

Chapter 5

All Good Things Mustn't Come to an End: Reigniting the Debate on Patent Policy and Standard Setting



Ashish Bharadwaj, Manveen Singh and Srajan Jain

1 Introduction

The mobile evolution has transformed into a digital revolution. People around the world, along with hundreds of objects surrounding them, will be connected to networks as well as to one another, through significantly faster, more robust and secure wireless communications. A range of industrial sectors will ride on this transformative digital wave, from automotive, healthcare and energy, to urban infrastructure, agriculture and entertainment. To facilitate this inevitable change, reliable networks running on technology standards enabling them, will be needed. This brings to center stage the critical role of the patent system that incentivizes technology innovation, and the antitrust laws that ensure that market competition facilitating innovation is safeguarded. Therefore, compatibility and standardization are important for most internet-enabled and internet technology products and ser-

A. Bharadwaj · M. Singh
Jindal Global Law School, OP Jindal Global University, Sonipat, India
e-mail: abharadwaj@jgu.edu.in

M. Singh
e-mail: msingh@jgu.edu.in

A. Bharadwaj · M. Singh · S. Jain (✉)
JIRICO, OP Jindal Global University, Sonipat, India
e-mail: srajan.jain@jgu.edu.in

vices which exhibit network effects. Often, the successful diffusion of these products is based on the emergence of a single standard.¹ Therefore, network externalities can be termed as guiding force behind the pathologies in standard setting.² On a fundamental level, standards are sets of technical descriptions and protocols of product features that enable interoperability.³

Interoperability is an important requirement for many products embedded with advanced technologies, to operate seamlessly across various users.⁴ The last two decades have witnessed the exponential increase in the number of communication devices around the world, including smartphones, which has led to increase in the value of devices to each user.⁵ Over the past two decades, consensus-driven associations have been developing interoperability standards, which work in partnership within the standard setting organization (SSO).⁶ It is no secret that, these SSOs have played a key role in changing the landscape of the information and technology industry. They are tasked with the responsibility of fostering a regime of rapid technological innovation by balancing the interests of their members. Their membership comprising of standard essential patent (SEP) holders or licensors on one hand and implementers or licensees on the other. However, the composition of all the participants can vary greatly in size. While the SEP holders are involved in research and development (R&D), and look to maximize their earnings from licensing out their SEPs, the implementers look to seek licenses from SEP holders on terms that are fair, reasonable, and non-discriminatory (FRAND), in order to use the patented technology in the manufacturing of standard-compliant end-use products. However, at least in theory, an SEP holder can always engage in opportunistic behavior in order to charge extra royalty from the implementor for licensing the standard than the real worth of the standard at the time of creation of the standard by the SSO.⁷ SSOs, such as the Institute of Electrical and Electronic Engineers Standards Association (IEEE-SA) aid in facilitating the interoperability of systems.⁸ Published SSOs standards outline technical requirements that

¹Nicholas Economides and Lawrence White, 'One-Way Networks, Two-Way Networks, Compatibility, and Public Policy' in David Gabel and David F. Weiman (eds), *Opening Networks To Competition: The Regulation and Pricing of Access* (Springer 1998).

²ibid 14–15.

³ibid 5.

⁴Ashish Bharadwaj and Manveen Singh, 'A Single Spark can start A Prairie Fire: Implications of the 2015 Amendments to IEEE-SA's Patent Policy' (2018) 46(4) *Capital University Law Review* (forthcoming).

⁵Max Miceli, 'Smartphones Are Taking Over the US' (*US News & World Republic*, 30 October 2015) <<https://www.usnews.com/news/blogs/data-mine/2015/10/30/smartphones-are-taking-over-the-us>> accessed 24 March 2018.

⁶ICF, 'Standards and Interoperability In Electric Distribution Systems' (2016) US Department of Energy 7.

⁷Mark Lemley and Carl Shapiro, 'Patent Hold-up and Royalty Stacking' (2007) 85 *Texas Law Review* 1992.

⁸IEEE 2030-2011 (American National Standards Institute 2013); ANSI/IEEE 1420.1-1995 (American National Standards Institute 2002); IEEE 1849-2016 (American National Standards Institute 2018); The quantity of standards set forth just by the IEEE are extensive.

guarantee interoperability across and within devices that utilize the standardized technologies.⁹ The success of a standard's implementation in the future is dependent upon the SSOs inclination to disclose and license their SEPs. In order to minimize the potential *ex-post* hold-up situation, the SSOs place themselves as a fundamental part of the standard setting process.¹⁰ Therefore, the patent holders adequately disclose the licensing of their SEPs on FRAND terms.¹¹ The patent holders follow the patent policies developed by the SSO which require the participants to disclose all their SEPs during the process of standard development.¹² The policies are based on the operating performance and the impact in the market for standards, technologies, and products.¹³ According to the policy for licensing, the patent holders are required to grant licenses of their SEPs to implementers on FRAND terms.¹⁴ These commitments guarantee that implementers are able to obtain SEP licenses to sell their standards-compliant products under SEPs.¹⁵

The SSOs formed in the US are best considered 'quasi-formal' groups that are typically large, international organizations that 'share many of the characteristics of formally-recognized groups.'¹⁶ Their significance is to enable virtually all products on which people depend in modern society to interoperate with one another and to consequently encourage informed consumer choice, higher efficiency, and further innovation. This takes the shape of essential products like communication equipment, telecommunication devices, electrical mechanisms and other mechanical systems to interoperate. SSOs, such as the IEEE-SA, the European Telecommunications Standards Institute (ETSI), and the International Telecommunications Union (ITU), facilitate this by developing and managing

⁹Patrick Curran, 'Standard-setting Organizations: Patents, Price Fixing, and Per Se Legality' (2003) 70 University of Chicago Law Review 983; 'Technical standards, and the SSOs that develop them, are a common and essential element of the modern economy. As early as 1987, more than four hundred standard-setting groups had developed approximately thirty thousand voluntary standards. Because standard setting requires particular expertise in specialized product areas, new SSOs are constantly forming to meet the needs of niche markets.'

¹⁰Josh Lerner, 'Patent Disclosures and Standard-Setting' (2016) 2 National Bureau of Economic Research, Working Paper No. w22768 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2851539>.

¹¹*ibid.*

¹²Joseph Farrell, 'Standard Setting, Patents, and Hold-up' (2007) 74 Antitrust Law Journal 603.

¹³Neil Gandai and Pierre Regibeau, 'Standard Setting Organizations' in Panagiotis Delimatsis (ed), *The Law, Economics and Politics of International Standardization* (Cambridge University Press 2015) 394–395.

¹⁴*ibid* 609.

¹⁵Jorge Contreras, 'National Disparities and Standards Essential Patents: Considerations for India' in Ashish Bharadwaj, Vishwas H. Devaiah and Indranath Gupta (eds) *Complications and Quandaries In The ICT Sector* (ebook, Springer 2018) 1, 5 <https://link.springer.com/chapter/10.1007/978-981-10-6011-3_1#citeas>.

¹⁶Jorge Contreras, 'Technical Standards, Standards-setting Organizations and Intellectual Property: A Survey of the Literature (with an Emphasis on Empirical Approaches)' in Peter S. Menell & David Schwartz (eds) *Research Handbooks on the Economics of Intellectual Property Law: Analytical Methods* (Edward Elgar 2017) 3 <<https://ssrn.com/abstract=2900540>>.

technical standards, which are essentially technical requirements for products implanted with patented inventions.¹⁷ While standards themselves are not patentable, standard compliant products i.e. products manufactured in accordance with provided standards, ‘generally satisfy the statutory requirements for patent protection.’¹⁸ The overarching objective of standards bodies is to ensure availability of standardized technologies to any implementer under licensing terms that vary across standards and standards bodies.

This chapter attempts to explain the details of amendments to the patent policy of IEEE-SA implemented in early 2015 in order to analyze the impact of these amendments on incentives for innovation and dissemination of innovation in essential technologies that are enabled by a well-functioning SSO. Broadly, the policy changes redefined the prevailing meaning and terms of how SEP licensing will be carried out. This includes the obligation set by IEEE that an SEP holder has to accept in the form of a Letter of Assurance (LoA), a promise to license its essential patents on FRAND terms to any implementer of a standard administered by IEEE.¹⁹ Part one shall begin with a brief introduction to standard setting, followed by an explanation to importance of standard setting for the Information and Communications Technology (ICT) industry in part two. Part three discusses the WiFi standard and the developments that led to the IEEE-SA’s policy changes. Part four shall discuss the changes introduced by the 2015 policy, while placing emphasis on the core issues of royalty rates, injunctive relief, and reciprocal licensing, followed by the reactions to the revised policy from various stakeholders. Part five elucidates on the implications of the 2015 amendments, followed by the shift in US antitrust enforcement *vis-à-vis* SSO IPR policy in part six. Finally, part seven of the chapter presents the conclusion to the chapter.

