
Patent Disputes Involving Standards - Is Arbitration a Solution?

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I. Introduction

1. The last years have seen a steady increase in intellectual property and patent-related disputes go to arbitration.
2. Patent filings keep going up every year in most jurisdictions. International patent filings have gone up by 5% from 2018 to 2019 and a staggering 71% over the last decade.¹ Yet, a more connected, technological world also needs more technical standards to make things work together. The European Telecommunications Standard Institute (ETSI), for example, has published over 2700 standards in 2018 alone, and over 46000 since 1988.
3. With more standards and more patents, it comes as no surprise that ever more patents read on standardized technology. With it, disputes between the patent owners and the standard implementers increase.
4. Patent disputes can involve many patents, are cross-jurisdictional, and require significant technical and financial expertise. They may also involve standard issues. In a word, patent disputes are complex and arbitration seems like an attractive and efficient way to solve such disputes.
5. But, there are some public law and public policy aspects particular to patent disputes that distinguish them from other technology disputes, particularly when the dispute involves standardization. These aspects affect the arbitrability of patent issues, and the enforcement of the award. For the arbitration professional or in-house counsel that has to choose between litigation and arbitration, choose the seat of the arbitration, make a choice of law, or choose which patents to arbitrate, these considerations are crucial to avoid an invalid award, lack of jurisdiction, or problems with enforcement.
6. In this article, we introduce patents in a standardization context and discuss how the standard-setting organizations try to deal with the tension between making a standard accessible, and the patent's inherent exclusivity. We discuss the distinct patent conflicts that might arise and how the parties could resolve a portfolio dispute. Homing in on standard-essential patents, we outline the difficulties in determining fair, reasonable and non-discriminatory (FRAND) royalty rates. Because these rates are difficult to determine, defendants in patent infringement actions often defend by claiming that the SEP owner did not offer them a FRAND license. The standard implementer

¹ "China Becomes Top Filer of International Patents in 2019," accessed April 30, 2020, https://www.wipo.int/pressroom/en/articles/2020/article_0005.html.

can invoke the FRAND defense based on two legal theories that we detail and contrast.

7. The last part of the article looks at how these issues affect arbitration and consider how standard-setting organizations could favor arbitration for standard-essential patents. Finally, we look at the arbitrability and enforcement of the most common patent dispute issues and find that patent validity is the thorniest issue.

II. Patent Disputes and Standards

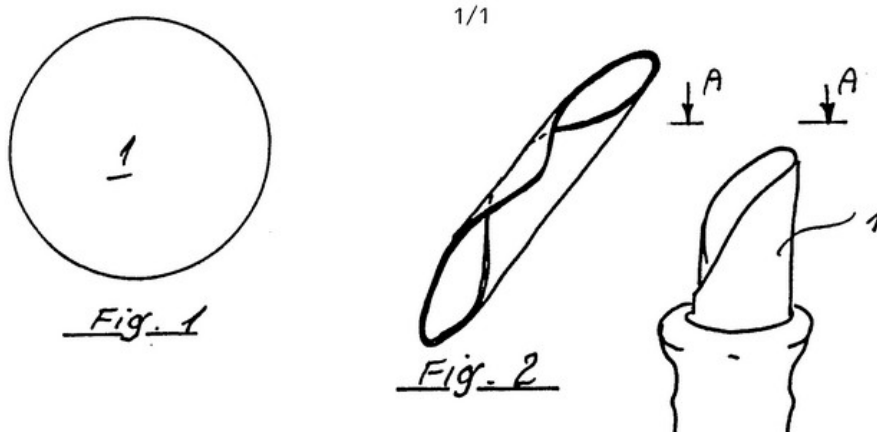
A. Patents to Promote and Protect Innovation

8. States grant invention patents to inventors, to protect innovative companies from free-riders. This promotes innovation and is particularly important for expensive, easy-to-copy inventions. In exchange for the patent right, the invention is published and freely available to the public when the patent lapses.
9. A company invests to solve a technical problem using a technical solution. If this solution is new, we may speak of an invention. If the invention is more than just an obvious modification of an already known solution to the problem, the invention may be patentable.² A patent is a state's grant of a right to exclude others from making, using or selling the invention in its territory for twenty years. Its scope of protection, including protected variants of the invention, is delimited in the patent claims.
10. Thus, the company may use the patent to restrict its competition from copying the invention and hence protect its investment. When the investment to bring an invention to market is large, and the invention is easy to copy, companies would not invest if they could not protect their product market from copycats

² What in patent law is considered "patentable", "new", "non-obvious" (inventive), a "technical problem" or a "technical solution" is beyond the scope of this article. An aesthetic creation, for example a better-looking design of a chair, would not be considered technical. Or, rearranging known work steps on an assembly line in a more efficient order while using the same technical methods, would not be a technical solution, but rather a business solution. On the other hand, placing a high-resistance carbon filament inside a glass bulb ("technical solution") to generate light from electricity ("technical problem") would be a classical, patentable invention. See Edison's lightbulb US patent No. 223,898.

free-riding on their investment. There would be no viable way to turn a profit. This is the primary reason the state grants patents, even though restricted competition is *per se* not in the public interest. The state also requires the company to publish its invention in the patent document. Once the patent lapses, the public can freely use the invention.

11. Thus, the company needs to weigh the benefit of a patent right against the disadvantage of publishing the invention. Sometimes, the company may keep its idea a trade secret instead, because it better fits its business model.
12. For example, you may know the invention called DropStop®³, illustrated in Fig. 1 and Fig. 2. It is a circular disk made of flexible, waterproof foil that wants to spring back into a planar shape when bent. When it is rolled up and inserted into a bottle opening, it stops the liquid from dripping and running down the bottleneck. The DropStop® is a very simple, yet elegant solution to the problem of dripping bottles. It only costs a few cents to manufacture and would be easy for a competitor to copy. With the patent, the inventor can stop the copying, and get compensated for his smart idea.



13. Pharmaceutical products also need unusually large up-front investments. Companies need to sift through thousands of chemical compounds and perform extensive testing. Before a product can enter the market, it needs to get approval from the regulatory authorities. All this costs a lot of time and money, yet a competitor could often take the ultimate product, analyze it and

³ BRIAN VANG JENSEN, Drip-Catcher., EP0560777A1, filed September 17, 1991, and issued September 22, 1993.

copy it effortlessly. In such scenarios, patent protection is fundamental for the investment to generate a return.

