

Overdeclaration of Standard-Essential Patents

Cody M. Akins*

Technical interoperability standards such as LTE or Wi-Fi allow technology manufacturers to develop equipment capable of seamlessly interacting with one another, providing economic benefits to these companies and their consumers along the way. Standard-essential patents (SEPs) claim technology necessary to practicing such a standard and give their owners the accompanying right to exclude others from using the standard. But once a standard is set by an industry, members of that industry are commercially locked in to that technology. SEP holders, therefore, have inordinate leverage in license negotiations with parties who already have or intend to develop standard-compliant products.

Although balancing the power between SEP licensors and licensees has been discussed extensively in the literature, this Note focuses on a related problem that has received relatively little academic attention: the overdisclosure of SEPs. For the purposes of this Note, overdisclosure refers to parties' declaration of patents they own as "essential" to a technology standard, when, in reality, the claims of those patents would not be infringed by a standard-compliant product.

This Note fills a gap in SEP literature by discussing the various causes of SEP overdisclosure and the associated costs on the patent system. Finally, the Note ends by suggesting a potential solution to the overdisclosure phenomenon—patent essentiality checks performed by regional government patent offices.

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Introduction

Technical interoperability standards allow products made by different manufacturers to interact seamlessly. Standards range from very simple—the

* Articles Editor, Volume 98, *Texas Law Review*; J.D. Candidate, Class of 2020, The University of Texas School of Law.

dimensions and shape of an electrical outlet,¹ for example—to very complex—such as LTE, the standard underlying fourth-generation cell networks.² The economic benefits of technical standards are well documented, leading to lower development and manufacturing costs, and increasing production of socially valuable products.³ Standards are typically developed by standard-setting organizations (SSOs), groups of market participants voluntarily collaborating on standardized technology.⁴

Technical standards frequently incorporate patented technology. Patents claiming technology necessarily practiced by a standard have been dubbed “standard-essential patents” (SEPs). Complex standards such as LTE or Wi-Fi may encompass hundreds or even thousands of SEPs,⁵ and many modern technologies utilize multiple standards.⁶ One study found 251 distinct technical interoperability standards used in a modern laptop.⁷ As a result, the number of patents covering a complex product can reach into the hundreds of thousands.⁸

1. See, e.g., NAT’L ELEC. MFRS. ASS’N, ANSI/NEMA WD 6-2016, at ii (2016) (“The purpose of th[is] Standard is to present the dimensional requirements of wiring devices in order to assist the user in selecting and obtaining the proper product for a particular need and to minimize the possibility of unsafe interchangeability between configurations.”).

2. See, e.g., *Introduction to LTE*, LTE ENCYCLOPEDIA, <https://sites.google.com/site/lteencyclopedia/home> [<https://perma.cc/ZM9B-5N95>] (describing the LTE standard).

3. U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 33 (2007), <https://www.ftc.gov/sites/default/files/documents/reports/antitrust-enforcement-and-intellectual-property-rights-promoting-innovation-and-competition-report.s.department-justice-and-federal-trade-commission/p040101promotinginnovationandcompetitionrpt0704.pdf> [<https://perma.cc/5925-YWX7>].

4. Although cooperation between market competitors normally raises antitrust concerns, the consumer benefits flowing from technology standardization have led to antitrust organizations looking favorably upon SSOs. See, e.g., Makan Delrahim, Assistant Att’y Gen., Dep’t of Justice Antitrust Div., Remarks at IAM Patent Licensing Conference in San Francisco (Sept. 18, 2018), <https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-iam-s-patent-licensing> [<https://perma.cc/SR89-Y26V>] (explaining that antitrust law should not be used to police commitments to SSOs). SSOs are alternatively called “standard-development organizations” (SDOs) in the literature.

5. See Jason R. Bartlett & Jorge L. Contreras, *Rationalizing FRAND Royalties: Can Interpleader Save the Internet of Things?*, 36 REV. LITIG. 285, 288 (2017) (summarizing estimates of patent coverage for five standards); NAT’L RESEARCH COUNCIL, PATENT CHALLENGES FOR STANDARD-SETTING IN THE GLOBAL ECONOMY 55 (Keith Maskus & Stephen A. Merrill eds., 2013) (noting wireless communication standards covered by hundreds of patents).

6. For a relatively simple example, consider a fitness tracker that uses GPS to track the wearer’s position and Bluetooth to wirelessly transfer data to a laptop or smartphone. Multipurpose devices like a smartphone or laptop computer may incorporate dozens of technology standards, from the obvious ones like Wi-Fi, LTE, and Bluetooth, to underlying hardware and software technologies like audio- and video-compression standards (e.g., MPEG-4), internet protocols (HTTP), and data-bus standards (PCIe and USB).

7. Brad Biddle et al., *How Many Standards in a Laptop? (And Other Empirical Questions)* (2010), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1619440 [<https://perma.cc/4XLF-RNRY>].

8. A 2011 SEC filing by RPX Corp., a defensive patent aggregator, estimates that 250,000

Because successful technical standards are highly commercially valuable and, by nature, have no commercially feasible alternative, but necessarily practice patented technology, SEP holders have considerable leverage in license negotiations with standard implementers. This leverage, called “patent holdup,” can yield skyrocketing licensing fees, the costs of which are ultimately passed to consumers.⁹ Many SSOs combat patent hold-up by requiring participants to license their SEPs on “fair, reasonable and non-discriminatory” (FRAND) terms.¹⁰

While FRAND commitments have received substantial academic and judicial attention, this Note focuses on a related problem that has received relatively little consideration: overdeclaration of SEPs. For purposes of this Note, overdeclaration occurs when a patent owner publicly asserts that a patent is “essential,” when, in reality, that patent would not be infringed by a standard-compliant product. Overdeclaration can result in substantial inefficiencies in both patent licensing and litigation. On the licensing side, due to the cost of verifying an SEP’s essentiality, technology firms deciding whether to utilize a standard tend to presume all declared SEPs would give rise to infringement liability absent a license. Similarly, because SEP declaration plausibly puts standard implementers on notice of infringement, the threat of enhanced damages for willful infringement further inflates licensing fees. Relatedly, in patent litigation, overdeclaration can shift portions of royalty awards to nonessential patents, causing devaluation of truly essential patents and frustrating the incentive structure of the patent system.

This Note argues that a new administrative procedure for SEP-essentiality determinations most effectively reduces the costs of SEP overdeclaration. Performed by the United States Patent and Trademark Office (PTO), this process would permit patent owners and standard implementers alike to obtain binding judgments as to whether a technical standard practices a declared SEP’s claimed technology. In contrast to patent-pool- or SSO-based approaches, this solution incentivizes both patent owners and technology companies to obtain essentiality determinations for patents likely to be the subject of contentious licensing or litigation. And although

patents cover a modern smartphone. RPX Corp., Registration Statement (Form S-1) 55 (Jan. 21, 2011), <https://www.sec.gov/Archives/edgar/data/1509432/000119312511012087/ds1.htm> [<https://perma.cc/5ZBW-FUTY>]. Because RPX takes a defense-focused position, this estimate should be taken with a grain of salt. Nonetheless, the figure demonstrates that technology producers may need to obtain the right to practice tens of thousands of patents to avoid infringement liability.

