer cannot

82. Id. at 440.
83. The ITU’s web site states that the standards it produces “are non-binding; their objective is to ensure compatibility of technologies and systems on a worldwide basis.” Common Patent Policy, supra note 25.
84. AAI Amicus Brief, supra note 18, at 1. See also Rambus Inc. v. Fed. Trade Comm’n., 522 F.3d 456, 459 (D.C. Cir. 2008) (noting that ninety percent of computer memory produced is compliant with the standards at issue in the case, “and therefore the technologies adopted in those standards . . . enjoy a similar level of dominance over their alternatives”).
86. AAI Amicus Brief, supra note 18, at 1.
88. Brief Amicus Curiae of Professors Jack M. Balkin et al. Urging That The FCC’s
connect a cable modem to a phone line to receive DSL service, and she cannot connect a DSL modem to a cable outlet to receive cable modem service. Thus, for consumers who have access to only one type of broadband, DSL modems and cable modems are not "reasonably interchangeable"; they are completely different products, each useless for the other's purpose. Furthermore, the price, speed, and nature of DSL and cable services differ, and it is not clear that even those consumers with a choice between the two services would consider them to be interchangeable. Even if consumers with a choice considered DSL service and cable modem service to be interchangeable, the modems required for each would remain incompatible.

Further, standards are typically unique because SSOs try to avoid promulgating multiple standards that solve the same problem. For example, the IEEE is the SSO that promulgates wireless local area networking (WLAN) standards. Likewise, the ITU-T is responsible for international standardization of DSL. Thus, when a standard exists to provide a specific capability, it is likely to be the only such standard providing that capability.

*Kodak* supports the notion that when a commodity is unique and not interchangeable with other products, a single brand of product can constitute a separate market. Unlike the pizza supplies at issue in *Queen City Pizza*, a non-standard product is not reasonably

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89. A DSL modem connects via an RJ-11 jack to a telephone line and transmits and receives baseband signals, whereas a cable modem connects via a coaxial connector to the cable network and transmits and receives passband signals. NIKIL A. JAYANT, BROADBAND LAST MILE ACCESS TECHNOLOGIES FOR MULTIMEDIA COMMUNICATIONS 222, 256 (CRC Press 2005).

90. For example, Comcast advertises "Comcast High-Speed Internet with PowerBoost," which supports speeds up to 16 Mbit/s; Comcast claims its service is "way faster than DSL." Comcast High-Speed Internet, http://www.comcast.com/HighSpeedInternet/ (last visited Apr. 3, 2010).


interchangeable with a standard-compliant product. Furthermore, a product that is compliant with one standard, such as the cable modem standard, is not compliant with another standard, such as a DSL standard. Therefore, because standards are unique, products that comply with a particular standard can be considered to be a single "brand," and the associated relevant market comprises only products that are compliant with that standard.

DOES THE HOLDER OF ESSENTIAL IP FOR A STANDARD HAVE MONOPOLY POWER IN THE RELEVANT MARKET?

Having determined that for antitrust purposes the relevant market is the standardized product, the next step in a Section 2 inquiry is to determine whether a party who holds a patent that is essential to practice the standard has monopoly power in that market. The Supreme Court has said that monopoly power under Section 2 of the Sherman Act requires "something greater than market power under section 1." Thus, it is necessary to decide first whether a patent holder whose patented technology has been standardized by an SSO, either intentionally or unwittingly, even has market power in the relevant market. If so, then it is necessary to decide whether the patent holder's market power rises to the level of monopoly power.

A party has market power if it has "the 'power to control prices or exclude competition'" in the relevant market. The Supreme Court has said that a patent does not necessarily confer market power on its owner. When implementation of a standard requires the use of a patented invention, however, the standard can confer additional economic value on a patent holder beyond the value of the patented invention itself. As the FTC has said, "[a] patent holder's market power may be materially enhanced once the patented technology is incorporated into a standard, as alternatives become less attractive relative to the chosen technology and less able to constrain its price." As a result, "the ex post value of a patent (after adoption of