B. Technology Standards and the Patent Holdup Problem

14. Standards are essential to make today's technological products and services work together. When these standards can only be implemented using patented technology, the patent owner has significant leverage over the standard implementer when negotiating a patent license. This can lead to the holdup problem. To avoid it, the standard-setting organizations only adapt patented technology from patent owners that have agreed to license out their standard-essential patents on fair, reasonable and non-discriminatory terms.
15. Technical ecosystems are complex and bring together many actors, including manufacturers of technical equipment, service providers, regulators, retailers, and consumers. To ensure that products and services are interoperable, Standard-Setting Organizations (SSOs) such as ETSI, IEEE, or ITU⁴ standardize certain interfaces and minimum requirements. The SSOs provide an industry forum for the various actors to propose and discuss technical options for the standards they develop. Examples of such standards from the telecommunications industry, are wireless networking over Wi-Fi (IEEE 802.11), MPEG-2 video encoding (ITU H.262), or the LTE standard for 3G mobile communications (ETSI).⁵
16. SSOs normally define a standard in terms of a result to be achieved. That is, they define an outcome or feature but do not prescribe how to implement it. Examples may be interface specifications or message formats. In this way, the implementers can differentiate themselves, and they can maintain an element of competition. Typically, some requirements are mandatory while others are optional.
17. Sometimes only one technical solution is known to implement a mandatory requirement of the standard. We then speak of a standard-essential technical solution. In other words, the standard cannot be implemented without this standard-essential technical solution.⁶ If that standard-essential technical

⁴ The focus here is on *de jure* standards as opposed to *de facto* standards. IEEE: Institute of Electrical and Electronic Engineers, ITU: International Telecommunications Union.

⁵ MPEG-2: Moving Picture Expert Group, LTE: Long-Term Evolution.

⁶ In some cases an alternative solution is found in the future. Essentiality and possibility may thus depend on when the issue arises.

solution is within the scope of a patent claim, the associated patent is called a standard-essential patent (SEP).

1. The Patent Holdup Problem

18. When implementers invest in implementing a standard before they negotiate a license with the SEP owners, either unaware of the SEP or under a belief of low royalties, the patent owner has strong leverage to charge the implementer royalties that far exceed the value of the SEP technology in *ex-ante* negotiations. This is the so-called “holdup” problem (also called the *ex-post* opportunistic negotiation problem).⁷
19. The rational implementer in *ex-ante* negotiations would pay a royalty up to the marginal profit increase of using the standardized technology over a competing alternative technology. In *ex-post* negotiations, however, the patent owner could force the implementer to pay up to the entire up-front

⁷ J GREGORY SIDAK, “Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents,” 2014, p.10; ALEXANDER GALETOVIC, STEPHEN HABER, AND ROSS LEVINE, “An Empirical Examination of Patent Holdup,” *Journal of Competition Law and Economics* 11, no. 3 (September 2015): 549–78, <https://doi.org/10.1093/joclec/nhv024>; GALETOVIC, HABER, AND LEVINE.

investment *over* the marginal profit increase.⁸ Clearly, this could be substantial.

20. To avoid the patent holdup problem⁹, the SSOs require the participants in the standard finding process to sign a FRAND declaration¹⁰ before they can propose technology for adoption in the standard. In the FRAND declaration, the participant patent owners declares that they are willing to license their SEPs on Fair, Reasonable And Non-Discriminatory (FRAND) terms¹¹ to standard implementers. The FRAND declarations also ensure that the

⁸ Consider the ex-ante situation, i.e. the parties negotiate a license before the implementer invests any money: Using the standardized technology, the implementer could generate income X , invest the sum A , and pay royalty R to obtain profit $p1 = X - A - R$. Alternatively, to use a non-standardized alternative technology, the implementer could generate an income $Y = X + dX$, invest a sum $B = A + dA$ and generate a profit $p2 = Y - B$. The rational implementer in ex-ante negotiations would be willing to pay a royalty R , as long as the profit $p1$ exceeds the profit $p2$, since otherwise it is more lucrative to invest in the non-standardized technology. Thus, from the condition that $p1 > p2$, it follows that the royalty must be $R < dA - dX$, the marginal increase in profit that can be expected using the standardized technology over the non-standardized technology. Now, consider the ex-post situation, i.e. the situation where the implementer has already invested the sum A in the standardized technology. Profit $p1$ remains unchanged if the implementer sticks to the standardized technology, but the profit $p2$ when switching to the alternative non-standardized technology is now diminished by the sunk cost A . Thus, $p2 = Y - B - A$, assuming that the investments A are lost completely for a technology switch, for simplicity's sake. Correspondingly, for the implementer to stick with the standardized technology, i.e. $p1 > p2$, it follows that the royalty must be lower than $R < dA - dx + A$. In other words, in ex-post negotiations, the patent owner can extract a royalty from the rational implementer that is higher by the sunk investment A over the marginal profit increase that he would be able to obtain in ex-ante negotiations.

⁹ There is some debate about how much of a practical problem the patent holdup is. See e.g. GALETOVIC, HABER, AND LEVINE, "An Empirical Examination of Patent Holdup"; SIDAK, "Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents."

¹⁰ For examples of the declaration, see for ITU: https://www.itu.int/net/ITU-R/index.asp?redirect=true&category=study-groups&mlink=patents&lang=en&company=&recommendation=&patent=&country=&receiveddate_type=&receiveddate_dd=&receiveddate_mm=&receiveddate_yyyy=&SearchText= ; for ETSI: <https://www.etsi.org/intellectual-property-rights/ipr> ; for IEEE: <https://mentor.ieee.org/myproject/Public/mytools/mob/loa.pdf>, all last accessed on April 30, 2020.

¹¹ About what may constitute FRAND Royalties J. G. SIDAK, "The Meaning of FRAND, Part I: Royalties," *Journal of Competition Law and Economics* 9, no. 4 (December 1, 2013): 931–1055, <https://doi.org/10.1093/joclec/nht040>.

competition law authorities do not consider a collaboratively developed industry standard an anticompetitive undertaking.¹²

21. For the patent owner, the trade-off is a larger number of licensees at lower royalties for when his technology is adopted into a standard, compared to higher royalties from fewer licensees without standard adoption.

C. Anatomy of Patent Disputes in a Standardization Context

22. Patent disputes may arise between an implementer and a patent owner in a contractual relationship, often a license agreement. More common for patent disputes, however, is that the implementer and the patent owner are not in a contractual relationship. The patent owner claims that the implementer infringes one or more of his patents and, sometimes, that some of these patents¹³ are standard-essential. The implementer, on the other hand, would defend by counterclaiming that he does not infringe the patents (i.e. not use), that they are invalid, not standard-essential, or a combination of those. In addition, the implementer may also object that the patent owner failed to submit a licensing offer on FRAND terms for the SEP patents.
23. Fig. 3 illustrates a generic patent dispute in a standardization context. The ellipses symbolize sets of elements with certain properties and the various intersections between the sets show combinations that could arise in the dispute.