9. Jorge L. Contreras, *Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing*, 79 ANTITRUST L.J. 47, 49 (2013). Patent holdup has become more prevalent with the rise of patent-assertion entities, pejoratively called “patent trolls,” who “wait[] until a technology is fully entrenched before scouting around for patents to acquire or asserting the patents [they] hold[.]” Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1591 (2009).

10. Bartlett & Contreras, *supra* note 5, at 290; Contreras, *supra* note 9, at 50–51.

such a process would require legislative endorsement, Congress's recent interest in improving patent litigation suggests such authorization may not be a lost cause.

This Note proceeds in three parts. Part I describes the overdeclaration phenomenon and some of its causes. Part II examines the costs associated with overdeclaration, both in licensing and litigation. Finally, Part III describes the proposed administrative solution.

I. Overdeclaration Causes

Overdeclaration of SEPs is rampant. Studies by Fairfield Resources International, an intellectual-property consulting firm, evaluated the essentiality of patents declared essential to major wireless-communication standards and found that *less than half* of the declared SEPs were actually essential or “probably essential.”¹¹ Accordingly, given that more than 1,100 patents were declared essential to the LTE standard alone,¹² a technology firm licensing all declared patents pays for the right to practice over 500 patents its products never infringe.

Additionally, while empirical studies on actual essentiality are sparse—likely because of their high cost—SEP-infringement litigation provides anecdotal evidence of overdeclaration.¹³ And the technology industry is acutely aware of the problem. SEP overdeclaration was the issue most frequently reported as important to surveyed industry members in a recent study authorized by the European Commission.¹⁴ This Part examines how ineffective SSO disclosure policies and economic incentives favoring overdisclosure led us to this point.

11. FAIRFIELD RES. INT'L, ANALYSIS OF PATENTS DECLARED AS ESSENTIAL TO GSM AS OF JUNE 6, 2007, at 7 (2007), http://frlicense.com/GSM_FINAL.pdf [<https://perma.cc/W4G5-9358>] [hereinafter GSM STUDY] (27% judged essential or probably essential); FAIRFIELD RES. INT'L, REVIEW OF PATENTS DECLARED AS ESSENTIAL TO WCDMA THROUGH DECEMBER, 2008, at 2 (2009), <http://www.frlicense.com/WCDMA%202009%20Report%20for%20Web.pdf> [<https://perma.cc/2PY2-JYMC>] [hereinafter WCDMA STUDY] (39% judged essential or probably essential); FAIRFIELD RES. INT'L, REVIEW OF PATENTS DECLARED AS ESSENTIAL TO LTE AND SAE (4G WIRELESS STANDARDS) THROUGH JUNE 30, 2009, at 2 (2010), <http://www.frlicense.com/LTE%20Final%20Report.pdf> [<https://perma.cc/DNP2-WQ6E>] [hereinafter LTE STUDY] (50% judged essential or probably essential); *see also*, Bartlett & Contreras, *supra* note 5, at 300–01 (discussing overdeclaration of SEPs and results of the Fairfield studies).

12. LTE STUDY, *supra* note 11, at 5.

13. *See, e.g.*, *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1209, 1222–24 (Fed. Cir. 2014) (reversing the jury's finding of infringement of a patent declared essential to the 802.11(n) (Wi-Fi) standard).

14. PIERRE RÉGIBEAU ET AL., CHARLES RIVER ASSOCS., TRANSPARENCY, PREDICTABILITY, AND EFFICIENCY OF SSO-BASED STANDARDIZATION AND SEP LICENSING 40 (2016).

A. *SSO Patent-Disclosure Policies*

The vast majority of SSOs have some form of disclosure requirement for standard-essential intellectual-property rights.¹⁵ However, the details of each SSO's disclosure policy produces drastically different volumes and accuracies of disclosures across organizations. A 2012 empirical study of SSO intellectual-property-rights policies conducted by Rudi Bekkers and Andrew Updegrove demonstrates the many ways in which disclosure policies differ.¹⁶ Before discussing specific policies, note that I take no position on which approach to a particular SSO-disclosure issue is normatively desirable. Rather, my intention in this subpart is only to describe how particular policy choices contribute to overdeclaration.

First, and most fundamentally, SSO disclosure policies vary widely in their definition of “essential” intellectual property.¹⁷ For example, some SSOs require disclosure of merely “technically” essential patents, that is, patented technology without a noninfringing technical alternative.¹⁸ Other SSOs also require disclosure of “commercially” essential patents—those that cover a portion of the standard and have technically feasible, but commercially infeasible, noninfringing alternatives.¹⁹ SEPs disclosed pursuant to policies of the latter category will therefore include patents not infringed by standard-compliant products. To be sure, a standard implementer may want to obtain a license for commercially essential patents for practical purposes. Nonetheless, SSO policies that require disclosure of commercially essential patents prevent such deliberate, cost-conscious decisions because implementers do not know to which category of “essential” a particular patent belongs.

Second, some, but not all, SSOs require disclosure of patents essential to optional features.²⁰ Technical standards often define features which need not be implemented to be considered standard compliant but may nonetheless be used in particular products.²¹ The majority of SSOs analyzed by Bekkers

15. RUDI BEKKERS & ANDREW UPDEGROVE, A STUDY OF IPR POLICIES AND PRACTICES OF A REPRESENTATIVE GROUP OF STANDARDS SETTING ORGANIZATIONS WORLDWIDE 6, 48 (2012). “Intellectual property rights,” as used in this study, includes all forms of intellectual property, including patents and copyrights. *Id.* at 12. This Note focuses only on the effect of SSO disclosure policies on SEPs.

16. *See generally id.* (reviewing SSO intellectual-property-rights policies and finding wide variability).

17. *See id.* at 39–40 (“In the strictest sense, policies consider [intellectual property rights] essential if there is simply no other, non-infringing alternative way to implement a standard. However, some [intellectual-property-rights] policies recognize the fact that other routes to compliance . . . do not represent commercially realistic alternatives.”).

18. *Id.* at 39.

19. *Id.* at 39–40. Bekkers and Updegrove give the example of a situation in which two technical solutions exist, but the noninfringing option makes the device twice as expensive to produce. *Id.*

20. *Id.* at 40–41.

21. *Id.* at 41; *see also* Microsoft Corp. v. Motorola, Inc., No. C10–1823JLR, 2013 WL 2111217, at *50 (W.D. Wash. Apr. 25, 2013) (“There are also many optional portions of the 802.11 Standard.

and Updegrove require disclosure of patents essential to both mandatory and optional features, but others leave the issue unaddressed, while the International Telecommunication Union's "essential" definition explicitly applies only to patent claims practiced by mandatory features.²² Regardless of which approach is preferable, policies requiring disclosure of patents practiced only by optional features cause SSO participants to disclose patents not infringed by standard-compliant products.

Third, SSO policies differ in whether a patent essential to an underlying standard is considered essential to the top-level standard. Modern technology standards, especially in telecommunication, often build on other standards.²³ If Patent *A* is essential to Standard *X*, and Standard *X* is a necessary component of a Standard *Y*, Patent *A* could reasonably be considered essential to both Standards *X* and *Y*. Yet, the majority of SSOs reviewed by Bekkers and Updegrove are silent on whether patents essential to the underlying standard are considered essential to the higher level standard.²⁴ SSOs that specifically exclude patents related to underlying standards in their disclosure requirement can further vary in their definition of such "enabling technologies."²⁵ Here again, a nonexistent or narrowly defined enabling-technology-exclusion policy leads SSO participants to disclose patents only tangentially related to the standard, rather than infringed by its practice.