94. Contra Queen City Pizza v. Domino's Pizza, Inc., 124 F.3d 430, 438 (3rd Cir. 1997) ("[T]he dough, tomato sauce, and paper cups that meet Domino's Pizza, Inc. standards and are used by Domino's stores are interchangeable with dough, sauce and cups available from other suppliers and used by other pizza companies.").
95. Eastman Kodak, 504 U.S. at 481.
96. Id. (quoting United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 391 (1956)).
98. AAI Amicus Brief, supra note 18, at 7.
an effectively mandatory standard requiring its use) will exceed its value \textit{ex ante} (before adoption of the effectively mandatory standard)."\textsuperscript{100} Consequently, even if the patent itself did not give the patent owner market power, the inclusion of that patented invention in a standard at least increases the value of the patent to the patent owner and may give the patent owner market power in the consumer market.\textsuperscript{101}

Standardization of a patented technology can also increase the likelihood of market power in another way. As time passes after an SSO issues a standard, "the industry commits greater levels of resources to developing products that comply with the standard, [and] the costs of switching to alternative technologies begin to rise."\textsuperscript{102} As a result, members of the industry may become "locked in" to the standardized technology, which means the costs to switch to another technology are significant enough that switching is onerous.\textsuperscript{103}

The Supreme Court considered the problem of "lock in" in \textit{Kodak} when it considered whether Kodak had market power in the service and parts market for its machines.\textsuperscript{104} Kodak argued that it could not have market power in the service and parts market, which was the aftermarket, because it did not have market power in the equipment market.\textsuperscript{105} In response to the observation that Kodak's service was more expensive than ISO service, Kodak asserted that although the pricing of its service exceeded ISO pricing, Kodak's marketing strategy was to offer a "package deal" that would spread over time the total cost of Kodak equipment, including the parts and service.\textsuperscript{106} Therefore, Kodak argued, its customers were purchasing equipment at sub-competitive prices, and it was making up the difference by charging supra-competitive prices for service; thus, the overall pricing was competitive.\textsuperscript{107}

The Court first noted that Kodak's pricing theory was inconsistent with its policy of providing parts to customers who serviced their own machines: if Kodak priced its machines sub-

\textsuperscript{100} AA1 Amicus Brief, \textit{supra} note 18, at 7.
\textsuperscript{101} \textit{Id}.
\textsuperscript{103} \textit{Id}.
\textsuperscript{105} \textit{Id} at 467.
\textsuperscript{106} \textit{Id} at 472.
\textsuperscript{107} \textit{Id}.
competitively, it would lose money on its self-service customers. After finding Kodak's customers were unable to assess accurately at the time of purchase how much it would later cost to have their machines serviced, the Court observed that once customers had purchased a Kodak machine, which required a "heavy initial outlay," the costs to switch to a different brand were high. As a result, customers who had already purchased Kodak equipment were "locked in" to Kodak's service and would tolerate at least some level of price increase before switching to a different brand of equipment. The fact that Kodak's equipment customers were "locked in" to Kodak's service supported the Court's conclusion that there was a question of fact whether Kodak had market power in the service and parts market.

Like the equipment customers in Kodak, those who have invested time and resources in preparing to produce a standard-compliant product may find it more economical to pay supra-competitive licensing fees to the patent holder rather than re-tool to produce a non-standard product that does not infringe the patent. Thus, lock-in also has the potential to increase the patent holder's market power.

Although it is clear that the holder of a patent that is essential to a standard has some market power, in order to constitute a Section 2 Sherman Act violation, that market power must rise to the level of monopoly power. In determining whether a patent holder whose technology has been standardized has monopoly power in the relevant market, it is useful to consider two possible scenarios. In the first scenario, a single patent holder owns all patents incorporated into the standard, and in the second scenario, several patent holders own different patents that collectively are essential to practice the standard.

Although the first scenario is probably unusual, it could arise if a technology is truly revolutionary, only one party has engaged in the research and development of that revolutionary technology, and that one party owns all existing patents on that technology. It could also

108. Id. at 472-73.
109. Id. at 477.
110. Id. at 476.
111. Id. at 477.
113. An example of such a revolutionary technology is Texas Instruments' (TI's) digital light processing (DLP®) technology, which is used in televisions and projectors. Although TI chose to maintain DLP® as a proprietary technology, had it instead chosen the standardization
arise if a party were to purchase all patents in a particular field. When a single patent holder owns all patents required to practice a standard, if the patent holder is so inclined and is not otherwise obligated to license its patents, the patent holder may choose not to license its patents to any other party. In this case, the patent holder would be the only party who could practice the standard. Under these circumstances, the patent holder would have complete "power to control prices or exclude competition" in products compliant with the standard and would thus have monopoly power in the relevant market.