¹² FLORIAN BRUNNER, “‘FRAND’-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive,” *sic! Zeitschrift für Immaterialgüter-, Informations- und Wettbewerbsrecht* 1 (2019): p.4.

¹³ A patent contains several patent claims, each of which defines the scope of a variant of the invention. Generally, only a subset of those variants of the invention are standard-essential, if at all. The declarations to license under FRAND terms only apply to those standard-essential patent claims and do not extend to the non-standard essential patent claims.

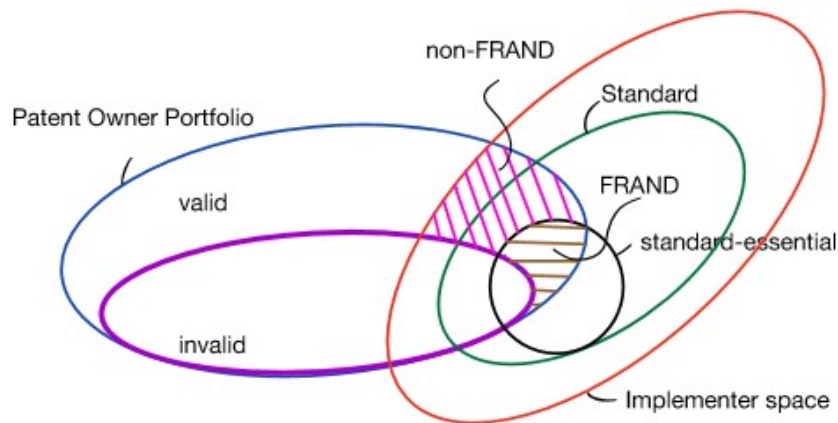


Fig. 3 Illustration of a patent dispute

24. The patent owner claims that the implementer infringes a portfolio of his patents (blue). Some of those patents may be invalid (purple). The implementer has created a product with various features (red). Some of those features are standardized (green) and some standardized features are furthermore standard-essential (black). The patent owner can enforce those patents that are valid and used (i.e. infringed) by the implementer. In Fig. 3, this corresponds to the pink and brown hashed areas. For the non-standard-essential, valid and infringed patents (pink hash), the patent owner can claim the typical remedies available through patent law, notably injunctive relief or damages. For the standard-essential, valid and infringed patents (brown hash), the patent owner can likely not obtain an injunction and get damages only in the form of FRAND royalties. This is because of competition law considerations and the FRAND declaration to the SSO, as we will discuss below.¹⁴

¹⁴ The inability to obtain an injunction and obtain at best FRAND royalties can lead to the “holdout” problem, in which case the implementer tries to stall the patent owner for as long as possible in negotiations, or does not in good faith negotiate a SEP license because he hopes to get away with not paying a license. If caught, he can at worst be facing FRAND royalties, i.e. what he would have paid anyway. The issues surrounding the holdout problem are beyond the scope of this article.

D. The Value Distribution of Patents and Portfolio Sampling

25. A patent dispute between two large technology companies can become very complex. It is not feasible to litigate all the patents relevant to a specific technology dispute. As it turns out, a portfolio license's value can be estimated reasonably well from litigating only a small percentage of the patents in the portfolio. This is sometimes called sampling.
26. The distribution of the economic value of patents is very skewed, in the sense that few patents are precious and the large majority of patents are worth little.¹⁵ Correspondingly, a few patents determine most of the value of a reasonably large patent portfolio. *Harrhoff et al.*, for example, surveyed German and US patents and determined that for the German sample the top five percent of patents accounted for just over 50% of the portfolio value. For the US sample, the top 8.5% of patents accounted for 78% of the portfolio value.¹⁶
27. The patent value distribution suggests that it is most efficient to litigate or arbitrate only a few valuable patents from the economically most significant jurisdictions, even if a license for a global patent portfolio is the aim. Sometimes, this is referred to as "sampling"¹⁷ or "claim winnowing". Sampling will determine the value of the entire portfolio well, considering the expense and complexity of litigating each patent's validity, infringement and, where applicable, standard-essentiality. With SEPs, once validity and standard-essentiality have been shown, the infringement analysis, by

¹⁵ DIETMAR HARHOFF, FREDERIC M. SCHERER, AND KATRIN VOPEL, "Exploring the Tail of Patented Invention Value Distributions," in *Economics, Law and Intellectual Property*, ed. Ove Granstrand (Boston, MA: Springer US, 2003), 279–309, https://doi.org/10.1007/978-1-4757-3750-9_13; PAOLA GIURI ET AL., "Inventors and Invention Processes in Europe: Results from the PatVal-EU Survey," *Research Policy* 36, no. 8 (October 2007): 1107–27, <https://doi.org/10.1016/j.respol.2007.07.008>; MARK A. LEMLEY AND CARL SHAPIRO, "Lemley, Mark A. and Shapiro, Carl, Probabilistic Patents. *Journal of Economic Perspectives*, Vol. 19, p. 75, 2005; Stanford Law and Economics Olin Working Paper No. 288. Available at SSRN: <https://ssrn.com/abstract=567883> or <http://dx.doi.org/10.2139/ssrn.567883>," *Journal of Economic Perspectives* 19 (2005): 75, <http://dx.doi.org/10.2139/ssrn.567883>.

¹⁶ HARHOFF, SCHERER, AND VOPEL, "Exploring the Tail of Patented Invention Value Distributions."

¹⁷ THOMAS LEGLER, "Arbitration of Intellectual Property Disputes," *ASA Bulletin* 37, no. 2 (2019): 57.

definition, is moot unless the implementer claims not to implement the standard.

III. FRAND Issues in Patent Disputes

A. Why it is Difficult to Determine FRAND Royalties

28. In a patent dispute about standard-essential patents, the implementer and the SEP patent owner not only dispute validity, standard-essentiality, and infringement, but often what constitute FRAND royalties for the SEP. A discussion about what FRAND terms are, is beyond the scope of this paper but the issue is involved¹⁸, as we shall see.
29. Smartphones and other high-tech devices often implement dozens of standards, and read on thousands of patent claims, both SEPs and non-SEPs. Typically, the implementer does not know how many SEPs exist for a standard because the SSOs do not count, list, or test patents for standard-essentiality. The SSOs collect the FRAND declarations, but mostly these do not list individual patents. And, some FRAND declarations are irrelevant because the proposed technology was not adopted into the standard.
30. Sometimes, patent owners form patent pools to ease access to the standard and lower transaction cost. Sometimes there are multiple patent pools for a same standard. Patents that are standard-essential may already be standard-essential for a predecessor standard, for which the implementer already pays. The problem that many and sometimes overlapping standards apply to a product is called the “royalty stacking” problem when the cumulative royalties exceed the royalties that would be reasonable if a single actor held all the SEPs.¹⁹
31. The result of all this uncertainty is that the implementer and patent owner disagree on what monetary value is FRAND. Their estimates may be orders of magnitude apart.²⁰

¹⁸ SIDAK, “The Meaning of FRAND, Part I.”