Finally, SSO disclosure policies vary on when a patent's essentiality should be assessed. Because technology changes rapidly and standards often take years to develop and go through several approval and revision stages before final acceptance, a standard's definition and the availability of technical alternatives may change significantly over time.²⁶ As a result, a patent essential to an early version of the standard may be irrelevant to the final version. Yet, only four of the ten SSOs studied by Bekkers and Updegrove defined when SSO members are to assess and disclose their essential patents.²⁷ Those that did specify varied in their policies.²⁸ Even for those that specify a disclosure period, very few SSOs require participants to actively update their SEP declarations, resulting in declared patents that, while essential at the time the declaration was made, are no longer essential to practicing the standard.²⁹

A device does not need to implement an optional portion of the standard in order to be compliant with the 802.11 Standard.").

22. BEKKERS & UPDEGROVE, *supra* note 15, at 41.

23. *Id.* at 42.

24. *Id.* at 43.

25. *See id.* (contrasting one policy specifically excluding semiconductor technology only and another excluding all technologies not expressly set forth in the standard's specification).

26. *Id.*

27. *Id.*

28. *See id.* (comparing the policies that specify the time at which the determination is made).

29. *Id.* at 64–65. Patents, or patent applications, originally declared essential may no longer be essential for a variety of reasons: the patent claims were rejected or narrowed, the final version of

While the differences between SSO disclosure policies vary in other ways as well, surveying just these four characteristics demonstrates how many declared SEPs may not be essential in the sense that an implementer faces infringement liability without a license. Indeed, Bekkers and Updegrove ultimately concluded that most SSOs' disclosure policies favor overdisclosure of SEPs instead of underdisclosure, understanding that the final list of SEPs will include many nonessential patents.³⁰ Divergence in critical aspects of disclosure policies—like the definition of “essential”—causes significant variations in the accuracy and volume of SEP declaration across SSOs.

B. Disclosure Incentives

Beyond SSO disclosure policies, several other economic incentives drive SEP overdeclaration. This subpart explores a few of those factors: harsh penalties for failing to disclose SEPs, the lack of consequences for overdisclosure, and the expense of performing essentiality checks.

Although this Note focuses on the problem of and solutions to overdeclaration, the consequences of failing to disclose SEPs contribute significantly to overdeclaration. The legal ramifications of intentional or bad-faith failure to disclose can be severe.³¹ For example, the Federal Trade Commission (FTC) has brought unfair-competition actions against SSO participants alleged to have intentionally hidden their SEP holdings.³² In one case, the FTC resorted to the “atomic bomb” of patent law,³³ holding the relevant patents unenforceable as a consequence of the defendant's deception.³⁴ Courts have similarly been willing to impose antitrust liability on parties who intentionally mislead an SSO during the standard-setting

the standard no longer covered the claimed technology, the patents expired, or the patents were held invalid or unenforceable. *Id.* at 64; *see also* NAT'L RESEARCH COUNCIL, *supra* note 5, at 77 (explaining how lack of update requirement results in overdeclaration).

30. BEKKERS & UPDEGROVE, *supra* note 15, at 55.

31. Likely in part due to these consequences, actual instances of deceptive nondisclosure are rare. Rather, the failure to disclose SEPs in the vast majority of cases is attributable to either the mistaken but good-faith efforts of individuals participating in standard setting on behalf of an organization or the ownership of SEPs by SSO nonmembers. *See* NAT'L RESEARCH COUNCIL, *supra* note 5, at 74–75 (explaining the lack of obligations of nonmembers); *cf.* BEKKERS & UPDEGROVE, *supra* note 15, at 56–58 (describing SSO policies regarding the assumed knowledge of participants and requirements of acting in good faith).

32. *See, e.g.,* Rambus Inc. v. Fed. Trade Comm'n, 522 F.3d 456, 459 (D.C. Cir. 2008) (describing Rambus's alleged failure to disclose and the FTC's finding of a Sherman Act violation); Dell Comput. Corp., 121 F.T.C. 616 (1996). Although the FTC's decision in *Rambus* was ultimately vacated by the D.C. Circuit, 522 F.3d at 469, the case nonetheless demonstrates the FTC's determination to bring charges for deceptive conduct in the standard-setting process.

33. *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1288 (Fed. Cir. 2011) (quoting *Aventis Pharma S.A. v. Amphastar Pharms., Inc.*, 525 F.3d 1334, 1349 (Fed. Cir. 2008) (Rader, J., dissenting)).

34. *See Dell*, 121 F.T.C. at 620 (ordering Dell to “cease and desist” all pending efforts and refrain from “undertak[ing] any new efforts to enforce” the named patent).

process.³⁵ Ultimately, the threat of harsh nondisclosure penalties leads many companies to strategically favor overdeclaration.³⁶

Unfortunately, countervailing incentives to disclose only truly essential patents are effectively nonexistent. While the vast majority of SSOs require SEP owners to license those patents on FRAND terms,³⁷ it remains unclear exactly what a FRAND commitment entails.³⁸ Although the specific weaknesses of FRAND commitments are well beyond the scope of this Note, their undisputed deficiencies leave SSO participants with an easy choice: make no disclosure and risk the patents being held unenforceable, or disclose and commit to toothless licensing terms.

Additionally, some SSOs permit members to issue so-called “blanket disclosures.”³⁹ Blanket disclosures allow firms to declare that they *may* hold some essential patents without identifying the specific patents.⁴⁰ Blanket disclosures are particularly useful for SSO participants who do not intend to proactively enforce their intellectual property rights, instead holding their patents solely for defensive purposes.⁴¹ Relatedly, firms with large patent portfolios use blanket disclosures to avoid incurring the costs of a comprehensive patent search.⁴² Regardless of the strategic value of blanket disclosures, the practice increases the number of declared SEPs and ultimately shifts the search costs to potential implementers.⁴³

Moreover, patent holders often stand to gain by disclosing purportedly essential patents because doing so gives rise to a plausible basis for the

35. See, e.g., *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 314 (3d Cir. 2007) (recognizing a new antitrust cause of action for a party’s intentionally deceiving an SSO regarding its intentions to license SEPs on FRAND terms and noting “[d]eceptive FRAND commitments, no less than deceptive nondisclosure of [intellectual property rights], may [harm the competitive process]”).

36. NAT’L RESEARCH COUNCIL, *supra* note 5, at 75.

37. Contreras, *supra* note 9, at 50–51.

38. See *id.* at 52 n.23 (collecting sources); Bartlett & Contreras, *supra* note 5, at 290–92 (“Despite the widespread usage of FRAND commitments, there is little consensus regarding the precise meaning of such commitments, particularly with regard to the level of royalties that would be considered ‘fair’ and ‘reasonable.’”).

39. See BEKKERS & UPDEGROVE, *supra* note 15, at 61–62 (observing that four out of the eight studied SSOs permit blanket disclosures, including IEEE, the SSO responsible for the heavily litigated 802.11 (Wi-Fi) standards).