What if, instead of refusing to license its patents, the patent holder agrees to license but demands high royalties? If the royalties are so high that none of the patent holder's competitors can afford to pay the royalties and still sell a price-competitive standard-compliant product, and they thus refrain from participating in the relevant market, the patent holder is in the same position as when it refuses to license at all. In this case, the patent holder has monopoly power because it has complete control of prices and has excluded competition by demanding too-high royalties.

If, on the other hand, the patent holder charges royalties that are higher than its competitors would like, but competitors are still willing to pay, it is a closer question as to whether the patent holder has monopoly power. Because lock-in is likely in play, the patent holder's competitors might have to raise the prices of their standard-compliant products in order to make a profit. The Supreme Court has said, however, that higher consumer prices do not necessarily indicate harm to the competitive process. Moreover, if competitors are willing to pay the patent holder's demanded royalties in order to build standard-compliant products, the cost of royalties is likely a small component of the overall product cost. Thus, the patent holder's competitors may be able to find a way to save costs in other areas to


114. For example, the patent owner has not committed to license its IP on FRAND terms.

115. The patent laws of the United States specifically provide that "[n]o patent owner otherwise entitled to relief for infringement . . . of a patent shall be denied relief or deemed guilty of . . . illegal extension of the patent right by reason of his . . . having refused to license or use any rights to the patent." 35 U.S.C. § 271 (2006). Thus, Congress has expressly provided that a patent owner who refuses to license her patent to others does not illegally extend her patent right.

offset the increased cost due to royalties. Therefore, even if they have to pay exorbitant royalties to the patent holder, the competitors still may be able to meet or beat the patent holder’s price.

Furthermore, even if the patent holder’s competitors’ products are priced higher than the patent holder’s products, the patent holder can only raise the price of its own product to approximately the same price as its competitors; otherwise, absent some advantage other than standard compliance, consumers will likely buy its competitors’ lower-priced products. Thus, when the patent holder charges high royalties, but its competitors are willing to pay, it is unlikely that the patent holder has monopoly power because it does not have significant power to control prices, and it has not excluded competition.

In the second scenario, several parties hold patents, and each company’s patents are essential to practice the standard. In this case, the patent holders collectively have market power because use of the collection of patents they own is essential to practice the standard. Acting together, the patent holders could control prices or exclude competition, but such action would clearly violate Section 1 of the Sherman Act. Does any single patent holder have market power? Assume only three patent holders—A, B, and C—own patents that are essential to practice the standard. If all three have agreed to license their essential patents, for example, on FRAND terms, then all three can practice the standard, as can any other party willing to pay for patent licenses. In this case, none of the holders of essential IP has the power to control prices or exclude competition, and none has monopoly power in the relevant market. Conversely, if each of A, B, and C decides independently not to license its patents to others, no one can practice the standard. Although in this scenario each patent holder has the power to exclude competition, each is also excluded from competing as a result of the actions of the other two patent holders. A party who cannot participate in the market cannot have monopoly power in that market.

117. For example, competitors could choose a different semiconductor process, integrate more or less of the solution in application-specific integrated circuits, or fabricate the product in less expensive off-shore facilities.

118. DOJ/FTC Report, supra note 29, at 37. The DOJ and FTC “condemn as per se illegal activities designed to reduce or eliminate competition among members of an SSO—such as bid rigging by members who otherwise would compete in licensing technologies for adoption by the SSO or naked price fixing on downstream products by members who otherwise would compete in selling downstream products compliant with the standard.”
What if, however, B and C agree to license their patents on FRAND terms, and A does not? Now A has the power to practice the standard itself and deny that ability to every other party. In this case, A has the power to be the only participant in the market. A party who is the only possible participant in a market can control prices and, by definition, excludes competition. Thus, such a party has monopoly power in that market.119

Therefore, whether a party who owns IP essential to practice a standard has monopoly power turns not only on whether that party refuses to license its IP but also on whether it is the only party refusing to license its IP to those who wish to practice the standard. When a single party refuses to license patents essential to the practice of a standard, that party has monopoly power in the relevant market.