2 Importance of Standards Setting

Standardization is set through two main mechanisms: the explicit co-ordination of product designs around generally agreed technological measurements, and the *de facto* market dominance of a particular technology.²⁰ Standards in technology has various purposes, ‘including reducing product variety, maintaining product quality and performance, measurement, codifying knowledge, assuring compatibility, articulating a vision of the industry, assuring health and safety, and controlling

¹⁷ibid; ‘About ETSI’ (*ETSI*) <<http://www.etsi.org/about>>; ‘About International Telecommunication Union’ (*ITU*) <<https://www.itu.int/en/about/Pages/default.aspx>>.

¹⁸Contreras (n 16) 8.

¹⁹Art MacCord, ‘Standard Essential Patents: The IEEE Approach’ *IEEE Power Electronics Magazine* (September 2015) 10; the patent holder can alternatively circumvent by declining to submit an LoA or submitting a negative LoA expressing their noncommitment to license SEPs.

²⁰Justus Baron and Daniel Spulber, ‘Technology Standards and Standards Organizations: Introduction to the Searle Centre Database’ (2015) 3 Northwestern Law & Economic Research Paper No. 17-16 <http://www.law.northwestern.edu/research-faculty/searlecenter/innovacioneconomics/documents/Baron_Spulber_Searle%20Center_Database.pdf>.

environmental quality.²¹ In order to witness the success of standards, implementers must have access to patented technologies in which they receive returns on their investments. Patent holders deserve a market reward, without which they are unlikely to further invest in future innovation and future standards setting.

There are two types of patents in standardization- minor or non-essential patents, and essential patents. The minor or non-essential patents relates to the technology, for which an alternative exist.²² On the other hand, it is not possible to bypass the essential patent because they require the operation of a standard in order to function.²³ Much like patents, there are two types of disclosures: generic and specific. The former relates to cost containment and therefore the need for thorough patent search is avoided.²⁴ Whereas, the latter i.e. specific disclosures are required to disclose all the relevant Intellectual Property (IP) because they invite concerns about antitrust claims.²⁵ ‘If the firm neglects to include all IP that could be relevant, even if the omission was unintentional, the firm may be vulnerable to antitrust claims if it seeks to enforce its patent portfolio.’²⁶ Unlike the case for specific disclosures, generic disclosures guarantee ‘that all relevant patents will be available on FRAND terms.’²⁷ The challenge lies with valuing the patented technologies. Scholars have argued that government intervention is required on the grounds that clarity is required with respect to the meaning of FRAND.²⁸ There is a need for government intervention through policy recommendations.²⁹ In order to improve the standards setting process, transparency should be made viable by either the standards developing organizations (SDOs) or the regulators. Until a transparent system is in place, the implementers may continue to face challenges in identifying the parties from whom they must seek the SEP.³⁰

The process of licensing all the patents going into a standard is remarkably complex. The main issue in the context of standards setting is that of collective adoption defects or collective action. Theoretically, adoption of products which has

²¹ibid 1.

²²Lerner (n 10) 8.

²³ibid.

²⁴ibid 6.

²⁵ibid.

²⁶ibid.

²⁷ibid 6–7.

²⁸David Teece and Edward Sherry, ‘The IEEE’s New IPR Policy: Did the IEEE Shoot Itself in the Foot and Harm Innovation?’ (2016) Tusher Center for the Management of Intellectual Capital Working Paper Series No. 13, 6. <<http://businessinnovation.berkeley.edu/wp-content/uploads/2014/07/Tusher-Center-Working-Paper-No.-13.pdf>>.

²⁹European Commission, ‘Communication from the Commission on Standards Essential Patents for a European digitalised economy’ COM (2017) 712 final <https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-1906931_en>.

³⁰Kirti Gupta and others, ‘Highlights and Economic Analysis’ (IP Leadership, Brussels, 2017) <<https://www.competitionpolicyinternational.com/wp-content/uploads/2017/11/CPI-Gupta-Wong-Ervin-Coniglio-Naegele.pdf>>.

interoperability issues are prone to the collective action problems such as excess inertia, where a prevailing standard which requires to be displaced is not displaced because of user commitments and path dependency. Further, excess momentum, which takes place when an old standard is not sustained or maintained due to other alternatives also hinders the adoption of products which exhibit network externalities. These collective action issues, in the existence of network externalities, are mainly the result of spillovers across users that are not essentially internalized correctly. The collective interest of the standards implementers gives way to the private interest of the SEP holders and there is a potential likelihood of the latter being able to exploit its position to extract more favorable rate of royalties *ex-post*, due to the vagueness of FRAND terms. This phenomenon is commonly referred to as ‘patent hold-up’ and has led to calls for a more precise definition of FRAND in the IPR policies of SSOs.

Most SSOs require their members to license patents essential to the implementation of the standard, i.e., the SEPs, on FRAND terms. The problems of potential anticompetitive harm are addressed by FRAND commitments.³¹ These commitments reflect an *ex-ante* competitive commitment by the SEP holder to the implementer of the standard.³² This gives SEP holders the ability to engage in ‘hold-up’ and *ex-post* market power.³³ Shapiro has said that ‘[t]he need to navigate the patent thicket and hold-up is especially pronounced in industries such as telecommunications and computing in which formal standard setting is a core part of bringing new technologies to market.’³⁴ Therefore, once the technology involving patents is locked into a standard and investments towards the development of standard compliant products have been made, working around the technology, or switching over to an alternative may become difficult for the technology implementers, leading to an increase in the bargaining power of the SEP holders. However, this area of contention has been the theory and empirical evidence of hold-up are at odds with each other, due to there being almost no empirical evidence of hold-up, since the very inception of the term in the context of standardization. Claims that SEP holders abuse their market position has been found to lack empirical rigor, which fails to establish patent hold-up as an institutional practice that needs a regulatory correction. Recent scholarly work, including research done by Stephen Haber, Alexander Galetovic and Ross Levine suggests that the concept of patent hold-up is based on an incorrect or fallacious understanding of the

³¹Janusz Ordover and Allan Shampine, ‘Implementing the FRAND Commitment’ (2014) 14(1) Antitrust Source 1 <https://www.americanbar.org/content/dam/aba/publishing/antitrust_source/oct14_full_source.authcheckdam.pdf>.

³²*ibid.*

³³*ibid.*

³⁴Carl Shapiro, ‘Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting’ (2001) 1 Innovation Policy and the Economy 119.

underlying economic principles in the domain of SEP markets.³⁵ The stakeholders around the world have failed to point out to any solid evidence of market failure and instead, there has been a tendency to draw conclusions based on merely few examples of abuse to support broad regulations with no or little attention given to the potential adverse impacts.³⁶ When implementers fail to undertake investment in R&D of new technologies or make commercial use of the existing technology without proper licenses, the entire ecosystem of innovation and technological progress comes under stress. An excessive scrutiny of the actions of SEP holders in the past few years has resulted in the imposition of unilateral good faith obligations on the SEP holders, while the implementers enjoy lower liability to comply with FRAND terms in such patent licensing contracts.

However, there exists concerns that specific SEP holders may look to prohibit rivals from pertinent downstream markets by either imposing discriminatory terms or declining to license the IP which is important for the practice of the standard.³⁷ Further, it is asserted that few SEP holders are likely to abuse their additionally gained market power by including their IP in the standard to charge inordinate prices.³⁸ The last two decades has witnessed a substantial increase in the number of patents covering standardized technologies which has led to alleged threats of stacking and patent hold-up and thus a sequence of policy measures have been proposed to address these issues.³⁹ Therefore, one would be led into believing that bargaining power is concentrated in the hands of technology developers, with none lying with the technology implementers. However, there is also a possibility of opportunistic conduct on behalf of technology implementers in the form of ‘reverse hold-up’ or ‘hold-out’. ‘Reverse hold-up’ or ‘hold-out’ situations arise on the refusal of technology implementers to pay royalties to SEP holders at a reasonable rate, after the standard has been set and significant R&D costs have been incurred by the SEP holders. Since it is obligatory on the part of licensors to charge royalties based on FRAND terms, even on successful litigation by the SEP holders, the maximum royalties recovered from licensees are, what they would have paid to the licensors in the first place, had they not indulged in hold-out. In such a scenario, one would like to believe that there is a significant incentive for technology implementers to hold-out and refuse to pay royalties to the SEP holders. In order to get

³⁵Alexander Galetovic and Stephen Haber, ‘The Fallacies of Patent- Hold-up Theory’ (2017) 13 (1) *Journal of Competition Law & Economics* 1; Alexander Galetovic, Stephen Haber and Ross Levine, ‘An Empirical Examination of Patent Hold-up’ (2015) 11(3) *Journal of Competition Law & Economics* 549.