40. *Id.* at 61; see also Bartlett & Contreras, *supra* note 5, at 302 (describing blanket disclosures and briefly explaining the associated litigation hurdles); NAT’L RESEARCH COUNCIL, *supra* note 5, at 76 (describing benefits and costs of blanket disclosures). The litigation and licensing problems associated with blanket disclosures are discussed in Part III, *infra*.

41. NAT’L RESEARCH COUNCIL, *supra* note 5, at 76. Jorge Contreras refers to such firms as “Product-Centric Developers” (as distinct from “Patent-Centric Developers,” who earn significant revenue from licensing their SEPs) and notes that these firms are a likely source of at least some of the resistance to earlier and more detailed SSO disclosure policies. Jorge L. Contreras, *Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study*, 53 JURIMETRICS 163, 206–07 (2013).

42. NAT’L RESEARCH COUNCIL, *supra* note 5, at 76.

43. *Id.*

enhanced damages of a willful-infringement claim.⁴⁴ Admittedly, the Supreme Court’s heightened “egregious misconduct” standard for enhanced damages⁴⁵ eliminates much of the risk that notice of a patent’s existence alone could satisfy the willfulness standard.⁴⁶ Nonetheless, because notice of the patent remains a required element of a willful-infringement claim,⁴⁷ SEP disclosure affords opportunistic patent holders a straightforward basis for proving notice, at least as to other SSO participants.⁴⁸

Finally, verifying the essentiality of a patent is expensive. Professor Contreras has noted that patent pools, private organizations that collect SEPs to facilitate licensing transactions, spend between \$10,000 and \$15,000 per patent to verify essentiality.⁴⁹ And while the Fairfield Studies spent only one hour per patent performing their “preliminary technical assessments,” the studies also note that a complete analysis could require several days of engineer and attorney time.⁵⁰ For organizations that hold dozens or even hundreds of potentially essential patents,⁵¹ the financial burden of comprehensive essentiality checks can be significant, and, in light of the unsettled obligations of FRAND licensing, unnecessary.

II. The Costs of Overdeclaration

SEP overdeclaration creates substantial inefficiencies in both patent licensing and litigation. This Part explores how overdeclaration artificially

44. See 35 U.S.C. § 284 (2018) (providing that, in patent-infringement cases, “the court may increase the damages up to three times the amount found or assessed”).

45. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1933, 1935 (2016) (holding that § 284 permits district courts to award enhanced damages for patent infringement in “egregious cases of misconduct”).

46. See *id.* at 1936 (Breyer, J., concurring) (“[T]he Court’s references to ‘willful misconduct’ do not mean that a court may award enhanced damages simply because the evidence shows that the infringer knew about the patent *and nothing more*.”). Although Justice Breyer wrote for three Justices on this point, district courts remain split as to whether notice alone is sufficient to survive a motion to dismiss. Jonah Mitchell & Nicole Medeiros, *Navigating Willfulness in Patent Cases Three Years After Halo*, LAW360 (Apr. 30, 2019, 2:13 PM), <https://www.law360.com/articles/1154875/navigating-willfulness-in-patent-cases-3-years-after-halo> [https://perma.cc/9R6U-2CU6].

47. See *Halo*, 136 S. Ct. at 1933 (noting that “culpability is generally measured against the knowledge of the actor at the time of the challenged conduct”).

48. See Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (and One Not To)*, 48 B.C. L. REV. 149, 164–65 (2007) (arguing, in a pre-*Halo* article, that enhanced damages accompanying a willfulness claim encourages disclosure of essential patents).

49. Contreras, *supra* note 9, at 77 n.115.

50. See, e.g., LTE STUDY, *supra* note 11, at 17 (emphasis omitted) (explaining the study’s methodology).

51. See, e.g., *id.* at 12 (noting that Nokia, Qualcomm, and Ericsson owned 102, 26, and 24, declared patent families, respectively); WCDMA STUDY, *supra* note 11, at 3 (noting that Huawei, Nokia, Ericsson, and Qualcomm owned 111, 72, 48, and 35 declared essential patents, respectively). Although not universally defined, the term “patent family” typically refers to a group of patents covering the same technology and spanning multiple jurisdictions and procedural phases. See GSM STUDY, *supra* note 11, at 5–6.

inflates royalty rates in license negotiations and skews courts' reasonable-royalty analyses.

Due to the costs of performing in-depth essentiality checks,⁵² many standard implementers engage in license negotiations with SEP holders under the assumption that declared SEPs would actually be infringed by practicing the standard.⁵³ Furthermore, even the SEP holder may not know whether its declared patents are actually essential, preferring to invest in essentiality determinations only if litigation arises from failed licensing negotiations.⁵⁴ As a result, implementers often license the entirety of a firm's declared SEP portfolio, including the patents not infringed by standard-compliant products.⁵⁵

Even if an individual implementer musters enough resources to perform a comprehensive valuation, including essentiality checks, of a declared SEP portfolio, the resulting efficiency is unlikely to spread beyond that individual. The failure to share this information could occur for a number of reasons. Foremost is the fact that license negotiations often occur under strict nondisclosure agreements that bar licensees from sharing the terms of their license with others.⁵⁶ Additionally, license agreements, especially in the telecommunications industry, are often unique to the parties involved.⁵⁷ Sharing valuations of an SEP holder's declared portfolio among potential implementers could have antitrust consequences as well.⁵⁸ Finally, some firms may choose to keep the details of an SEP portfolio valuation to themselves for strategic reasons. Regardless of the reason, the costs of

52. See *supra* subpart I(B) (discussing the costs of essentiality checks).

53. A recent European Commission report observed that “[s]takeholders report that recorded declarations create a *de facto* presumption of essentiality in negotiations with licensees.” EUROPEAN COMM’N, SETTING OUT THE EU APPROACH TO STANDARD ESSENTIAL PATENTS 5 (2017); see also NAT’L RESEARCH COUNCIL, *supra* note 5, at 75 (noting that substantial overdisclosure could prevent would-be implementers from investing in the standard-based technology entirely).

54. See *supra* subpart I(B) (discussing blanket disclosures).

55. See Contreras, *supra* note 9, at 61 (noting that “patent holders often compute royalties based, at least in part, on the number of patents being licensed”). Kristelia A. García and Justin McCrary describe a similar phenomenon in copyright law—called “rights accretion”—in which an abundance of caution stemming from the harsh penalties for copyright infringement causes prospective users to license copyrights that are not actually necessary to avoid liability. See Kristelia A. García & Justin McCrary, *A Reconsideration of Copyright’s Term*, 71 ALA. L. REV. (forthcoming 2019) (manuscript at 15), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3357965 [<https://perma.cc/9MCK-JME6>].

56. Contreras, *supra* note 9, at 64.

57. See NAT’L RESEARCH COUNCIL, *supra* note 5, at 65–66 (explaining how cross-licensing and portfolio licensing make it difficult to determine the value of individual patents included in a license).