This analysis suggests that a failure to disclose relevant IP to an SSO, standing alone, is not enough to constitute Section 2 Sherman Act violation because a patent holder who fails to disclose in Phase I that it has essential IP might still agree in Phase II to license that IP under terms that are not so onerous as to confer monopoly power on the patent holder. In order to violate Section 2, the patent holder who fails to disclose the existence of patents and patent applications in Phase I must then actually or effectively refuse to license its patents in Phase II. Additionally, the patent holder must be the only party to refuse to license patents that are essential to the standard because if others also refuse to license essential patents, the patent holder cannot practice the standard and thus cannot have monopoly power in the relevant market.

DID THE PATENT HOLDER ACQUIRE ITS MONOPOLY POWER BY ANTICOMPETITIVE OR EXCLUSIONARY MEANS?

The final inquiry in a Section 2 violation is whether the patent holder acquired its monopoly power by anticompetitive or exclusionary means.120 Here, the concern is with a patent holder who failed to disclose material information about its patents in Phase I and who, in Phase II, is the only holder of essential IP who actually or

119. Note that whether A has monopoly power in the relevant market depends in part on what B and C do. If B and C behave pro-competitively but A does not, A can have monopoly power in the relevant market. In contrast, if two of the three parties behave anti-competitively, neither of those parties has monopoly power because each blocks the other from the market.

effectively refuses to license that IP to competitors. Thus, the inquiry is a narrow one.

The cases of *Kodak* and *Queen City Pizza* support the idea that antitrust law reaches market power obtained as a result of a lack of disclosure of relevant information to a decision-maker. In *Kodak*, the Supreme Court found unpersuasive Kodak’s argument that it sold its equipment at sub-competitive prices and made up the difference by charging supra-competitive prices for service.121 The Court observed that “[f]or the service-market price to affect equipment demand, consumers must inform themselves of the total cost of the ‘package’—equipment, service, and parts—at the time of purchase; that is, consumers must engage in accurate lifecycle pricing.”122 To perform such an analysis, customers would need “data on price, quality, and availability of products needed to operate, upgrade, or enhance the initial equipment, as well as service and repair costs, including estimates of breakdown frequency, nature of repairs, price of service and parts, length of ‘downtime,’ and losses incurred from downtime.”123 Because it was expensive and difficult, if not impossible, for most of Kodak’s customers to engage in accurate lifecycle pricing, the Court found it was unreasonable “to assume, in the absence of any evidentiary support, that equipment-purchasing decisions [were] based on an accurate assessment of the total cost of equipment, service, and parts over the lifetime of the machine.”124 Thus, because Kodak disclosed no contract terms related to service at the time of the equipment sale, it was inappropriate for Kodak to leverage its market power in the service market later to force its equipment customers to purchase Kodak service.125

In *Queen City Pizza*, in contrast, the Third Circuit found no failure to disclose with the Domino’s franchise agreement because, unlike the customers forced to buy Kodak’s service in *Kodak*, “the Domino’s franchisees could assess the potential costs and economic risks at the time they signed the franchise agreement.”126 Consequently, the “franchise transaction between Domino’s Pizza, Inc. and [the franchisees] was subjected to competition at the pre-

122. *Id.* at 473.
123. *Id.*
124. *Id.* at 473-76.
125. *Id.* at 477.
contract stage." The court thus found compelling that Domino’s had adequately informed the franchisees of future costs, noting that the franchisees “need not have become Domino’s franchisees. If the contractual restrictions . . . were viewed as overly burdensome or risky at the time they were proposed, plaintiffs could have purchased a different form of restaurant, or made some alternative investment.”