¹⁹ MARK A. LEMLEY AND CARL SHAPIRO, “Patent Holdup and Royalty Stacking,” *Texas Law Review* 85 (2007 2006): 1991.

²⁰ SIDAK, “Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents,” p.8.

32. In a recent UK case, *Unwired Planet v. Huawei*, the FRAND landscape further complicated because the Court found that there was only one correct FRAND royalty in a set of circumstances, rather than an acceptable range of FRAND royalties. Economic bargaining theory and most commentators would disagree, however²¹.
33. As an example, consider a common video compression standard called “High-Efficiency Video Coding” (HEVC or ITU H.265). This standard is used for video transmission in Ultra-High Definition (UHD), so called 4K video, on set-top boxes, computers, and mobile devices. Because of its data compression, the standard allows streaming of high-quality video with low data rates. One analysis²² estimates close to 1000 relevant patent families²³ from 75 companies for just the one standard. Three patent pools represent about 460 patent families comprising 4200 patents. About 30% of the patents overlap with the predecessor standard, ITU H.264, from which this standard developed. This example illustrates how complex the patent landscape of a single standard can be.

B. The FRAND Defense

34. We have seen that the SEP owner’s view of reasonable royalties may differ substantially from the implementer’s view. In these cases, the implementer often raises the FRAND defense: That the SEP owner did not make him a licensing offer on FRAND terms. There are two legal bases for the FRAND defense, on contract law or competition law grounds, both depending on the FRAND declaration.
35. In the FRAND declaration, the patent owner declares to the SSO that he is prepared to license his SEP to third parties on FRAND terms. Under the contractual theory, the FRAND declaration is interpreted as a contract for the benefit of a third party, the implementer. The implementer thus counterclaims

²¹ See e.g. BRUNNER, “‘FRAND’-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive”; J. GREGORY SIDAK, “Is a FRAND Royalty a Point or a Range?,” SSRN Electronic Journal, 2017, <https://doi.org/10.2139/ssrn.3179151>; *Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH*, No. C-170/13 (CJEU July 16, 2015).

²² “High Efficiency Video Coding: How the Video Ecosystem Is Evolving,” IPWatchdog.Com | Patents & Patent Law (blog), July 11, 2018, <https://www.ipwatchdog.com/2018/07/11/high-efficiency-video-coding-video-ecosystem-evolving/id=99094/>.

²³ A patent family is the set of patents associated with one invention. The set of patents may contain e.g. patents from different countries.

breach of contract because he did not receive a FRAND licensing offer and petitions the court to estop the SEP owner from asserting patent infringement.

36. Under the competition law approach, the implementer defends that the SEP owner abused a dominant market position because he did not make him a FRAND offer and should therefore be enjoined from asserting patent infringement.
37. Let us now consider both approaches and offer some remarks.

C. The FRAND Declaration as a Third Party Beneficiary Contract

38. Many jurisdictions, with the notable exception of Germany, recognize a FRAND declaration as a contract for the benefit of a third party, the implementer. The SEP owner's duty to make a FRAND offer creates a right of acceptance for the implementer, but nothing more. In the author's opinion, the FRAND declaration does not impose a duty to make multiple offers or multi-round negotiations between the SEP owner and the implementer.
39. Whether a court finds an enforceable contract in the FRAND declaration depends on the applicable law. This is generally considered to be the law of the seat of the SSO because the declarations rarely contain an express choice of law²⁴. For example, for the ITU, this is Switzerland, ETSI France²⁵, and the IEEE New York, USA. Note, however, that this concerns only the declaration, not the substantive law related to the patent issues where the law of the registration country applies.²⁶
40. Most jurisdictions, except Germany, recognize a FRAND declaration as a contract for the benefit of a third party.²⁷ But which rights and duties does the FRAND declaration create?

²⁴ BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.5.

²⁵ Apple, Inc. v. Motorola Mobility, Inc., 886 F. Supp. 2d 1061 (Dist. Court 2012).

²⁶ *lex loci protectionis*, see fn.6 referring to Rome II JACQUES DE WERRA, "Can Alternative Dispute Resolution Mechanisms Become the Default Method for Solving International Intellectual Property Disputes?," SSRN Electronic Journal, 2012, p.41, <https://doi.org/10.2139/ssrn.2195968>.

²⁷ for Switzerland, see BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.6; for USA, applying Wisconsin law, not significantly different from NY law on this issue Apple, Inc. v. Motorola Mobility, Inc., 886 F. Supp. 2d at p.1081.

41. It makes sense to assume that the SSO and the SEP owner intended the FRAND declaration to bind them. The SSO's aim is to make the standard available, at reasonable rates, and avoid the patent holdup problem. The SEP owner wants the SSO to adopt his technology into the standard, to get a fair reward, and tap into the pool of potential licensees. Without an agreement, and leaving aside competition law for the moment, the SEP owner could ask for royalties exceeding FRAND rates, get prohibitory injunctions for some standard implementer and selectively license to others, or simply decline to grant any licenses to the SEP at all. This would frustrate the SSOs intent, and it seems fundamentally reasonable that two capable parties can contractually agree accordingly.
42. The intent of the parties and the wording of the declaration clarify that the FRAND declaration is not a license to the SEP. The ETSI and ITU declarations, for example, state that the patent owner is "... prepared to grant... licenses..." on (F)RAND terms, while the IEEE Letter of Assurance states "... will grant a license...". As we have seen, determining FRAND rates is not trivial. The FRAND declaration leaves open what might be FRAND because it contains no terms or pricing. Based on indefinite terms, wording and intent, the FRAND declaration is not a SEP license, nor does it make up a valid offer for a SEP license.
43. But to grant a SEP license under the wording in the FRAND declaration, a license offer with definite terms and conditions must be made, so that an implementer can accept it. That duty falls squarely on the shoulders of the SEP owner because the standard implementer, as the third-party beneficiary, is not a party to the FRAND declaration and therefore has no duties imposed by it. Thus, the SEP owner's duty under the FRAND declaration should be to make a good faith FRAND licensing offer to an implementer. That offer should objectively manifest the SEP owner's willingness to enter into a bargain, inviting mutual assent, should the implementer accept the offer.
44. The FRAND offer from the SEP owner creates a right to accept the offer for the implementer. Because implementers have no duties under the FRAND declaration, they are free to accept or reject the offer, and cannot be forced to negotiate beyond. However, they may lose their rights as third-party beneficiaries because of these actions. Rejecting the offer, or unreasonably delaying a response to the offer, would exhaust their rights because a third-party beneficiary has no contractual claim to anything going beyond the agreement between the promisor SEP owner and the promisee SSO.²⁸

²⁸ J. Gregory Sidak, "The FRAND Contract," *SSRN Electronic Journal*, 2018, p.6, 14, <https://doi.org/10.2139/ssrn.3182770>.