58. Michael Bloom, *Information Exchange: Be Reasonable*, FED. TRADE COMM’N: COMPETITION MATTERS (Dec. 11, 2014), <https://www.ftc.gov/news-events/blogs/competition-matters/2014/12/information-exchange-be-reasonable> [<https://perma.cc/Y7SY-WTRJ>] (“The sharing of information [among competitors] relating to price, cost, output, customers, or strategic planning is more likely to be of competitive concern than the sharing of less competitively sensitive information.”).

informational asymmetries in SEP licensing are likely to aggregate over multiple implementers, compounding an already large cost.

The threat of enhanced damages for SEP infringement causes licensing inefficiencies as well. As discussed in subpart II(B), SEP holders often have cognizable claims for willful infringement and the associated treble damages, especially against fellow SSO participants. Once a would-be implementer engages in license negotiations with a SEP holder, the threat of enhanced damages if a license agreement cannot be reached becomes palpable.⁵⁹ This threat gives SEP holders significant leverage in license negotiations, likely resulting in artificially inflated licensing terms.⁶⁰

Beyond the licensing context, overdeclaration of SEPs may lead to otherwise avoidable inaccuracies in a judicial assessment of a reasonable royalty in patent-infringement or breach-of-FRAND litigation. Although courts have dealt with SEP remedies in only a few instances, two approaches to the reasonable-royalty analysis have emerged.⁶¹ In the “bottom-up” approach, courts determine the incremental value of the litigated SEPs without reference to other patents covering the same standard.⁶² Thus, the bottom-up approach is unaffected by overdeclaration because patents other than those before the court are irrelevant to the royalty determination. The bottom-up approach nevertheless suffers from numerous other problems and has become disfavored by SEP scholars.⁶³ Instead, many have advocated for and several courts have embraced a “top-down” approach.⁶⁴ In a top-down

59. *Cf.* Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc., No. 2:14-cv-911, 2016 WL 4596118, at *2 (E.D. Tex. Sept. 3, 2016) (denying summary judgment of no willful infringement where an alleged infringer’s argument that willful infringement claims were inconsistent with FRAND commitment).

60. Although beyond the scope of this Note, an SEP holder’s leverage may be further increased by the threat of injunctive relief. *See* Jorge L. Contreras & Richard J. Gilbert, *A Unified Framework for RAND and Other Reasonable Royalties*, 30 BERKELEY TECH. L.J. 1451, 1460–63 (2015) (arguing that holders of RAND-encumbered patents may be entitled to seek injunctive relief under *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006)).

61. *See* Bartlett & Contreras, *supra* note 5, at 295–310 (describing “bottom-up” and “top-down” approaches to SEP royalty determinations and advocating for the latter); *see also* Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1229 (Fed. Cir. 2014) (collecting cases that considered FRAND royalty rates through 2014).

62. Bartlett & Contreras, *supra* note 5, at 293.

63. *See id.* at 295–305 (discussing weaknesses of the bottom-down approach); Contreras, *supra* note 9, at 72–73 (describing the risk of royalty stacking in a hypothetical bilateral negotiation approach and arguing that “any assessment of the ‘reasonableness’ of an individual patent holder’s royalty rate [must] take into account the overall number of SEPs applicable to a standard, the number of patent holders, and the aggregate royalty burden on the standard”).

64. *See* Bartlett & Contreras, *supra* note 5, at 306–09 (advocating for a top-down approach and collecting cases). For a recent example of a court applying a top-down approach, *see TCL Communication Technology Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson*, No. SACV 14-341 JVS (DFMx), 2018 WL 4488286, at *8–26 (C.D. Cal. Sept. 14, 2018), *appeal argued*, No. 18-1363 (Fed. Cir. Aug. 7, 2019).

analysis, an aggregate rate for all patents essential to a standard is determined, then shares of that total rate are apportioned amongst SEP holders.⁶⁵

Although such an approach solves many of the problems associated with the bottom-up approach, including royalty stacking, overdeclaration of SEPs would taint the results of a top-down analysis. If the apportionment method does not take actual essentiality into account, putatively essential patents would be allocated a share of the total royalty without actually contributing to the total value.⁶⁶ While some district courts have been willing to engage in a more thorough top-down analysis that invokes expert evidence on essentiality and apportionment,⁶⁷ jurisdictions that rarely handle complex SEP litigation may opt instead for the more straightforward (and less technically demanding) head-count approach. In the latter case, overdeclaration shifts a portion of royalties from actually essential patents, which legitimately contribute to the standard, to patents that add no value to the standard.⁶⁸

Whether private parties resolve a SEP dispute alone or before a court, overdeclaration of SEPs muddies the water of those resolutions, imposing substantial costs on the parties and nonparties along the way. As such, overdeclaration is a problem worth solving, a topic to which I now turn.

III. Solutions

Despite the substantial costs of overdeclaration, it is unclear who should be responsible for solving this problem. Essentiality checks are expensive, require both legal and technical expertise, and, at least in the current legal regime, only benefit potential implementers. This Part explores three possible actors for implementing an essentiality-check system to reduce overdeclaration of SEPs.

A. *Standard-Setting Organizations*

Perhaps the most obvious choice is SSOs themselves. These organizations are intimately familiar with the technical details of the

65. Bartlett & Contreras, *supra* note 5, at 306–07.

66. *See id.* at 309 (noting that, in some instances, “parties may divide aggregate revenues amongst themselves pro rata, based on nothing more than a simple patent ‘head count’”); *cf. Ericsson*, 773 F.3d at 1226 (“The essential requirement [of royalty apportionment] is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product.”).

67. *See TCL Commc’ns Tech.*, 2018 WL 4488286, at *15–18 (decreasing the “denominator” in the royalty calculation to account for nonessential, expired, and non-U.S. declared SEPs).

68. Admittedly, overdeclaration in such a case would result only in allocative inefficiency rather than true economic loss. Nonetheless, widespread allocative inefficiencies undermine the basic incentive structure of the patent system. *See* John M. Golden, *Principles for Patent Remedies*, 88 TEXAS L. REV. 505, 517 (2010) (“Patents can impair dynamic efficiency by impeding follow-on development or, if the reward they provide is excessive, by inducing the diversion of resources from more socially productive activity.” (citations omitted)).

standard, have at least some legal expertise, and can adapt the contours of each essentiality-check policy to the nuances of a particular standard-setting environment. Additionally, requiring essentiality checks for declared patents could benefit the standard-setting process itself by enabling SSOs to more accurately understand the potential licensing costs associated with a particular technology solution.⁶⁹

However, there are good reasons to question whether SSOs can and should be doing this type of work. Some commentators have argued that SSOs should be focused on the technical details of a standard, with costs and legal consequences an afterthought.⁷⁰ Additionally, SSOs likely lack the financial resources to perform comprehensive essentiality checks. To overcome this, SSOs could require standard participants to subsidize the costs of essentiality assessments. After all, for some technology firms, the opportunity to lock their patented technology into a commercially successful standard is invaluable.⁷¹ However, requiring SSO participants to pay for essentiality checks could chill participation in the process entirely. This risk is particularly high for product-centric developers, whose participation in standard-setting is driven by the potential revenue from standard-compliant products, not licensing fees.⁷² Relatedly, requiring participants to pay for essentiality checks on declared SEPs could incentivize product-centric firms to recoup the declaration costs through licensing revenue they would otherwise forego.⁷³

Additionally, determining the ideal time for performing an essentiality check stands in the way of SSOs limiting overdeclaration. As discussed above, the technical content of a standard can change significantly as it develops. Thus, if essentiality checks are performed upon disclosure, early in the standard-development process, patents deemed “essential” at that time may not be essential to the final version of the standard. This would suggest the ideal time for an essentiality check is not the time of disclosure, but when the standard is finalized. Yet, the damage may be done by that point. Many firms engage in licensing negotiations for purportedly essential patents well

69. See NAT’L RESEARCH COUNCIL, *supra* note 5, at 73 (listing “allow[ing] working group members to make appropriate and informed choices concerning the inclusion of technologies, based on technical merit, implementation costs, and the prospective availability of licenses” as an objective of SSO disclosure policies).