How do these cases apply in the context of SSOs? Both *Kodak* and *Queen City Pizza* stand for the proposition that a decision-maker cannot make an informed decision about a “package”—be it copiers and service, or a pizza franchise and supplies—if he or she does not know the total cost of that package. Likewise, an SSO cannot make an informed decision about what technology to standardize without “adequate and reasonably complete knowledge of both the technical merits and the expected cost of the alternative solutions being considered.” Some information that may be useful to an SSO in assessing the cost of a solution, such as information about some pending patents, is uniquely within the possession of SSO participants. When an SSO participant withholds known information about the expected cost of a solution, the SSO cannot make an informed decision. Thus, in Phase I, SSO participants who do not know that a proposed solution reads on a party’s pending or issued patents are much like the customers in *Kodak* in that by making their decision in Phase I, they are binding themselves to a Phase II cost they did not anticipate. On the other hand, SSO participants who have perfect knowledge of the IP content of a proposed solution are much like the franchisees in *Queen City Pizza*: they can make an informed decision in Phase I, taking into account the costs that decision will impose in Phase II. Thus, *Kodak* and *Queen City Pizza* support the idea that antitrust concerns arise when an SSO participant withholds information that is relevant to the SSO’s decision-making process.

In order to determine whether an SSO participant’s failure to disclose information relevant to the SSO’s decision-making process is an “anticompetitive” or “exclusionary” means to acquire monopoly

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127. *Id.*
128. *Id.* at 441.
129. *Id.* at 438-39.
130. AAI Amicus Brief, *supra* note 18, at 4.
131. See, e.g., In re Union Oil Co. of Cal., FTC Order, 2004 WL 1632816, at *27 (July 6, 2004) (observing “CARB did not know that it was taking action that would subject the California oil industry and California consumers to Unocal’s patent claims and ensuing market power.”).
power, it is necessary to understand how courts evaluate allegedly anticompetitive or exclusionary conduct. Sitting en banc, the D.C. Circuit set forth an analysis framework to distinguish between competitive and exclusionary conduct in United States v. Microsoft Corporation. First, the court said, "to be condemned as exclusionary, a monopolist's act must have an 'anticompetitive effect.' That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more competitors will not suffice." Second, the plaintiff "must demonstrate that the monopolist's conduct indeed has the requisite anticompetitive effect." Third, if the plaintiff is able to establish "a prima facie case under Section 2 by demonstrating anticompetitive effect, then the monopolist may proffer a 'procompetitive justification' for its conduct." Finally, if the monopolist offers an unrebutted procompetitive justification, "the plaintiff must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit."

Does a patent holder's failure to disclose that it has IP "harm the competitive process and thereby harm consumers," or does it just harm the patent holder's competitors? When a patent holder withholds information in Phase I while the SSO is evaluating the merits of various possible solutions to a problem, the patent holder's conduct can affect the competitive process to choose which solution to standardize. Thus, the patent holder's failure to disclose may be one factor leading the SSO to choose a solution that, unbeknownst to the SSO members, is patented. On the other hand, if the SSO is performing its intended function of selecting the best solution, then the solution it selects must have some technical merit. Thus, it does not necessarily follow that the patent holder's failure to disclose its IP in Phase I automatically leads to an inferior standardized technology simply because that technology is burdened by royalty costs. As a consequence, it is not clear that the patent holder's failure to disclose necessarily harms the competitive process in Phase I, nor is it clear that consumers are harmed in Phase II by the selection of royalty-burdened standardized technology in Phase I.

133. Id. at 58 (emphasis in original).
134. Id. at 58-59.
135. Id. at 59.
136. Id.
137. Id. at 58.
The previous section's analysis leads to the conclusion that a patent holder who fails to disclose its IP to an SSO does not have monopoly power unless, in Phase II, it is the only patent holder who refuses to license its IP to competitors, whether explicitly or by demanding royalties that make participating in the market infeasible for competitors. In this narrow set of circumstances, the patent holder, by definition, harms the competitive process in Phase II by closing the market for standardized products to its competitors. The combined behavior then harms consumers because they can buy standard-compliant products from only the patent holder, who can charge a monopoly price. Furthermore, a patent holder in this position cannot possibly offer a pro-competitive justification for its behavior when its competitors not only spent time and money to participate in the SSO but also wish to license the patented technology under reasonable terms.

Thus, the analysis indicates that a patent holder who simply attends SSO meetings and fails to disclose that it has IP that will be essential to practice the standard does not violate Section 2 of the Sherman Act simply because the patent holder failed to disclose its IP. However, after the standard issues, if that patent holder refuses to license its essential patents, and the patent holder is the only holder of essential IP making such a refusal and is thus in a position to be the only participant in the market for standardized products, the patent holder's course of conduct constitutes a violation of Section 2 of the Sherman Act.