Requesting better license terms without an outright rejection, would probably not exhaust the implementer's rights, though.²⁹

45. Presenting the FRAND offer to the implementer discharges the SEP owner of any further contractual obligations under the FRAND declaration. The FRAND declaration should not force the SEP owner into negotiations beyond making that FRAND offer. Specifically, the declaration does not appear to create a duty or right into multi-round negotiations or multiple offers. Of course, these are generic observations, and a detailed interpretation depends on the jurisdiction.
46. In Switzerland, while there is no jurisprudence on this exact issue, contract law suggests that the declaration does not amount to an enforceable "agreement to agree" under Art. 22 of the Code of Obligations because of indefinite terms. Instead, the declaration may give rise to an obligation to negotiate such terms in good faith.³⁰ Conversely, this also means that if the terms were definite enough, there might well be an obligation to contract for the patent owner, as opposed to negotiate only.³¹ In the USA, this is similar. The IEEE, for example, allows SEP owners to submit template contracts and royalty rates with the declaration. If those conditions were FRAND and reasonably definite, an implementer third-party beneficiary may possibly enforce those against the patent owner promisor.
47. The situation is similar in France and in the United States and requires the promisor SEP owner to enter into good faith negotiations with the third-party beneficiary implementer by making him a FRAND license offer.³²
48. The UK courts seem to prefer the contractual theory also, rather than the EU competition law approach.³³

²⁹ Sidak, p.17.

³⁰ BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.8.

³¹ BRUNNER, p.8.

³² J. GREGORY SIDAK, "The FRAND Contract," SSRN Electronic Journal, 2018, p.3,24, <https://doi.org/10.2139/ssrn.3182770>; *Unwired Planet Int'l Ltd. v. Huawei Techs. Co.*, [2017] EWHC, No. [2018] EWCA Civ 2344 (England and Wales, Ct of Appeal, Civ. 2018).

³³ See e.g. PETER PICHT, "Unwired Planet v Huawei: A Seminal SEP/FRAND Decision from the UK," *Journal of Intellectual Property Law & Practice* 12, no. 10 (October 1, 2017): 867–80, <https://doi.org/10.1093/jiplp/jpx152>; *Unwired Planet Int'l Ltd. v. Huawei Techs. Co.*, 2018 EWCA Civ 2344 - 2018, No. [2018] EWCA Civ 2344 (England and Wales, Ct of Appeal, Civ. 2018).

49. Nevertheless, and certainly contrary to the SSOs intent, it is possible to argue that the FRAND declaration between the SSO and patent owner is unenforceable.³⁴
50. German decisions reject the FRAND declaration as a contract for the benefit of a third party and see it only as a non-binding invitation to make an offer (*invitatio ad offerendum*), at least partly because they consider the FRAND declaration to restate a licensing duty that exists independently based on competition law.³⁵
51. Let's now turn our attention to the competition law approach for the FRAND defense.

D. The FRAND Defense Based on the Abuse of a Dominant Market Position

52. The other approach for the FRAND defense is the recourse to competition law. Here, the implementer claims that the patent owner of the standard-essential patent is in a dominant market position and has abused that position by not making a FRAND licensing offer to the SEP.
53. Under EU competition law Art. 102 TFEU, the SEP owner must not abuse a dominant market position. Swiss competition law is strongly influenced by EU competition law and would lead to similar results³⁶, although the Swiss courts have not yet decided any FRAND cases.
54. Whether the SEP owner's market position is dominant depends on the market definition. In the EU, that market for a SEP is the so-called input market, i.e. the market for licenses to the SEP in question.³⁷ The output market, in contrast, is the market for standardized services and product.

³⁴ SIDAK, "The FRAND Contract," p.3; BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.7.

³⁵ *"Einer Lizenzbereitschaftserklärung gegenüber einer Standardisierungsorganisation kommt nämlich lediglich die Wirkung einer invitatio ad offerendum zu, weil eine Lizenzbereitschaftserklärung in der Regel lediglich eine Lizenzierungspflicht, die ohnehin auf kartellgesetzlicher Grundlage besteht, deklariert"* LG Düsseldorf, Urteil vom 07.06.2011, No. 4b O 31/10 (Landgericht Düsseldorf July 6, 2011); BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.6; See e.g. PICT, "Unwired Planet v Huawei," p.10.

³⁶ for a detailed analysis, see BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive," p.10.

³⁷ BRUNNER, p.10.

55. Even though the EU attorney general Wathelet stated in *Huawei v. ZTE*³⁸ that he only presumes a SEP owner to be in a dominant market position, the input market definition implies a dominant position.³⁹ The SEP owner, by definition, has a 100% share of the market of his SEP. Absent any other market participants, the SEP owner's dominance follows. Some commentators correspondingly criticize this definition of the market and consider it more appropriate to look at the output market, i.e. the market of products and services implementing the standard.⁴⁰ The presumption that the SEP is dominant might not hold in Switzerland and was mostly rejected in Germany.⁴¹
56. The CJEU held in *Huawei* that an action for a prohibitory SEP injunction is abusive when the SEP owner is in a dominant position, has signed a FRAND declaration, and the implementer is willing to license under FRAND conditions, unless the SEP owner followed certain steps.⁴² These FRAND process steps are⁴³: 1) The SEP owner informs the implementer which SEP he infringes and how. 2) The implementer has to inform the SEP owner whether he is willing to enter into a FRAND license. 3) The SEP owner makes a written FRAND offer, including pricing and computation model used. 4) The implementer has to react to this offer in a timely fashion, in good faith. If he refuses the offer, he has to make a written counteroffer. 5) The implementer has to make a bank deposit if he uses the SEP technology before he concludes the license.
57. *Huawei* has raised many additional questions that particularly German courts have answered. Among these are questions such as when the FRAND process steps need to occur, what happens if the parties do not follow some steps, whether the parties need to follow the exact sequence, whether a party has to continue its steps if the other party does not perform a step, whether a FRAND offer is necessary if the implementer has not showed his willingness to license, or whether a counteroffer is necessary if the SEP owner's offer is

³⁸ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH.