³⁶Anne Layne-Farrar, ‘Patent Hold-up and Royalty Stacking Theory and Evidence: Where Do We Stand After 15 Years of History?’ (2014) OECD DAF/COMP/WD (2014) 84.

³⁷Roberto Grasso, ‘Selected Issues in SEP Licensing in Europe: The Antitrust Perspective’ in Ashish Bharadwaj, Vishwas H. Devaiah and Indranath Gupta (eds), *Complications and Quandaries In The ICT Sector* (ebook, Springer 2018) 79–81 <https://link.springer.com/chapter/10.1007/978-981-10-6011-3_1#citeas>.

³⁸ibid.

³⁹Contreras (n 16) 5.

returns on its investment, the SEP holder will either have to litigate to obtain any royalties or simply give up on the royalties and let the implementer freeload on their SEPs. Such a behavior on the part of implementers has been duly recognized by antitrust agencies globally.⁴⁰ The issue lies in there being no definite definition of FRAND, as SSOs have disclaimed their role in interpreting, adjudicating or establishing boundaries of FRAND licensing terms.⁴¹ This lack of conviction has led to recent litigation over FRAND commitments and thus it has contributed to leaving the details of licensing arrangements over to bilateral negotiations among the potential licensees and patent holders.⁴² In order to successfully implement the standard, the implementers are required to have access to patented technologies for which they receive returns on their investments. The patent holders who have invested in the development of the IP deserve a market reward, without which they are unlikely to further invest, and contribute innovative technologies to future standard developing process.

3 IEEE-SA 2015 IPR Policy Change and the WiFi Standard

3.1 Importance of 802.11 (The WiFi Standard)

A considerable number of standards for wireless telecommunications were developed under coordination of the IEEE-SA platform.⁴³ The set of specifications for WiFi chipset that enables interoperability of electronics connected via wireless network can also be referred as IEEE 802.11 WLAN standard.⁴⁴ IEEE-SA Standard 802.11 is the main WiFi standard that has a dedicated long list of companies that have vowed their patents to be utilized in the development and utilization of the standard.⁴⁵ The procedure of asking for guarantees from SEP holders and

⁴⁰Richard Epstein and Kavyan Noroozi, 'Why Incentives for 'Patent Hold-out' Threaten to Dismantle FRAND and Why it Matters' (2017) Berkeley Technology Law Journal.

⁴¹Jorge Contreras, 'A Brief History of FRAND: Analysing Current Debates in Standard Setting and Antitrust Through a Historical Lens' (2015) 80 Antitrust Law Journal 39.

⁴²ibid.

⁴³Nicolo Zingales and Olia Kanevskaia, 'The IEEE-SA patent policy update under the lens of EU competition law' (2016) 12(2-3) European Competition Journal 195.

⁴⁴IEEE 802.11tm Wireless Local Area Networks The Working Group for WLAN Standards <<http://www.ieee802.org/11/>>.

⁴⁵'Response of Cisco Sys., Hewlett-Packard Co., Int'l Bus. Machs. Corp., & Research in Motion Ltd. to FTC Request for Comment on Standard-Setting Issues' (*Federal Trade Commission*, 1 August 2011) <https://www.ftc.gov/sites/default/files/documents/public_comments/request-comments-and-announcement-workshop-standard-setting-issues-project-no.p111204-00035%20A0/00035-80135.pdf>.

standard's subsequent upgrades are detailed on IEEE-SA's website.⁴⁶ The written guarantee given by each SEP holder, called a Letter of Assurance (LoA), enumerates the terms on which the patent is committed to the SSO.⁴⁷ Figure 1 (Total number of individual companies making declarations to IEEE for 802.11 WiFi Standard) depicting the number of companies that have pledged their patents to IEEE for the development of 802.11 WiFi standard. The graph indicates that there is a substantial rise in both negative LoAs and in missing LoAs where the IEEE did not receive an LoA in response. There is an 83% decline in the net average supply rate of nonduplicate LoAs for the IEEE 802.11 k and h standards.⁴⁸

The IEEE-SA within its regulatory framework develops a set of rules that ensures standard-setting activity is guided by minimum procedural safeguard.⁴⁹ The IEEE-SA standards development stage which includes the proposal to standardize, approval of a standard, defining the technical conditions of the standard etc. are guided by openness, due process, balance and right of appeal.⁵⁰

However, a substantial number of IEEE-SA members who had pledged their patented technology for the development of high value standards raised disapprovals to the substance of the proposed amendments and expressed their objections for the manner in which the process of forming the new policy took place.⁵¹ This strong opposition came from key patented technology developers such as Qualcomm, Nokia, Ericsson, GE, IBM etc. These key patent developers contributed an aggregate of 45% of all IEEE declared SEPs in 2007–2013 and further contributed an aggregate of 36% of all IEEE LoA during 2007–2013.⁵² The 'Other' companies accounted for about 64% of rest of the SEPs. The graphical representation of fraction of IEEE LoAs contributed in 2007–2013 has been produced

⁴⁶'Submitting a Project Request' (*IEEE-SA*) <<http://standards.ieee.org/develop/par.html>>.

⁴⁷'Sample Letter of Assurance for Essential Patent Claims' (*IEEE-SA*) <<https://development.standards.ieee.org/myproject/Public/mytools/mob/loa.pdf>>.

⁴⁸ibid.

⁴⁹Zingales (n 43).

⁵⁰Standards Board Bylaws, art 2.1, 5.3.3, 'IEEE-SA Standards Board Operations Manual' (*IEEE-SA*, December 2015) <http://standards.ieee.org/develop/policies/opman/sb_om.pdf>.

⁵¹'Email from Qualcomm, Nokia, NSN, & Blackberry to the Members of the SASB' (Email) (*IEEE*, 9 June 2014) <<http://grouper.ieee.org/groups/pp-dialog/email/msg00287.html>>; (describing that the deliberations of the Patent Committee Ad Hoc were not open to non-members and there was no public announcement of any vote taken by the Ad Hoc, but that they did receive a number of comments and responded to them). The email known as the 'Four Company Letter' lays out grievances on behalf of Qualcomm, Inc., Nokia Solutions, Networks Oy, Nokia Oy, and Blackberry Ltd. and illustrates, in their view, how the policy and its formation was wholly inconsistent with the SASB's principles of 'consensus, due process, openness, and balance.'

⁵²Ron Katznelson, 'The IEEE Controversial Policy on Standard Essential Patents: The Empirical Record Since Adoption' (Symposium on Antitrust, Standard Essential Patents, and the Fallacy of the Anticommons Tragedy, Berkeley, California, 29 October 2016) <<https://works.bepress.com/rkatznelson/80/>>.