70. See Contreras, *supra* note 9, at 65–66 (summarizing and rejecting this argument).

71. Qualcomm, for example, earned 74% of its operating income—over \$6 billion—in fiscal year 2015 through licensing its wireless communication IP to mobile device manufacturers. Paige Tanner, *Qualcomm Gets the Majority of Profits from Its Licensing Business*, YAHOO! FIN. (Dec. 17, 2015), <https://finance.yahoo.com/news/qualcomm-gets-majority-profits-licensing-140637621.html> [<https://perma.cc/BP4G-CJD5>].

72. Contreras, *supra* note 41, at 206–07.

73. *Id.*

before the standard is finalized, as first-to-market advantage drives significant market power in the IT sector.⁷⁴

The timing problem is exacerbated by SSO policies that require disclosure of pending patent applications in addition to issued patents. But whether that application will result in an issued patent, and what the claims of the issued patent will cover, is pure conjecture.⁷⁵ Continuation practice can make the problem even worse. An early-issued patent from a continuation application may not be essential, but a later patent stemming from the same parent application may be essential.⁷⁶ In sum, SSOs' lack of financial resources, limited leverage over participants, and organizational priorities suggest that they likely are not the best actor for combatting SEP overdeclaration.

B. Patent "Pseudo-Pools"

As an alternative to SSOs, Jorge Contreras has recommended a "pseudo-pool" solution that combines the desirable features of SSOs and patent pools.⁷⁷ Contreras's proposal has several important features: (1) SSO participants agree to license their declared SEPs on FRAND terms; (2) the SSO establishes an aggregate royalty for the standard, which is apportioned based on a simple numeric-proportionality, or head-count, approach; (3) anyone may challenge the essentiality of a declared SEP; (4) if a challenged patent is deemed nonessential, the patent holder's share of the standard's aggregate royalty is reduced by more than the value of a single patent; and (5) participants may declare a patent "possibly essential" in exchange for receiving a fractional share of the aggregate royalty due an actually essential SEP and immunity from essentiality challenges.⁷⁸

74. See Contreras, *supra* note 9, at 63 & n.59 (arguing royalty cost information should be considered in determining whether to adopt a standard); JILL C. GALLAGHER & MICHAEL E. DEVINE, CONG. RESEARCH SERV., R45485, FIFTH-GENERATION (5G) TELECOMMUNICATIONS TECHNOLOGIES: ISSUES FOR CONGRESS 1 (2019) (noting that "[p]ast experience has shown that companies first to market with new technologies capture the bulk of the revenues" in the context of 5G telecommunication technologies).

75. Indeed, some organizations may amend the claims of their pending applications to encompass technologies adopted during the standard-setting process to ensure their claims capture the value of a standardized technology. See, e.g., *Micron Tech., Inc. v. Rambus Inc.*, 645 F.3d 1311, 1315 (Fed. Cir. 2011) (noting the patentees' claim amendments to cover technology later adopted into a standard).

76. Mark Lemley criticizes this practice, noting that some patentees use continuation applications to "wait and see what standards get adopted by SSOs and then redraft their patent claims around those standards." Lemley, *supra* note 48, at 163.

77. Contreras, *supra* note 9, at 78–79. Although patent pools could effectively solve the overdisclosure problem, they introduce such substantial costs in other areas of the SEP-licensing system that patent pools, at least as conventionally understood, are not a viable solution. *Id.* at 75–78.

78. *Id.* at 78–83.

With respect to solving overdeclaration, Contreras's proposal has several attractive features. Most notably, the system theoretically reduces overdisclosure by setting the penalties for disclosing a nonessential patent higher than the value of disclosing without making any assessment of essentiality.⁷⁹ Contreras's proposal also substantially reduces costs compared to SSOs and traditional patent pools by requiring essentiality checks for only a subset of declared SEPs (only those affirmatively challenged by others). Furthermore, the risk of essentiality checks chilling the participation of product-centric SSO participants is reduced by the option of declaring "possibly essential" patents.

That said, there are two important drawbacks. First, as with SSOs, pseudo-pools offer no positive incentive for patent holders to proactively perform essentiality checks. In other words, patent holders receive no benefit from verifying essentiality before disclosure, only the reduced risk of an overdeclaration penalty. And there are reasons to doubt whether that reduced risk alone is enough to effectively regulate disclosure. To be effective, the royalty-share-reduction penalty must take into account the probability that a patent is actually challenged—a probability likely to be low in a pool of several hundred or thousand patents, especially when the only gain to be realized from challenging a patent is a few royalty shares spread over all other pool participants.⁸⁰ But setting the penalty high enough to account for the low probability of challenge also invites counterproductive gamesmanship. After all, if a participant could negate the royalty-share value of a dozen of another participant's actually essential patents by successfully challenging one borderline nonessential patent, that could drive risk-averse participants to instead utilize the "possibly essential" disclosure option discussed below. Alternatively, participants could blunt the effects of the penalty by simply declaring more patents, as the value of unchallenged patents would compensate for overdeclaration penalties incurred.

Relatedly, permitting declaration of "possibly essential" patents in exchange for a reduced royalty share and essentiality-challenge immunity may have the unintended and ironic consequence of encouraging mass declaration of "possibly essential" patents. Because the system uses numeric proportionality in allocating the aggregate royalty,⁸¹ declaring n "possibly essential" patents worth $1/n$ of a single actually essential patent yields the same value for the patent holder while insulating their declared portfolio from

79. *Id.* at 82.

80. For a relatively simple example, assume a pseudo-pool with 1,000 patents and 50 participants each owning 20 declared SEPs, entitling each participant to a twentieth of the aggregate royalty. If the overdeclaration penalty is a reduction of the value of two shares, each of the non-penalized participants would gain just one forty-ninth of the value of two shares. This example assumes the overdeclaration penalty shares are redistributed amongst the non-penalized participants; of course, if the penalty value goes elsewhere (administrative costs, for example), the value of a successful essentiality challenge is zero.

81. *Id.* at 81–82.

challenge. For firms with large patent portfolios, this outcome does not seem far-fetched. Thus, while pseudo-pools could likely solve many other issues of SEP licensing, their ability to effectively deter overdeclaration is questionable.