³⁹ PETER GEORG PICHT, „FRAND wars 2.0“ - Rechtsprechung im Anschluss an die Huawei/ZTE-Entscheidung des EuGH (Teil 1),” n.d., p.238.

⁴⁰ PICT, p.238; BRUNNER, “FRAND’-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive,” p.10.

⁴¹ BRUNNER, “FRAND’-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive,” p.10.

⁴² BRUNNER, p.10; Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH paragraph 68 ff.

⁴³ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH paragraph 68 ff.

not FRAND, etc.⁴⁴ In the result, the competition law approach leads to quite an elaborate process.

E. Remarks on FRAND: Contractual vs. Competition Law Approach

58. The author considers the contractual approach to the FRAND defense more direct and elegant than the competition law approach, which seems a bit strained. Perhaps, the courts could reserve the competition law approach for standards dominating the output market and for which the SEP owner has not signed a FRAND declaration. That is, mostly *de facto* standards.
59. Given the purpose of creating a standard, namely to promote wide adoption and provide interoperability for a technology ecosystem, it should be well within the freedom to contract of a voluntary patent owner and the SSO to agree to not hold up the standard implementers. An implementer should be able to enforce his right to a FRAND license at any stage in the standard's life, whether the standard is dominating the (output) market or not.
60. A patent by its very definition is unique. Defining, as in the competition law approach, the relevant market as the market for that patent renders the patent market dominant, as we have seen above. In the author's opinion, this is an unjustified market construct that contradicts the principle that asserting a patent is not *per se* abusive except in exceptional circumstances.⁴⁵ In *Huawei v. ZTE*, the CJEU held that those exceptional circumstances for an SEP are a willing implementer licensee and a FRAND declaration.⁴⁶
61. Because the CJEU held that the FRAND declaration is part of the exceptional circumstances that make a SEP prohibitory injunction claim abusive, the CJEU assigned substantial legal weight to the FRAND declaration. For example, the Court stated that a third-party can rely on the FRAND

⁴⁴ For more details see BRUNNER, "'FRAND'-Obliegenheiten bei standardessentiellen Patenten aus vertrags- und kartellrechtlicher Perspektive"; FLORIAN BRUNNER, "Standardessentielle Patente und «FRAND» im Zivilprozess," sic! Zeitschrift für Immaterialgüter-, Informations- und Wettbewerbsrecht, 2019, 131–46; PICT, "„FRAND wars 2.0“ - Rechtsprechung im Anschluss an die Huawei/ZTE-Entscheidung des EuGH (Teil 1)"; PETER GEORG PICT, "„FRAND wars 2.0“ – Rechtsprechung im Anschluss an die Huawei/ZTE-Entscheidung des EuGH (Teil 2)," n.d., 10.

⁴⁵ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.61, 69.

⁴⁶ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.103(1).

statement.⁴⁷ The Court also decided that the FRAND declaration called for a new process because the *Orange Book Standard* case was based on a *de facto* standard without a FRAND declaration.⁴⁸ Indeed, the CJEU stated that in the *Huawei* dispute “everything will hinge on the manner in which Huawei fulfilled its commitment to ETSI to license the patent at issue on FRAND terms”⁴⁹. The CJEU then defined the FRAND process steps discussed above, almost entirely based on the ETSI FRAND declaration.⁵⁰

62. While a certain *conduct* leads to an abuse of a dominant market position, the CJEU uses the *content* of the FRAND declaration to define the FRAND process. Without a doubt, the CJEU assigns legal significance to the content of the FRAND declaration and at least implicitly recognizes it as an enforceable third-party beneficiary contract. The CJEU held that, if there is a FRAND declaration plus the other elements mentioned above, the SEP owner abuses his dominant position unless he complies with the FRAND steps.
63. This leads to a somewhat absurd situation for the courts in Germany: The German courts consider the FRAND declaration a non-binding invitation to make a SEP license offer, without independent legal effect. The argument, at least in part, that the FRAND declaration restates a duty to license which exists anyway due to competition law.⁵¹
64. However, the *Huawei* decision distinguishes the situation with a FRAND declaration from the *Orange Book Standard* approach and rejects to apply it. The Court defines a new process that effectively contains the FRAND declaration duties. The result is that the German courts need to use a FRAND process based on enforcing the content of the FRAND declaration while they cannot recognize the FRAND declaration as an enforceable third-party beneficiary contract. It is, at long last, quite an awkward way to enforce the FRAND declaration without explicitly saying so. Maybe the competition laws approach’s most attractive property is that it provides a unified solution

⁴⁷ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.70 ff.

⁴⁸ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.48.

⁴⁹ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.70.

⁵⁰ Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.80 ff.

⁵¹ ”Einer Lizenzbereitschaftserklärung gegenüber einer Standardisierungsorganisation kommt nämlich lediglich die Wirkung einer invitatio ad offerendum zu, weil eine Lizenzbereitschaftserklärung in der Regel lediglich eine Lizenzierungspflicht, die ohnehin auf kartellgesetzlicher Grundlage besteht, deklariert” LG Düsseldorf, Urteil vom 07.06.2011 paragraph 136.

across Europe. EU competition law is applicable throughout the EU and offers strong sanctions, while contract law is not uniform and there may be jurisdictions that do not recognize third-party beneficiary contracts, although the author is not aware of any.

65. While the CJEU in *Huawei v. ZTE* was only asked to assess the case under competition law, the Attorney General Wathelet stated:
66. *“In the light of the questions submitted by the referring court, I shall confine my observations in this Opinion to competition law ... [t]hat does not mean, however, that the matters at issue in the dispute before the referring court, which, in my view, stem largely from a lack of clarity as to what is meant by ‘FRAND terms’ and as to the requisite content of such terms, could not be adequately — if not better — resolved in the context of other branches of law or by mechanisms other than the rules of competition law.”*⁵²
67. The author can only agree.

IV. Arbitration for Standard-Essential Patent Disputes

68. Arbitration could be attractive for the complex patent disputes described here because it can be faster and more efficient, particularly when it can replace multiple litigations. For FRAND disputes, we might even consider favoring arbitration over litigation through unilateral arbitration agreements between the SEP owner and the SSOs. However, there are some caveats that we should consider when deciding whether to resolve a dispute by arbitration, especially the arbitrability of patent validity.
69. The key advantage of arbitration over litigation is the flexibility of the parties to tailor the dispute resolution to their specific needs. This may include considerations such as multi-jurisdictional claims, arbitrator expertise, speed and with it economic efficiency, cost and enforceability. Using arbitration for patent disputes is not a novel idea and there appears to be a trend towards more patent arbitration in a standard setting, sometimes even mandatory arbitration.⁵³

⁵² Huawei Technologies Co. Ltd gegen ZTE Corp und ZTE Deutschland GmbH at para.8,9.