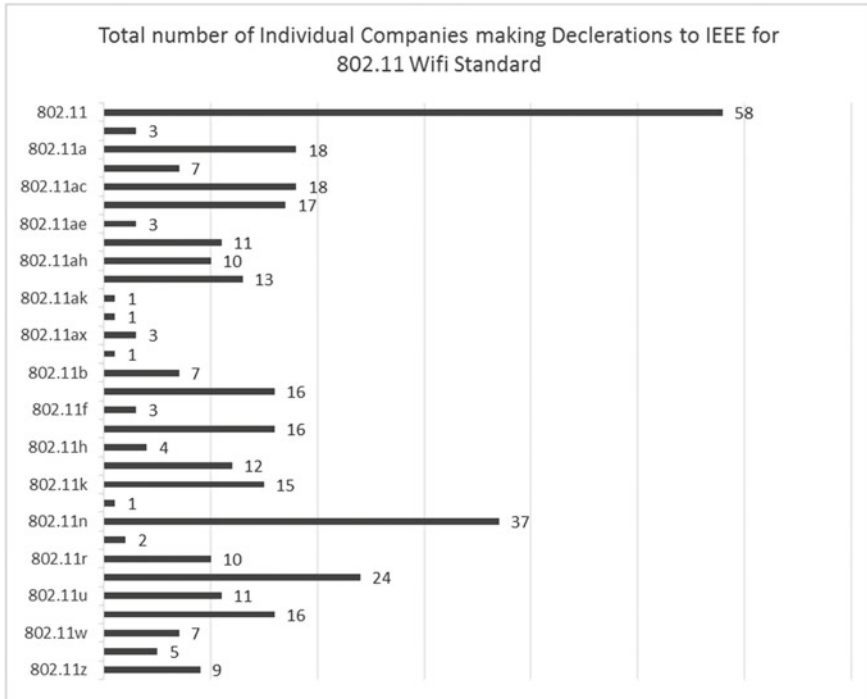


Fig. 1 Total number of individual companies making declarations to IEEE for 802.11 WiFi Standard. *Source:* Authors’ calculations based on IEEE-SA Standards Board (PatCom) records of letters of assurance for IEEE standard 802.11 and amendments (‘IEEE 802.11 and Amendments Patent Letters of Assurance’ (*IEEE-SA*) <http://standards.ieee.org/about/sasb/patcom/pat802_11.html>)

hereinbelow in Fig. 2 (Key Patented Technology Developers contribution to all IEEE licensing LoAs in 2007–2013).⁵³

Among the many issues and complaints raised by the critics of the policy, was the arrangement of the committee not taking account of the interests of the patent owners and most of their suggestions and comments were not considered.⁵⁴ Rather, the amendment to the policy was used by some of the major technology implementers to accommodate their own commercial interests, and any involvement on the part of patent holders was left to the final stages of the standardization process.⁵⁵

⁵³ibid.

⁵⁴Email (n 51); they express their view that the basic principles of due process were not adhered to. They complained that the consensus—the bedrock of the standard-setting process of IEEE technical standards—was missing from the deliberations and formulation stage of the new policy.

⁵⁵ibid.

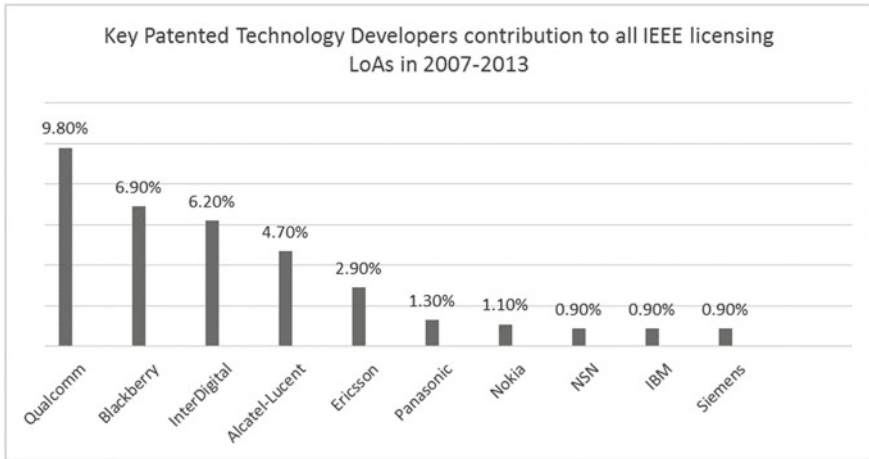


Fig. 2 Key patented technology developers contribution to all IEEE licensing LoAs in 2007–2013. *Source* Ron Katznelson, ‘The IEEE controversial policy on Standard Essential Patents the empirical record since adoption’

3.2 *Developments Leading to the IEEE-SA’s IPR Policy Change*

In 2015, IEEE revised its policy and became the first SSO in the world to establish regulation of FRAND royalties. In a post *Rambus* world, the US courts have necessarily enforced FRAND commitments between SEP holders and implementers to avoid opportunistic behavior by parties.⁵⁶

The patent policy was a series of important developments that eventually led to the changes to the patent policy being implemented by IEEE. It started off with the IEEE’s attorney highlighting the insufficiency of the 2007 patent policy in dealing with the problem regarding the vagueness of FRAND—especially since the SEP holders had only twice made use of the opportunity to disclose the most restrictive terms—out of a possible forty occasions in which an LoA committing to license on FRAND terms was issued.⁵⁷ This was followed by the Board of Governors of IEEE-SA giving its approval to the changes in December 2014.⁵⁸ Finally, in February 2015, the Antitrust Division of the US in a Business Review Letter sent by the Department of Justice (DOJ) to the IEEE, communicated their intent to not

⁵⁶*Ericsson Inc. v D-Link System Inc.* (2014) Federal Circuit, 773 F.3d 1201, 1231; *Microsoft Corp. v Motorola Inc.* (2015) 9th Circuit, C-14-35393 (citing *Microsoft Corp. v Motorola, Inc.* (2013) W.D. Wash No. 11 C 9308, 2013 WL 2111217, 2).

⁵⁷Zingales (n 43) 21–22.

⁵⁸‘Board of Governors Resolutions’ (*IEEE-SA*) <<https://standards.ieee.org/about/bog/resolutions.html>>.

challenge the proposed patent amendments.⁵⁹ The IEEE has asked for Business Review Letter because of concerns raised by few members with respect to the policy changes in addition to the procedure that was followed by IEEE-SA to draft and approve the amendments, thereby raising concerns of antitrust investigation of the organization.⁶⁰ Apparently, the DOJ seemingly based its inference regarding the policy changes resulting in ‘pro-competitive effects on policy preferences rather than a careful rule of reason analysis’.⁶¹

Thus, on 8 February 2015, the Standards Board, the Board of Directors, the Board of Governors, and the Patent Committee (PatCom) of the IEEE, voted to approve the amendments to the patent policy of IEEE-SA.⁶² The updates to IEEE-SA went into effect on 15 March 2015 and received a lot of feedback and criticism.⁶³ The updates see, *inter alia*, essentially decreased royalty fees from large manufacturers especially in the ICT sector, and compensation for a company’s IP was no longer corresponded on the value of the end device, but instead on a percentage of the price of the component that is patented.⁶⁴ This re-examined approach to calculate royalties is viewed as a realistic and practical approach to define FRAND licensing as it pertains to SEPs, to an extent that the innovators get a fair return for their sizable investment in the development of innovation, while taking into account easy entry for new suppliers and new products.⁶⁵ However, some proponents of the update are of the opinion that it could possibly hinder

⁵⁹‘Response to Institute of Electrical and Electronics Engineers, Incorporated’ (*US Department of Justice*, 2 February 2015) <<http://www.justice.gov/atr/public/busreview/311470.html>>.

⁶⁰Letter from Michael Lindsay, Esq., Dorsey & Whitney LLP, on behalf of IEEE, to Hon. William Baer, Assistant Attorney General US DOJ (30 September 2014) <<https://www.justice.gov/sites/default/files/atr/legacy/2015/02/17/311483.pdf>>; (requesting a business review letter pursuant to the Department’s business review procedure, 28 C.F.R. s 50.6).

⁶¹Stuart Chemtob, ‘Carte Blanche for SSOs?: The Antitrust Division’s Business Review Letter on the IEEE’s Patent Policy Update’ (March 2015) 1 *Competition Policy International Antitrust Chronicle* 2 <<https://www.wsgr.com/publications/PDFSearch/chemtob-0315.pdf>>; (The DOJ’s devaluing of concerns about harm to innovation incentives has serious implications that will affect the choices made by other SSOs, as well as enforcement policies of foreign competition authorities looking to US antitrust law for guidance on the proper relationship between antitrust laws and IP laws).

⁶²Rudi Bekkers, ‘Concerns and Evidence for Ex-post Hold-up with Essential Patents’ (2015) Eindhoven University of Technology, Working Paper <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2663939>.

⁶³*ibid*; Benjamin Li, ‘The Global Convergence of FRAND Licensing Practices: Towards ‘Inoperable’ Legal Standards’ (2016) 31 *Berkeley Technology Law Journal* 429 (discussing the mixed reviews received by the new policy); Deepa Sundararaman, ‘Inside the IEEE’s Important Changes to Patent Policy’ (*Law 360*, 3 April 2015) <<https://advance.lexis.com/api/permalink/3ca3eb00-8a2a-4ebb-b031-53e17586f8be/?context=1000516>> accessed 24 March 2018 (discussing the split reactions of patent holders). The author notes that the policy has support from some large technology companies while large companies on the other side argue that the ‘changes go too far.’

⁶⁴*ibid* 463.