C. *Patent Offices*

As an alternative to SSOs or pseudo-pools, regional patent offices, like the PTO, could perform essentiality checks upon request of either the patent holder or a potential licensee. This is precisely the solution proposed by the European Commission.⁸² Patent offices have expertise in both the technical and legal analysis required by essentiality checks. Additionally, a patent-office essentiality procedure provides potential implementers an opportunity to pool resources to have a patent declared nonessential, much in the same way parties currently use the *inter partes* review (IPR) proceeding to cancel weak patent claims.⁸³ Moreover, unlike SSOs that would need to evaluate the essentiality of every declared SEP, patent offices, like pseudo-pools, could make these assessments only when petitioned by private parties. This prevents wasting resources to determine the essentiality of a patent unlikely to be the subject of contentious licensing or litigation.

Most importantly, patent offices have more options for incentivizing efficient use of essentiality checks. Unlike SSOs and pseudo-pools that can wield only sticks, patent offices can dangle carrots to encourage parties to engage in essentiality checks. Specifically, I propose patents deemed essential by the PTO⁸⁴ be given a presumption of infringement by standard-compliant products. Such a presumption, akin to the statutory presumption of patent validity,⁸⁵ could reduce the risks and costs of litigation enough to encourage SEP holders to invest in essentiality determinations made by a neutral third-party.

Although the PTO could also use penalties to encourage accurate SEP declaration, prescribing a particular, one-size-fits-all penalty is not necessary. This is because permitting the PTO to perform essentiality checks removes one of the primary barriers to efficient SEP declaration—a lack of publicly available information. Rather than limiting the results of essentiality determinations to individual parties, the outcome of a PTO essentiality check is available to anyone. In turn, that information permits a variety of actors to

82. EUROPEAN COMM'N, *supra* note 53, at 5.

83. See Brian J. Love et al., *Determinants of Patent Quality: Evidence from Inter Partes Review Proceedings*, 90 U. COLO. L. REV. 67, 111 (2019) (“[B]ecause IPR has no standing requirement, potential infringers can pool resources in third-party organizations—like defensive aggregators and industry associations—that can challenge especially weak patents previously asserted en masse for nuisance value.”).

84. Although this proposal may be feasible in other jurisdictions as well, my analysis will focus on a solution implemented through the United States PTO.

85. 35 U.S.C. § 282(a) (2018).

respond in a manner most appropriate to their circumstances. For example, if the share-reduction penalty of Contreras's pseudo-pool approach⁸⁶ can be used effectively in a particular situation, parties are free to organize themselves in that manner while simply offloading essentiality checks to an administrative agency. For other actors, the PTO's determination that a declared SEP is nonessential may be grounds for renegotiating a licensing agreement with the SEP holder. Regardless of the particular response, patent-office essentiality checks provide much-needed transparency in SEP licensing.

Relatedly, the risk of an overdeclaration penalty chilling participation in standard setting altogether cannot be ignored. Thus, setting the penalty at a level effective to reduce overdeclaration without frustrating standard-setting efforts depends heavily on the balance of product- and patent-centric participants in a particular SSO. SSOs, like any other party, can use the information from PTO essentiality checks to appropriately tailor their declaration policies.

Turning to potential objections, the notion of a presumption of infringement likely makes the defense bar shudder. Consider several qualifications that may make this recommendation more palatable. First, the PTO's recent adoption of the *Phillips v. AWH Corp.*⁸⁷ claim-construction standard for post-grant review procedures means essentiality checks would be performed in the same framework as a district court's infringement analysis.⁸⁸ Second, although a presumption of infringement by standard-compliant products certainly lowers the patentee's burden in litigation—after all, that is what makes the presumption valuable—the burden nonetheless remains on the patentee to prove that an accused product is indeed standard compliant. In some cases, a Wi-Fi modem for example, a manufacturer's own marketing of standard compliance will make the patentee's remaining burden light. Not all cases will be so easy, however. And, of course, defendants could still argue noninfringement either by showing noncompliance with the portion of the standard covered by the SEP or by rebutting the presumption of infringement by standard-compliant products. Finally, that a patent owner could unilaterally seek an essentiality determination under this proposal (unlike current post-grant review proceedings)⁸⁹ likely gives many pause.

86. See *supra* subpart III(B) (discussing Contreras's pseudo-pool solution).

87. 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

88. See 37 C.F.R. § 42.100(b) (2018) (requiring use of the district court claim-construction standard for IPR proceedings); Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51340, 51341–42 (Oct. 11, 2018) (codified at 37 C.F.R. pt. 42) (discussing reasons for the switch to *Phillips* standard, including “greater uniformity and predictability of the patent grant, improving the integrity of the patent system”).

89. *E.g.*, 35 U.S.C. § 311(a) (2018) (“[A] person *who is not the owner* of a patent may file with the Office a petition to institute an inter partes review of the patent.” (emphasis added)); see also ROBERT P. MERGES & JOHN F. DUFFY, PATENT LAW AND POLICY 933 (7th ed. 2017) (summarizing

Permitting interested parties to intervene in otherwise ex parte essentiality proceedings could assuage much of this concern.⁹⁰

Beyond the procedural-fairness concerns, authorizing administrative agencies to adjudicate issues resulting in a statutory presumption that disfavors nonparties raises several constitutional concerns. First, it could be argued that because the Due Process Clause prohibits collaterally estopping nonparties, imposing a statutory presumption of infringement on parties absent from the PTO essentiality proceeding violates the Fifth Amendment.⁹¹ But a presumption is just that—while it changes the burden of proof, a presumption does not preclude a party from litigating an issue and, therefore, receives less demanding due process scrutiny. Statutory presumptions do not violate due process if there is “some rational connection between the fact proved and the ultimate fact presumed, and that the inference of one fact from proof of another shall not be so unreasonable as to be a purely arbitrary mandate.”⁹² Surely it is rational to infer that a patent deemed standard essential in an (often adversarial) agency proceeding is infringed by a product practicing that standard.⁹³

Permitting the PTO to make essentiality determinations also arguably violates Article III’s vesting of “the judicial Power” in federal courts.⁹⁴ Although Congress cannot confer that power on entities outside Article III, it has “significant latitude to assign adjudication of public rights to entities other than Article III courts.”⁹⁵ Thus, whether the PTO’s power to make

the features of the current post-issuance review procedures).

90. Although not intervention per se, IPR petitioners may, at the PTO’s discretion, join to an instituted review. See 35 U.S.C. § 315(c) (2018). Intervenor provisions are pervasive in administrative law. For example, “[a]ny party in interest may file with the [Federal Communications] Commission a petition to deny any [license] application.” 47 U.S.C. § 309(d)(1) (2018). And, as a baseline, the Administrative Procedure Act provides that “an interested person may appear before an agency or its responsible employees for the presentation, adjustment, or determination of an issue, request, or controversy in a proceeding.” 5 U.S.C. § 555(b) (2018).

91. See *Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found.*, 402 U.S. 313, 329 (1971) (explaining the due process limits on collateral estoppel); James R. Pielemeier, *Due Process Limitations on the Application of Collateral Estoppel Against Nonparties to Prior Litigation*, 63 B.U. L. REV. 383, 395–96 (describing general principles of due process and estoppel).

92. *Usery v. Turner Elkhorn Mining Co.*, 428 U.S. 1, 28 (1976) (quoting *Mobile, Jackson & Kan. City R.R. Co. v. Turnipseed*, 291 U.S. 35, 43 (1910)) (upholding against Fifth Amendment challenge a rebuttable statutory presumption that a miner with ten years’ employment in coal mines who suffers from respiratory disease contracted the disease from his employment). For a summary of the constitutionality of rebuttable evidentiary presumptions, see 21B CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., *FEDERAL PRACTICE & PROCEDURE* § 5129 (2d ed. 2005).