⁵³ Domain name disputes at WIPO DE WERRA, “Can Alternative Dispute Resolution Mechanisms Become the Default Method for Solving International Intellectual Property Disputes?,” p.47; Proposal for baseball-style arbitration in SEP disputes: MARK A. LEMLEY AND CARL SHAPIRO, “A Simple Approach to Setting Reasonable

A. Unilateral Arbitration Agreements Between the Patent Owner and the SSO to Favor Arbitration?

70. In the typical scenario considered here, the patent owner wants to license to an implementer and takes legal action. One idea is to favor arbitration over litigation in the FRAND context, to resolve the dispute promptly. Because time is of the essence for industry to adopt a new standard, the SSOs and industry want SEP licensing disputes resolved quickly.
71. One approach to encourage arbitration of SEP/FRAND disputes could be a unilateral arbitration clause in the FRAND declaration between the SSO and the SEP owner. Most jurisdictions are favorable to unilateral arbitration clauses, at least between sophisticated commercial parties. There, the risks of very unequal bargaining power and unconscionability are limited.⁵⁴ In the FRAND declaration, the SEP owner would confirm her willingness to arbitrate a FRAND dispute with an implementer. He could agree or reject arbitration because a unilateral arbitration clause does not bind him.⁵⁵ In the latter case, the SEP owner is free to enforce her patents at a state court. The arbitration clause, in other words, would work like the contractual FRAND

Royalties for Standard-Essential Patents,” SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, November 5, 2013), <https://doi.org/10.2139/ssrn.2243026>; against baseball-style arbitration SIDAK, “Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents”; Unitary Patent Court: JACQUES DE WERRA, “New Developments of IP Arbitration and Mediation in Europe: The Patent Mediation and Arbitration Center Instituted by the Agreement on a Unified Patent Court,” *Arbitragem e Mediação Em Materia de Propriedade Intelectual*, n.d., 17–35; generally: PETER G. PICT AND GASPARE T. LODERER, “Arbitration in SEP/FRAND Disputes: Overview and Core Issues,” *Journal of International Arbitration* 36, no. 5 (2019): 575–94; PIERRE LAROCHE, JORGE PADILLA, AND RICHARD TAFFET, “Settling FRAND Disputes: Is Mandatory Arbitration a Reasonable and Non-Discriminatory Alternative?,” SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, October 30, 2013), <https://doi.org/10.2139/ssrn.2346892>; WEI-HUA WU, “International Arbitration of Patent Disputes, 10 J. Marshall Rev. Intell. Prop. L. 384 (2011),” n.d., 28; PETER GEORG PICT, “Schiedsverfahren in SEP/FRAND-Streitigkeiten – Überblick und Kernprobleme,” n.d., 39; THERESE JANSSON, “Arbitrability Regarding Patent Law - An International Study,” *Juridisk Publikation* 1 (2019): 49–76; M A SMITH ET AL., “Arbitration Of Patent Infringement And Validity Issues Worldwide” 19, no. 2 (n.d.): 59.

⁵⁴ DANIEL GIRSBERGER AND NATHALIE VOSER, *International Arbitration: Comparative and Swiss Perspectives*, Third Edition (Baden-Baden: Nomos, 2016), p.70.

⁵⁵ PETER G. PICT AND LENNART CHROBAK, “Einseitige Schiedsklauseln in Der Schweizer Schiedsrechtsrevision - Teil I,” *Schweizerische Juristen-Zeitung*, no. 114 (2018): p.211.

mechanism because the SEP owner must propose SEP arbitration to the implementer.

72. The SEP owner would only be obliged to propose and potentially accept arbitration for the SEPs though. He would be free to assert the rest of the portfolio in state court litigation, if he felt so inclined. The principal advantage of the arbitration proceedings, however, is flexibility. The parties can mutually agree how to resolve the dispute most efficiently. For example, the SEP owner may target a global portfolio license. The parties then could agree on a sampling of patents to arbitrate, decide on a geographical scope, limit issues, etc. Most times, this may be preferable over a long drawn-out multi-jurisdictional battle for both parties.

B. Arbitrability and Enforcement of Patent Disputes

73. Patent disputes in the standardization context center on the issues of patent validity, infringement, standard-essentiality and the FRAND defense. When considering arbitration, the questions is whether these aspects are arbitrable⁵⁶ and enforceable. Arbitrability depends on the applicable *lex arbitri* at the seat of the arbitration⁵⁷ and is limited primarily by public policy considerations.⁵⁸ The other issue is whether an otherwise valid award on the subject matter can be recognized and enforced under the New York Convention. Under Art. V(2)(a), a state may refuse to recognize and enforce an award if the subject matter is not arbitrable⁵⁹ because the state court has exclusive jurisdiction⁶⁰. Or, under Art. V(2)(b), the state may refuse to enforce because the award is contrary to public policy.⁶¹

⁵⁶ Assuming a valid arbitration agreement with party consent and the subject matter falling within the scope of the arbitration agreement.

⁵⁷ GIRSBERGER AND VOSER, *International Arbitration*, 7.

⁵⁸ GIRSBERGER AND VOSER, 77.

⁵⁹ GIRSBERGER AND VOSER, 105.

⁶⁰ GIRSBERGER AND VOSER, 295.

⁶¹ GIRSBERGER AND VOSER, 447.

1. Patent Infringement, Standard-Essentiality, and the FRAND Defense

74. Patent infringement and standard-essentiality are questions of fact rather than law and no public policy objections are obvious, except maybe exclusive state jurisdiction on IP matters. The author is not aware of any jurisdiction that has declared patent disputes fundamentally non-arbitrable.
75. There also appears no obvious bar to a FRAND defense based on the contractual theory. The FRAND defense based on competition law, however, touches upon public law. Most states consider FRAND disputes arbitrable, though. This is true for the EU⁶², the US⁶³ and Switzerland.⁶⁴ Various institutions are also favorable towards arbitration for FRAND disputes, and sometimes even mandate them. Among them the EU Commission⁶⁵ and the FTC.⁶⁶ WIPO has published FRAND arbitration guidelines developed together with ETSI.⁶⁷ Some bodies have published materials or even included ADR provisions into their standard declarations.⁶⁸
76. Regarding enforcement of FRAND defense arbitral awards, the CJEU has proclaimed competition law a part of public law in the *Eco Swiss* case.⁶⁹ An

⁶² PICT AND LODERER, "Arbitration in SEP/FRAND Disputes: Overview and Core Issues," p.585; PICT, "Schiedsverfahren in SEP/FRAND-Streitigkeiten – Überblick und Kernprobleme," p.18.