⁶⁵Sundararaman (n 63).

innovation.⁶⁶ The antitrust division of the US DOJ absolutely failed to check, and, in fact, blessed the amendments made by IEEE to its by-laws that include policies that govern use of patents in IEEE standards. These amendments seek to reduce the royalty rates demanded by SEP holders in addition to diminishing the ability of SEP holders to enforce their patent rights. The antitrust division, applauding the efforts of the IEEE, entirely ignored the possible effects of these amendments that may potentially facilitate collusion among implementers.⁶⁷ The amendments seem to have addressed certain ambiguities, yet created a potential to lower the leverage for patent owners by undermining their patents, which can potentially lead to an explosion of litigation. It appeared that the ad hoc committee in charge of drafting the policy changes met in closed sessions and sought remarks and comments on the draft from members.⁶⁸

4 Key Changes and Reactions to the IPR Policy Amendments

4.1 Key Changes to the IEEE IPR Policy

The 2015 IEEE-SA patent policy significantly changed the meaning of FRAND. Among the many amendments, the core amendments sought to waive the right of injunction from the SEP holder until the SEP holder has successfully litigated the claim of infringement against the unlicensed implementor in the court of appeals. Another major amendment was made in relation to the royalties based on ‘smallest saleable’ implementation of any portion of the standard. Further, the SEP holders were also made to agree to not require reciprocal cross-licensing except of the same standard. Hereinbelow, the authors will discuss the changes brought by the policy with special reference given to the core issues, i.e. royalty rates, injunctive relief and reciprocal licensing.

4.1.1 Royalty Rate

Article 6.1 of the IEEE’s IP policy defines the term ‘compliant implementation’ as ‘any product (e.g., component, sub-assembly, or end-product) or service that conforms to any mandatory or optional portion of a normative clause of an IEEE

⁶⁶Li (n 63) 463–464; *ibid*.

⁶⁷Bharadwaj (n 4).

⁶⁸Email from Qualcomm, Nokia, NSN and Blackberry to the Members of the SASB (9 June 2014) <<http://grouper.ieee.org/groups/pp-dialog/email/msg00287.html>> (describing that the deliberations of the Patent Committee Ad Hoc were not open to non-members and there was no public announcement of any vote taken by the Ad Hoc, but that they did receive a number of comments and responded to them).

Standard.⁶⁹ Therefore, it takes into account the product components and other sub-assemblies as products for the purpose of standard-compliant implementation.⁷⁰ The amended policy defines ‘reasonable rate’ as follows:

Reasonable Rate shall mean appropriate compensation to the patent holder for the practice of an Essential Patent Claim excluding the value, if any, resulting from the inclusion of that Essential Patent Claim’s technology in the IEEE Standard. In addition, determination of such Reasonable Rates should include, but need not be limited to, the consideration of:

- The value that the functionality of the claimed invention or inventive feature within the Essential Patent Claim contributes to the value of the relevant functionality of the smallest saleable Compliant Implementation that practices the Essential Patent Claim.
- The value that the Essential Patent Claim contributes to the smallest saleable Compliant Implementation that practices that claim, in light of the value contributed by all Essential Patent Claims for the same IEEE Standard practiced in that Compliant Implementation.
- Existing licenses covering use of the Essential Patent Claim, where such licenses were not obtained under the explicit or implicit threat of a Prohibitive Order, and where the circumstances and resulting license are otherwise sufficiently comparable to the circumstances of the contemplated license.⁷¹

Instead of leaving the parties with liberty to calculate the royalties, with this policy change, the IEEE, endorses a royalty calculation method based on the value of the chipset, despite knowing the fact that there is a possibility of several other functions of the device using the contributed technology.⁷² This change in the method of calculation of the royalty base is a derivation from the Smallest Saleable Patent Practicing Unit (SSPPU) concept, that is widespread predominantly in the US⁷³ and is indeed a severely disputed rule as the new rule *vis-à-vis* royalties would lead to a reduced royalty being paid by large manufacturers, especially in the wireless sector.⁷⁴ However, the IEEE’s endorsement of the smallest saleable

⁶⁹IEEE-SA Standards Board Bylaws, s 6.1 (IEEE 2017) <http://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf>.

⁷⁰Sai Deepak, ‘Standard essential Patents: Comparing IP Rights Policies’ (*International Law Office*, 29 February 2016) <<http://www.internationallawoffice.com/Newsletters/Intellectual-Property/International/Saikrishna-Associates/Standard-essential-patents-comparing-IP-rights-policies>>.

⁷¹IEEE-SA Standards Board Bylaws (n 69).

⁷²Bill Merritt, ‘Why We Disagree with the IEEE’s Patent Policy’ (*EE Times Blog*, 27 March 2015) <http://www.eetimes.com/author.asp?doc_id=1326144>.

⁷³Anne Layne-Farrar, ‘The Practicalities and Pitfalls of the Smallest Saleable Patent Practicing Unit Doctrine: A Review of Teece and Sherry’ (2016) 4 *Les Nouvelles- Journal of the Licensing Executives Society* <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2855148>.

⁷⁴John Walko, ‘IEEE Waves Through Controversial Patent Policy’ (*EE Times Blog*, 17 February 2015) <http://www.eetimes.com/author.asp?section_id=36&doc_id=1325706>.

compliant implementation lacks lustre, since the concept of SSPPU was implemented in the US in order to avoid undue bias and jury disarray in jury trials.⁷⁵ It has been described as ‘a ‘term of art’ that was developed through judicial decision in patent infringement cases in the US.’⁷⁶ The jury in such cases weighed several competing and prospective patent valuation techniques (for the infringed patent) to arrive at SSPPU as one way to assign a value to a patent.⁷⁷ Moreover, the SSPPU model is not a prevalent rule in the US, as has been emphasized in many cases in the past; one of them being *Ericsson v D-Link*, wherein the Federal Circuit held the licenses to be negotiated without taking into account any consideration of the entire-market-value rule (EMVR) or the SSPPU model and rather adhering to comparable licenses based on the value of the end product.⁷⁸ The *Ericsson* case follows the rule laid down in *Virnetx Inc. v Cisco Systems*⁷⁹ with respect to the royalty rate.⁸⁰ It was held that ‘though there were undoubtedly differences between the licenses at issue and the circumstances of the hypothetical negotiation, the jury was entitled to hear the expert testimony and decide for itself what to accept or reject.’⁸¹ The ultimate advantage resulting from a patent and the reasonableness of the licensing terms is majorly dependent on the specificity of the patent and the product to be licensed rather than the smallest saleable value derived from the end product.⁸²

It is highly improbable for the baseband component to carry the value of all the essential patents. Few courts around the world have ruled out that the baseband component is able to capture most of the essential features, while on the other hand, other courts have ruled that the value of the SEP far exceeds the value baseband

⁷⁵Keith Mallinson, ‘Free and Fair Trade in IP Would Be Crushed by Compulsory Chip-based SEP Licensing’ (*IP Finance Blog*, 9 September 2016) <<http://www.wiseharbor.com/pdfs/Mallinson%20licensing%20based%20on%20device%20or%20SSPPU%2009Sept2016.pdf>>.

⁷⁶*ibid*.

⁷⁷*ibid*; Mallinson states that in a typical patent infringement case, where only a handful of patent rights are at issue and the scope of the claims of each patent is defined by the court, it might be possible to establish the value of SSPPU. However, it is not a substitute for how a patent licensor and licensee value an entire portfolio of patents. Mallinson claims that SSPPU ‘ignores realities of licensing’, and even if it is applied, in value terms, it would eventually come close to the value of the entire device.

⁷⁸*Ericsson* (n 56); David Long, ‘Federal Circuit Gives Guidance on Litigating RAND Royalty (Ericsson v. D-Link)’ (*Essential Patent Blog*, 5 December 2014) <<https://www.essentialpatentblog.com/2014/12/federal-circuit-gives-guidance-on-litigating-rand-obligation-ericsson-v-d-link/>>.

⁷⁹*Virnetx Inc. v Cisco Systems* (2014) Federal Circuit, 767 F.3d 1308.

⁸⁰David Long, ‘Patent Case: Federal Circuit Provides Guidance on Damages That Eschews Use of Nash Bargaining Solution (Virnetx v Cisco)’ (*Essential patent Blog*, 17 September 2014) <<http://www.essentialpatentblog.com/2014/09/patent-case-federal-circuit-provide-damages-guidance-that-eschews-use-of-nash-bargaining-solution-virnetx-v-cisco/>>.

⁸¹*Virnetx* (n 79) 1331.