93. Compare this presumption, for example, to the one upheld in *Garvey v. Nat’l Transp. Safety Bd.*, 190 F.3d 571, 578–79 (D.C. Cir. 1999) (upholding a Federal Aviation Administration presumption that an airline pilot who deviates from air-traffic control instructions without explanation acted carelessly).

94. U.S. CONST. art. III, § 1.

95. *Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1372–73 (2018). As *Oil States* acknowledges, the Court has not been “entirely consistent” in explaining and applying the distinction between public and private rights. *Id.* at 1373 (quoting *Stern v. Marshall*,

essentiality determinations violates Article III turns on whether those determinations are rightly considered adjudications of a public right. To be sure, an essentiality determination, especially with an accompanying presumption of infringement, certainly feels like a determination of infringement itself. And infringement—a matter “of the liability of one individual to another,” “which, from its nature, is the subject of a suit at the common law, or in equity”⁹⁶—is almost certainly adjudication of a private right that may be decided by only an Article III court.

Equating essentiality determinations with infringement, however, goes too far. Sure, an infringement analysis involves comparing a patent claim to a technology. But so does a validity analysis.⁹⁷ Like a validity analysis, an essentiality determination compares patent claims to a technology in the abstract; an infringement analysis, on the other hand, compares patent claims to a particular party’s conduct.⁹⁸ And although an essentiality determination before the PTO, like an IPR, may be adversarial in form, in substance it involves a matter “between the government and others” and “does not make any binding determination regarding ‘the liability of [one individual] to [another].’”⁹⁹ At bottom, an essentiality determination looks less like a matter of infringement and more like a matter of validity—a matter of public rights which the Supreme Court has held may properly be adjudicated outside Article III courts.¹⁰⁰

564 U.S. 462, 488 (2011)). Because *Oil States* says much about the public-rights nature of patents, however, describing the “various formulations” of the doctrine is not necessary here. *Id.*

96. *Stern v. Marshall*, 564 U.S. 462, 488–89 (2011) (internal quotation marks and citations omitted) (surveying precedent on the distinction between public and private rights for Article III purposes).

97. See MERGES & DUFFY, *supra* note 89, at 400 (describing the anticipation–infringement symmetry).

98. Compare 35 U.S.C. § 102(a) (2018) (“A person shall be entitled to a patent unless *the claimed invention* was patented, described in a printed publication or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.” (emphasis added and paragraph numbering omitted)), with 35 U.S.C. § 271(a) (2018) (“[W]hoever without authority makes, uses, offers to sell or sells any patented invention . . . infringes the patent.” (emphasis added)).

99. *Oil States*, 138 S. Ct. at 1378 (quoting *Crowell v. Benson*, 285 U.S. 22, 51 (1932)). Even if the PTO were to conduct a full trial in making an essentiality determination, “[t]he Court has never adopted a ‘looks like’ test to determine if an adjudication has improperly occurred outside an Article III court.” *Id.*

100. *Id.* at 1373. Note also that, at least where a party petitions the PTO for an essentiality check on another party’s patent, the petitioner is impliedly consenting to adjudication by a non-Article III entity. Implied consent resolves an otherwise valid Article III objection. See *Wellness Int’l Network, Ltd. v. Sharif*, 135 S. Ct. 1932, 1939, 1948 (2015) (holding Article III is not violated when parties expressly or impliedly give knowing and voluntary consent to a bankruptcy court’s adjudication of claims which could otherwise be adjudicated by only an Article III court). Furthermore, although the Supreme Court has never said as much, some scholars argue that review of agency adjudication by an Article III court vitiates Article III concerns. See RICHARD H. FALLON, JR. ET AL., HART & WECHSLER’S THE FEDERAL COURTS AND THE FEDERAL SYSTEM 389–90 (7th ed. 2015) (noting the view that “sufficiently searching appellate review by an Article III court” may be “both necessary and sufficient to legitimate initial adjudication” by a non-Article III federal tribunal).

Finally, several practical hurdles stand in the way of regional patent offices performing SEP essentiality checks. First, SEPs are often global in scope. Though a United States patent is typically included in the family, many SEPs also include European or Asian counterparts.¹⁰¹ Whereas any legal effects of essentiality checks performed by SSOs or pseudo-pools can have a global reach via international contract law, the legal benefits of patent-office essentiality checks will be geographically limited to the relevant jurisdiction. Two problematic consequences could follow. First, the total cost of essentiality checks increases as multiple patent offices repeat the same work. Second, and more importantly, in the event a patent is deemed nonessential in one jurisdiction, but essential (or not assessed at all) in another, SEP holders could leverage their rights in the latter jurisdiction to exact inflated global licensing fees.

That said, the magnitude of this issue depends substantially on the market for each standard. For standards with high initial investment costs, like telecommunication standards, the ability to capture a major market enables expansion to other markets.¹⁰² In these situations, the geographic limits of patent-office essentiality checks are less likely to be a hurdle, as obtaining a cost-effective license in only one geography is necessary initially. On the other hand, for standards with immediate global reach and low implementation costs, such as software protocols, global limitations are a larger barrier.

Perhaps the most obvious practical barrier to patent-office essentiality checks is that, at least currently, the PTO does not have the legal authority to conduct such a program.¹⁰³ Thus, performing essentiality checks at the PTO would literally require an act of Congress. However, given Congress's recent interest in patent law,¹⁰⁴ such legislation is not a lost cause.

Conclusion

Studies demonstrate that fifty percent or more of declared-essential patents for a given technology standard may not actually be practiced by the standard. Mass overdeclaration—caused by lenient SSO policies, severe underdeclaration penalties, and the expense of detailed essentiality checks—

Permitting the Federal Circuit to review PTO essentiality determinations, therefore, could also assuage Article III objections.

101. *E.g.*, LTE STUDY, *supra* note 11, at 7 (noting that over half of the studied SEP families included both US and European patents).

102. *See* GALLAGHER & DEVINE, *supra* note 74, at 9 (listing “the large Asian market” among reasons for prediction that “Asia may emerge as a 5G leader”).

103. *See* 35 U.S.C. § 2 (2018) (setting the powers and duties of the PTO).

104. *See, e.g.*, Protecting American Talent and Entrepreneurship Act of 2015, S. 1137, 114th Cong. (2015) (aiming to reduce abusive patent litigation in a bipartisan bill introduced in the Senate Judiciary Committee); *see also* Lauren Cohen et al., “Troll” Check? A Proposal for Administrative Review of Patent Litigation, 97 B.U. L. REV. 1775, 1840 (2017) (collecting examples of recent patent-litigation reform bills).

imposes significant costs on parties licensing the allegedly essential patents in developing a standard-compliant product. Despite these costs, the indeterminacy of FRAND commitments has received the lion's share of attention from courts and scholars addressing intellectual-property issues in the standard-setting context. Nonetheless, regional patent offices should consider implementing a program for efficiently assessing the essentiality of declared SEPs to reduce the informational asymmetry and associated inefficiencies in SEP licensing and litigation.