⁶³ WU, "International Arbitration of Patent Disputes, 10 J. Marshall Rev. Intell. Prop. L. 384 (2011)," p.387.

⁶⁴ GIRSBERGER AND VOSER, International Arbitration, 106.

⁶⁵ PICT, "Schiedsverfahren in SEP/FRAND-Streitigkeiten – Überblick und Kernprobleme," p.8.

⁶⁶ PICT, p.9.

⁶⁷ IGNACIO DE CASTRO, New Developments in International Commercial Arbitration 2014, Arbitration of Intellectual Property and Technology Disputes – Recent Developments, Cemaj - Centre de Recherche Sur Les Modes Amiables et Juridictionnels de Gestion Des Conflits (Schulthess Juristische median AG, 2014), p.55.

⁶⁸ ITU: R.N.A BEKKERS ET AL., "Understanding Patents, Competition & Standardization in an Interconnected World," 2014, https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf; Digital Video Broadcast (DVB) mandating arbitration in some cases "DVB Policies & Procedures," DVB (blog), accessed April 20, 2020, <https://dvb.org/about/policies-procedures/>; Open Mobile Alliance: "Open Mobile Alliance IPR Policy," n.d., <https://www.omaspecworks.org/>.

⁶⁹ DAMIEN GERADIN, "Public Policy and Breach of Competition Law in International Arbitration: A Competition Law Practitioner's Viewpoint," SSRN Electronic Journal, 2016, p.10, <https://doi.org/10.2139/ssrn.2786370>.

award could therefore be challenged on public policy grounds for failing to comply with EU competition law.⁷⁰ Switzerland, in contrast, has held that competition laws varies too much between different jurisdictions to consider them fundamental legal or moral principles in an international public policy sense.⁷¹ Thus, an award would not be set aside in Switzerland for failing to comply with some competition law.

2. Patent Validity

77. The prickliest patent issue to arbitrate is patent validity. Some jurisdictions hold that patent validity is part of public law because a patent is a state-granted right. The right affects the public as an involuntary party to the arbitration and is thus not objectively arbitrable on public policy grounds. In other cases, the state strictly reserves jurisdiction on patent validity and arbitration may not be used to circumvent it.⁷²
78. But, even if patent validity is not arbitrable, questionable patent validity will affect the arbitral tribunal. The tribunal would probably restrict the patent's scope of protection in view of close prior art. A narrow interpretation of the patent claims could find the patent not standard-essential or not infringed. It is conceivable that the result would be similar but on different grounds.
79. However, why an arbitral tribunal invalidating a patent would violate any fundamental legal or moral principles is unsure beyond invoking an abstract public policy exception. First, if the tribunal invalidates the patent inter partes, the patent remains valid for everyone but the arbitrating parties, and there is no direct effect on the public. Second, if the tribunal invalidates the patent erga omnes, the public enjoys more competition because a patent disappears. Enforcing an invalid patent, on the other hand, raises competition law and public policy concerns for patent misuse. Finally, the patent owner may prefer arbitrating validity inter partes rather than litigating validity erga omnes in state court. For the implementer, presumably, it does not matter.
80. The patent owner can voluntarily limit and revoke a patent and transfer his economic rights by licensing or selling the patent. Why should the state object if he effectively assigns these rights to the arbitral tribunal for dispute resolution? The issue remains controversial and different jurisdictions handle the situation differently.

⁷⁰ GIRSBERGER AND VOSER, *International Arbitration*, 107.

⁷¹ GIRSBERGER AND VOSER, 107.

⁷² GIRSBERGER AND VOSER, p.295.

81. Switzerland allows arbitrating patent validity *erga omnes*.⁷³ In the US, patent validity is expressly arbitrable *inter partes* by statute, 35. U.S.C. 294(a).⁷⁴ In Germany, where validity and infringement are decided by different courts, patent validity does not seem arbitrable and exclusive jurisdiction in a strict sense rests with the Bundespatentgericht.⁷⁵ France does not allow arbitrating validity either.⁷⁶

V. Conclusion

82. We have shown how patents and standards interact and the issues that may arise in typical patent disputes. Because a few precious patents determine the value of a patent portfolio, we suggest that "sampling" may efficiently resolve a dispute over a portfolio license.
83. Patent disputes may raise public law and public policy issues that can affect arbitrability and the enforcement of awards. The trickiest issue is patent validity. We find that patent infringement, standard-essentiality and the FRAND defense are less problematic. Nonetheless, the FRAND defense based on competition law may be an issue of public law and thus be under more scrutiny when it is time to enforce the award. We contrast the competition law approach to the contractual approach and found it a bit strained.

⁷³ There appear to be no court cases but based on WU, "International Arbitration of Patent Disputes, 10 J. Marshall Rev. Intell. Prop. L. 384 (2011)," 391; ROBERT BRINER, "The Arbitrability of Intellectual Property Disputes with Particular Emphasis on the Situation in Switzerland," Worldwide Forum on the Arbitration of Intellectual Property Disputes, March 3, 1994, <https://www.wipo.int/amc/en/events/conferences/1994/briner.html>; GERHARD FROTZ ET AL., "Schweizerische Mitteilungen über Gewerblichen Rechtsschutz und Urheberrecht," 1976, p.38.

⁷⁴ see also LAROUCHE, PADILLA, AND TAFFET, "Settling FRAND Disputes," 31; WU, "International Arbitration of Patent Disputes, 10 J. Marshall Rev. Intell. Prop. L. 384 (2011)," 391; JANSSON, "Arbitrability Regarding Patent Law - An International Study," p.65.

⁷⁵ JANSSON, "Arbitrability Regarding Patent Law - An International Study," p.63; LAURENT MANDERIEUX AND YANE SVETIEV, "Patent arbitration: a European comparative analysis," n.d., 181; SMITH ET AL., "Arbitration Of Patent Infringement And Validity Issues Worldwide," p.333.

⁷⁶ BRINER, "The Arbitrability of Intellectual Property Disputes with Particular Emphasis on the Situation in Switzerland."

84. For standard-essential patents, we consider unilateral arbitration agreements as one way to favor arbitration for FRAND disputes, which could lead to more efficient dispute resolution.
85. Arbitration can be suitable to patent disputes, but there are some caveats that should not be neglected when drafting arbitration clauses, or when deciding between litigation and arbitration.

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