⁸²*ibid* 1327.

components.⁸³ Further, many of the essential features have never been litigated and there is nothing available on public record to ascertain their value. Using the same as a base for real-world arm's-length negotiations between sophisticated market players⁸⁴ and circumscribing the terms of licensing negotiations was never going to be well-received by members of the association.⁸⁵ The change in the policy might lead to a situation wherein the SEP owners draft claims in order to broaden what constitutes a 'Compliant Implementation'. Therefore, what constitutes a 'reasonable' royalty may still need to be ascertained, taking into account the specific patent and its use in issue, instead of the smallest saleable Compliant Implementation. The best way to fix the issue of the calculation of royalty base might just be best catered by a continued case-by-case basis of what is deemed as reasonable.⁸⁶

4.1.2 Injunctive Relief

The exclusion of an SEP holder from seeking injunctive relief against an unwilling licensee was another drastic change brought by the change in policy.⁸⁷ However, the only exception was the scenario involving the litigation based on FRAND royalty and the initial stage of appeal being exhausted.⁸⁸ The amendment regarding the injunctive relief is phrased as:

A statement that the Submitter will make available a license for Essential Patent Claims to an unrestricted number of Applicants on a worldwide basis without compensation or under Reasonable Rates, with other reasonable terms and conditions that are demonstrably free of any unfair discrimination to make, have made, use, sell, offer to sell, or import any Compliant Implementation that practiced the Essential Patent Claims for use in conforming with the IEEE Standard. An Accepted LoA that contains such a statement signifies that reasonable terms and conditions, including without compensation or under Reasonable Rates, are sufficient compensation for a license to use those Essential Patent Claims and preclude seeking, or seeking to enforce, a Prohibitive Order except as provided in this policy. The Submitter of an Accepted LoA who has committed to make available a license for one or more Essential Patent Claims agrees that it shall neither seek nor seek to enforce a Prohibitive Order based on such Essential Patent Claim(s) in a jurisdiction unless the implementer fails to participate in, or to comply with the outcome of, an adjudication, including an affirming first-level appellate review, if sought by any party within applicable deadlines, in that jurisdiction by one or more courts that have the authority to: determine Reasonable Rates and other reasonable terms and conditions; adjudicate patent validity, enforceability, essentiality, and infringement; award monetary damages; and resolve any

⁸³Farrar (n 73).

⁸⁴Alden Abbott, 'Patent Policy Change Would Undermine Property Rights and Innovation' (*The Heritage Foundation*, 4 March 2015) <<http://www.heritage.org/research/reports/2015/03/patent-policy-change-would-undermine-property-rights-and-innovation>>.

⁸⁵*ibid.*

⁸⁶*Virmetx* (n 79) 1333.

⁸⁷Sundararaman (n 63).

⁸⁸*ibid.*

defenses and counterclaims. In jurisdictions where the failure to request a Prohibitive Order in a pleading waives the right to seek a Prohibitive Order at a later time, a Submitter may conditionally plead the right to seek a Prohibitive Order to preserve its right to do so later, if and when this policy's conditions for seeking, or seeking to enforce, a Prohibitive Order are met.⁸⁹

The above amendment in the policy is in opposition to the universally acknowledged availability of injunctive relief to SEP holders against unwilling licensees.⁹⁰ Under the revised policy, the right to injunctive relief is available to the SEP holder only in case the implementer of a standard fails to abide by the decision of an arbitral tribunal or the court.⁹¹ This has led to a further reduction of the leverage held by the SEP holder over unwilling licensees/infringers. Furthermore, it can also result in increased litigation between SEP holders and implementers,⁹² which is in complete contrast to administrative decisions that have reflected upon the right of SEP holders to seek injunctive relief and conclusively acknowledged that it should be made available against unwilling licensees/infringers.⁹³ In the case of *Apple, Inc. v Motorola Inc.*, the Federal Circuit opined that there was no *per se* rule prohibiting a party from seeking injunctive relief on an SEP covered by an agreement to license on FRAND terms.⁹⁴ The court further held that 'an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect.'⁹⁵ Further, in the *Apple* case and in the consent decree settlement in the case of *Google/Motorola*, the United States Federal Trade Commission (USFTC) called out for injunctive relief to be available against unwilling licensees/infringers in limited situations.⁹⁶

By making the right to seek injunctive relief conditional, the new policy fails to provide a viable explanation as to its exclusion or conditional availability to patent holders who have made commitments in compliance with FRAND terms,⁹⁷ provided that it forms part of the patent enforcement system in the US. For example,

⁸⁹IEEE-SA Standards Board Bylaws, s 6.1 (n 69).

⁹⁰Micheal Frohlich, 'Report-Work Plan Item 5: Availability of Injunctive Relief for FRAND-Defense in Patent Infringement Proceedings' (*AIPPI*, March 2014) 5 <<http://aippi.org/wp-content/uploads/committees/222/Report222AIPPI-report+on+the+availability+of+injunctive+relief+for+FRAND-committed+standard+essential+patentsEnglish.pdf>>.

⁹¹Sundararaman (n 63).

⁹²Thomas Stromberg and Marc Roualet, 'New IEEE Policy Affects Standard Essential Patent Holders' (*Lexology*, 1 April 2015) <<http://www.lexology.com/library/detail.aspx?g=b145d1e6-f42d-4655-813f-de1490a980e5>>.

⁹³Frohlich (n 90).

⁹⁴*ibid* 9; *Apple, Inc. v Motorola, Inc.* (2014) Federal Circuit, Case No. 12-1548.

⁹⁵*ibid* 1332.

⁹⁶*Motorola Mobility L.L.C. v Google Inc.* (2013) Federal Trade Commission 121-0120.

⁹⁷IEEE-SA Standards Board Bylaws, s 6.1 (IEEE, Draft No. 39 2014) (IEEE-SA Draft Standards) <http://grouper.ieee.org/groups/pp-dialog/drafts_comments/SBBYlaws_100614_redline_current.pdf>.

often SEP holders seek injunctions against implementers when they have infringed their IP without seeking licenses from the SEP owner.⁹⁸ The possibility of refusal to pay royalties or patent hold-out or refusal to enter into good faith negotiations is often disregarded.⁹⁹ As Administrative Law Judge Theodore Essex commented in the public version of his initial determination in the ITC Investigation,

...standards implementers using the technology incorporated in the standard but without seeking a license or without engaging in licensing negotiations can lead to SEP holders filing a suit against and the standards implementers being forced to pay royalties at the FRAND rate, the same FRAND rate at which they were willing to pay the royalties in the first place.¹⁰⁰

Such a behavior by the SEP implementers might lead to shift in the entire risk associated with the licensing negotiations onto the SEP holders.¹⁰¹ In the words of Judge Essex, ‘taking away the right to seek injunctive relief from SEP holders not only “puts the risk of loss entirely on the side of the patent holder,” but also “encourages patent hold-out”, which is as unsettling to a fair solution as any patent hold-out might be.’¹⁰²

4.1.3 Reciprocal Licensing

The third significant change introduced in the new policy concerns reciprocal licensing. ‘Reciprocal Licensing’ as defined under the new policy means:

...that the Submitter of an LoA has conditioned its granting of a license 67 for its Essential Patent Claims upon the Applicant’s agreement to grant a license to the Submitter with Reasonable Rates and other reasonable licensing terms and conditions to the Applicant’s Essential Patent Claims, if any, for the referenced IEEE Standard, including any amendments, corrigenda, editions, and revisions. If an LoA references an amendment or corrigendum, the scope of reciprocity includes the base IEEE Standard and its amendments, corrigenda, editions, and revisions.¹⁰³

There is a preclusion for the SEP holder from conditioning the grant of a license on a reciprocal access to the negotiator’s non-SEP patents.¹⁰⁴ The SEP holder is now at a disadvantageous position as the access to key standardized technology

⁹⁸Daryl Lim, ‘Standard Essential Patents, Trolls, and the Smartphone Wars: Triangulating the End Game’ (2014) 119 Penn State Law Review 1.

⁹⁹Teece (n 28).

¹⁰⁰*In re Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof* (2014) United States International Trade Commission, Inv. No. 337-TA-868 113–14.

¹⁰¹*ibid* 114.

¹⁰²*ibid*; Sandra Badin, ‘Patent Hold-up or Patent Hold-out? Judge Essex adds his voice to the SEP-FRAND Debate’ (*Intellectual Property Alert*, 10 July 2014) <<https://www.mintz.com/newsletter/2014/Advisories/4096-0714-NAT-IP/4096-0714-NAT-IP.pdf>>.