THE ESSENTIAL FACILITIES DOCTRINE AS AN ANTITRUST REMEDY FOR FAILURE TO DISCLOSE DURING THE STANDARDIZATION PROCESS

When a patent holder has engaged in the course of conduct that the previous sections concluded constitutes a Section 2 violation, the essential facilities doctrine provides a tool to force such a patent holder to license the patents it is leveraging to prevent others from practicing the standard.

An essential facility is "a facility that cannot reasonably be duplicated and to which access is necessary if one wishes to compete" in a market.138 Although firms ordinarily can decide with whom they will do business,139 when a monopolist controls an essential facility, it

138. Fishman v. Estate of Wirtz, 807 F.2d 520, 539 (7th Cir. 1986).
is obligated to make that facility available to competitors on 
nondiscriminatory terms.\textsuperscript{140} A monopolist's refusal to deal when it 
controls an essential facility is unlawful if it extends the monopoly from one market into another.\textsuperscript{141}

When a standard incorporates a patented invention as an essential component of the standard, the patent becomes, in effect, an essential facility because one wishing to implement the standard cannot do so without having access to the patented invention. When a patent holder who failed to disclose its essential patents to an SSO in Phase I later refuses to license those essential patents to its competitors who wish to practice the standard, it extends its patent monopoly from the market for that stand-alone invention to the consumer market for standard-compliant products. Thus, the patent holder's refusal to deal is unlawful.

Antitrust liability attaches under the essential facilities doctrine when four elements are present: "(1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility."\textsuperscript{142} A patent holder who failed to disclose its IP in Phase I and later refused to license that IP in Phase II is a monopolist with control of an essential facility. Because the innovation is patented and is incorporated into a standard, none of the patent holder's competitors can practically or reasonably duplicate the essential facility. If the competitors cannot license the patent, they cannot build standard-compliant equipment, and their only options are either to build and attempt to sell non-standard equipment, or to write a new standard that does not incorporate the patented invention. Both are expensive and unreasonable solutions, particularly because the patent holder's own actions led in part to its patents becoming an essential facility. Finally, there is no real barrier, other than greed, that prevents the patent holder from providing the facility. It is entirely feasible for the patent holder to provide licenses to its essential patents.

\textsuperscript{140} Fishman, 807 F.2d at 539; MCI Commc'ns Corp. v. Am. Tel. & Tel. Co., 708 F.2d 1081, 1132 (7th Cir. 1982) (citing United States v. Terminal R.R. Assoc., 224 U.S. 383, 410-11 (1912); Byars v. Bluff City News Co., 609 F.2d 843, 856 (6th Cir. 1979)).

\textsuperscript{141} MCI Commc'ns Corp., 708 F.2d at 1132.

\textsuperscript{142} Id. at 1132-33.
Thus, the essential facilities doctrine appears to be well-suited as a remedy for when a patent holder fails to disclose its IP to an SSO and later refuses to license its IP to competitors who wish to practice the standard.

CONCLUSION

Under the analysis in this paper, a patent holder's mere failure to disclose to an SSO that it has IP that will be essential to practice the standard does not, in itself, constitute a violation of the Sherman Act. As the FTC has posited, however, such behavior may constitute a violation of the FTC Act.143 If, however, a patent holder who failed to disclose its IP later refuses to license its patents to those wishing to practice the standard, and if the patent holder is the only party who refuses to license its patents, the patent holder arguably violates Section 2 of the Sherman Act. The essential facilities doctrine provides a possible remedy for this narrow circumstance.

Returning now to the question of whether the engineer from the abstract of this paper violates Section 2 by failing to disclose his pending patent, the answer is "it depends." By failing to inform the other SSO participants about his pending patent, the engineer probably does not violate Section 2 if he later agrees to license his patent. Even if he demands high royalties for his patent, if his competitors are willing to pay, it is unlikely that he violates the Sherman Act. But if he fails to disclose his pending patent and later actually or effectively refuses to license his patent, and he is the only patent-holder refusing to license essential IP, his actions may constitute a Section 2 violation.