¹⁰³IEEE-SA Standards Board Bylaws s 6.1 (n 69).

¹⁰⁴Sundaraman (n 63).

must be granted without having a reciprocal access to other party's technology as this aspect becomes the vital part with respect to commercialization of that SEP holder's products.¹⁰⁵ This scenario will most likely leave the owners of multiple SEP's in an unfavorable position as compared to those involved in non-SEP patenting. Further, large scale businesses have the risk of disincentivizing from developing and investing in such patents which can possibly elevate the quality of standards setting, resulting in the lower level of usefulness of such vital standard.¹⁰⁶

This will most definitely lead to royalty stacking where, there will be a disruption of existing licensing practices which in turn comprises of cross licensing negotiations, leading to a possibility of higher downstream prices. In essence, it is a manifestation of the 'Cournot Complements' principle, which states that the overall price of complimentary inputs sold by different firms is likely to be higher, as opposed to the inputs being sold by a single entity.¹⁰⁷

The process Cross-Licensing addresses this issue, where two firms will have smooth negotiations between holders of complimentary patents, subsequently lowering the making cost for standards-compliant products. It is essential for bringing the royalty claim down and ensuring freedom to operate. But, this policy update may most likely result in consumers paying a higher cost for products, while strangulating innovation efforts.¹⁰⁸

4.2 Major Reactions to the IPR Policy Changes

There has been a lot of disdain with regards to the policy changes by the high technology industries personnels as it has completely altered the terms on which patents can be made available to implementers of patented technology.¹⁰⁹ According to Irwin Jacobs, CEO of Emeritus, '[T]he proposed changes, and the process that has been followed, threaten the reputation and future of the IEEE as a developer of advanced technology'.¹¹⁰ Many other CEOs have voiced their opinion against the policy changes and believe that the changes provide short-term commercial benefits to investors by lowering fees that could create long-term effects and thus reduce the incentive for R&D.¹¹¹

¹⁰⁵IEEE-SA Draft Standards (n 97).

¹⁰⁶Abbott (n 84).

¹⁰⁷Ramon Casadesus-Masanell, 'Competing Complements' (2008) 1 Harvard Business School Working Paper No. 09-009 <<http://www.hbs.edu/faculty/Publication%20files/09-009.pdf>>.

¹⁰⁸Abbott (n 84).

¹⁰⁹Walko (n 74).

¹¹⁰ibid.

¹¹¹ibid.

Royalties that are based on the smallest saleable compliant implementation rule is the biggest and most arguable change that has been brought about by this new policy.¹¹² Some of the most convincing claims against the use of this model for calculation of royalty are as follows:

First, the return value received by an implementor is not a true reflection of the smallest saleable unit to that particular product, this usually is different at most times. It is indeed a fact that the entire process of negotiation between the SEP holders and implementers centers on the true value of the patented technology to the implementer.¹¹³ The value can be considered to be in between the smallest saleable unit and compliant implementations.¹¹⁴ Thus, it can be argued considering the smallest saleable compliant implementation model, if considered as the base for royalty determination will put the implementor in an advantageous position over the technology provider, which is unfair. According to David Teece and Edward Sherry, there lies a 'synergistic value' between the smallest saleable unit and other compliant implementations. These 'synergic values', at times which probably flows from smallest saleable unit and this provides an additional value to the product which further leads to increased returns on the products to the implementer.¹¹⁵ The focus if given to the smallest saleable unit will mean undue focus and hence ignorance of this 'synergistic value'(which can be considered in certain cases) and its share not being transferred to the SEP holder..

In the case of *Commonwealth Scientific & Industrial Research Organisation (CSIRO) v Cisco Systems, Inc.*, involving WLAN cellular technology, Justice Davis stated:

The benefit of the patent lies in the [technological] idea, not in the small amount of silicon that happens to be where that idea is physically implemented. ... Basing a royalty solely on chip price is like valuing a copyrighted book based only on the costs of the binding, paper, and ink needed to actually produce the physical product. While such a calculation captures the cost of the physical product, it provides no indication of its actual value.¹¹⁶

In a similar manner, it might be a far fetched idea to consider basing the calculation of royalties on chipset prices would adequately compensate the SEP holder, especially in those cases where the calculation of royalties based on chipset value was not made adequately. Therefore, in all likelihood, there is a possibility of patent holders unable to receive adequate royalties reflected from the prices of

¹¹²David Long, 'IEEE's Controversial Proposed Intellectual Property Rights (IPR) Policy Amendments' (*Essential Patent Blog*, 3 February 2015) <<https://www.essentialpatentblog.com/2015/02/ieee/>>.

¹¹³Teece (n 28) 3–4.

¹¹⁴*ibid.*

¹¹⁵*ibid* 8.

¹¹⁶*CSIRO v CISCO Systems, Inc.* (2015) United States Court of Appeals, Federal Circuit 809 F.3d 1295,1300 quoting *CSIRO v CISCO Systems, Inc.* (2014) E.D. Tex. No. 6:11-cv-343, 2014 WL 3805817, 11; Jorge Contreras, 'CSIRO v CISCO: The Convergence of RAND and Non-RAND Royalties for Standards-essential Patents' (*Patently-o*, 7 December 2015) <<http://patentlyo.com/patent/2015/12/convergence-royalties-standards.html>>.

chipset or profit margins.¹¹⁷ From the economic perspective and public policy, the amendments to the IEEE policy have attracted a lot of criticism amounting to FRAND benefiting the implementers at the expense of patent holders.¹¹⁸

5 Policy Implications and the Post 2015 Era at IEEE

Since the implementation of new IEEE patent policy on 15 March 2015, the SSO has received a number of duplicate, negative and missing LoAs. The duplicate LoAs are counted as LoA restatements filed for amendments, standards, or revisions to LoAs which were previously accepted from the same patent holder. On the other hand, negative LoAs means accepted LoA in which the patent holder refuses to license under the new IEEE patent policy. Further, missing LoA means a disclosed essential patent claim which was sought by IEEE but did not receive an Accepted LoA as of 30 September 2016. The 2015 amendments to the IEEE IPR policy led to a notable decrease in non-duplicate LoAs.¹¹⁹ An 86% surge has been observed in the submission of negative LoAs by the patent owners with respect to the IEEE flagship 802.11 WiFi standard.¹²⁰ As a result, one can substantiate, that the patent holders are unwilling to invest in R&D and licence their SEPs under the new policy. The graphical representation hereinbelow in Fig. 3 (Changes in the number of LoA after 2015 IEEE policy change) reflects upon the changes in the number of LoAs after IEEE policy change in 2015.¹²¹

Figure 3 illustrates the changes in the number of LoAs after 2015 IEEE policy change. It can be seen that the average number of positive LoA's per year before the policy change of 2015 stood at 22.8.¹²² However, this number declined significantly to an average of only two (2) LoAs per year after the policy change in 2015.¹²³ Further, one can also substantiate that there was 91% reduction of positive LoA's after the policy change.¹²⁴ The 10 negative LoA's submitted after the policy change were made by companies such as Nokia (6), Ericsson (2), Interdigital (1) and Orange (1).¹²⁵

¹¹⁷Teece (n 28) 8–9.

¹¹⁸ibid 9.

¹¹⁹Katznelson (n 52).

¹²⁰ibid.

¹²¹Kirti Gupta, 'IEEE Patent Policy Revisions: An Empirical Examination of Impact' (American Bar Association).

¹²²ibid.

¹²³ibid.

¹²⁴ibid.

¹²⁵ibid.

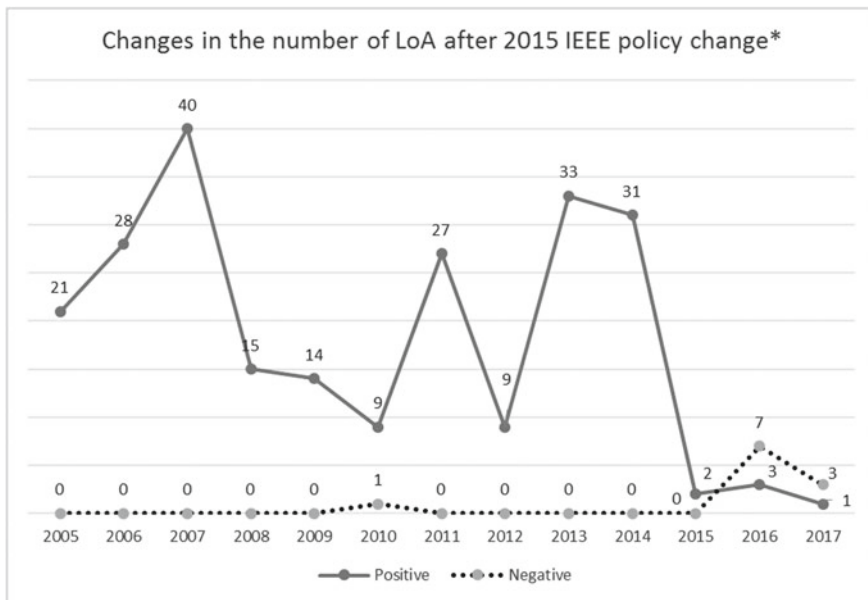


Fig. 3 Changes in the number of LoA after 2015 IEEE policy change (after removing duplicates and repeats). *Source* Kirti Gupta, ‘IEEE Patent Policy Revisions: An Empirical Examination of Impact’ (American Bar Association)

A total number of forty (40) LoAs have been submitted after the policy change. Figure 4 (802.11 LoAs submitted after policy change) depicting the inflation in the number of positive LoAs due to gross counting of submitted LoAs.¹²⁶

Figure 4 showcases the total number of LoAs that have been submitted after the policy change. We can see that since the change in policy in 2015, the submission rate of LoAs has significantly decreased. Since the policy change in 2015, 22 LoAs have been repeated, 12 LoAs are negative and only six LoAs are new positive.¹²⁷ Overall, empirical data suggests that post-March 2015, 85% of LoAs are either repeat or negative.¹²⁸

The standard participants, at the time of standard setting do not have a sense of the market value that will gradually grow making it rather difficult to agree on the value of standard technology or the essential patents to that product. In this scenario the parties have no other option than to agree to a framework of use which is also in

¹²⁶ibid.

¹²⁷ibid.

¹²⁸ibid.

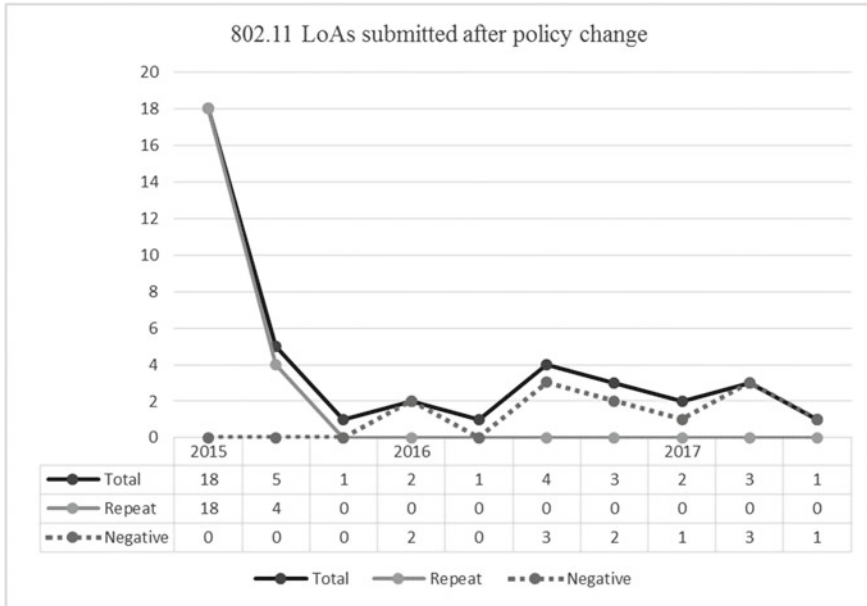


Fig. 4 802.11 LoAs submitted after policy change. *Source* Kirti Gupta, ‘IEEE Patent Policy Revisions: An Empirical Examination of Impact’ (American Bar Association)

simple terms known as FRAND licensing terms. Figure 5 below shows the changes in the LoAs received by IEEE-SA for the different versions of the 802.11 standard during 2011–2017.¹²⁹

Figure 5 is sourced from the PatCom Board meetings from 2011 to PatCom Board meetings held on 4 December 2017.¹³⁰ PatCom posted the number of LoA’s that it received and accepted. In the meeting held on 6 June 2012 one negative LoA was submitted¹³¹ and overall, a total number of ten negative LoA’s were received last year i.e. 2017.¹³² Further, PatCom held their last meeting on 6 March 2018 and it was reported that a total of 12 LoAs were accepted since the December 2017 meeting, out of which three LoAs were negative.¹³³

¹²⁹‘IEEE 802.11 and Amendments Patent Letters of Assurance’ (*IEEE-SA*) <http://standards.ieee.org/about/sasb/patcom/pat802_11.html>.

¹³⁰‘PatCom Meeting Information’ (*IEEE-SA*) <<http://standards.ieee.org/about/sasb/patcom/meetings.html>>.

¹³¹‘PatCom Meeting Minutes’ (*IEEE-SA*, June 2012) <<http://standards.ieee.org/about/sasb/patcom/0612mins.pdf>>.

¹³²‘PatCom Meeting Minutes’ (*IEEE-SA*, December 2016). <<http://standards.ieee.org/about/sasb/patcom/1216patmins.pdf>>; ‘PatCom Meeting Minutes’ (*IEEE-SA*, September 2016) <<http://standards.ieee.org/about/sasb/patcom/0916patmins.pdf>>; ‘PatCom Meeting Minutes’ (*IEEE-SA*, June 2016) <<http://standards.ieee.org/about/sasb/patcom/0616patmins.pdf>>; ‘PatCom Meeting Minutes’ (*IEEE-SA*, March 2016) <<http://standards.ieee.org/about/sasb/patcom/0316patmins.pdf>>.

¹³³‘PatCom Meeting Minutes’ (*IEEE-SA*, March 2018).

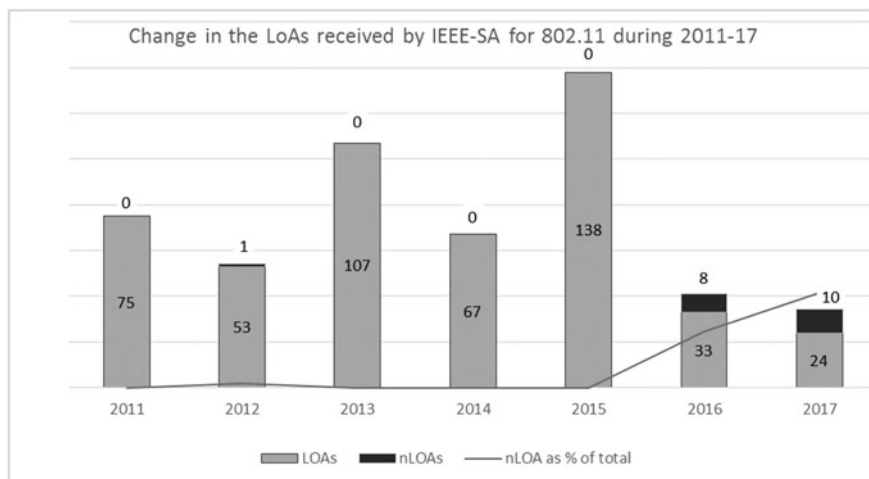


Fig. 5 Change in the LoAs received by IEEE-SA for 802.11 during 2011–17. *Source* Authors' calculations based on minutes of meeting of IEEE-SA Standards

Another major change caused by the IEEE policy change in 2015 which has found empirical evidence is the decline in the number of 802 Project Authorization Requests (PARs).¹³⁴ PARs is the means by which all standards projects gets initiated within the IEEE-SA.¹³⁵ They define the scope, purpose and contact points for the new project.¹³⁶ They kickstart the progress of new standards, amendments or revisions for all 802 Working-Groups (WGs).¹³⁷ Figure 6¹³⁸ (No. of 802 Project Authorization Requests) depicting empirical evidence on decrease in the number of 802 PaRs after the policy change.

Figure 6 illustrates the IEEE 802 PAR dataset within the period of 2009–2017. A careful analysis of these findings showcases a decline of (4.2%) in new PARs in the 802 WGs after the policy change.¹³⁹

The Innovation Alliance has called for a reversal to the policy changes, as they suggest it would 'arbitrarily reduce the level of protection given to WiFi related

¹³⁴Gupta (n 121).

¹³⁵'FAQs: PARs, the PAR Form & Continuous Processing' (*IEEE-SA*) <<https://standards.ieee.org/faqs/pars.html>>.

¹³⁶ibid.

¹³⁷Gupta (n 121).

¹³⁸ibid.

¹³⁹ibid.

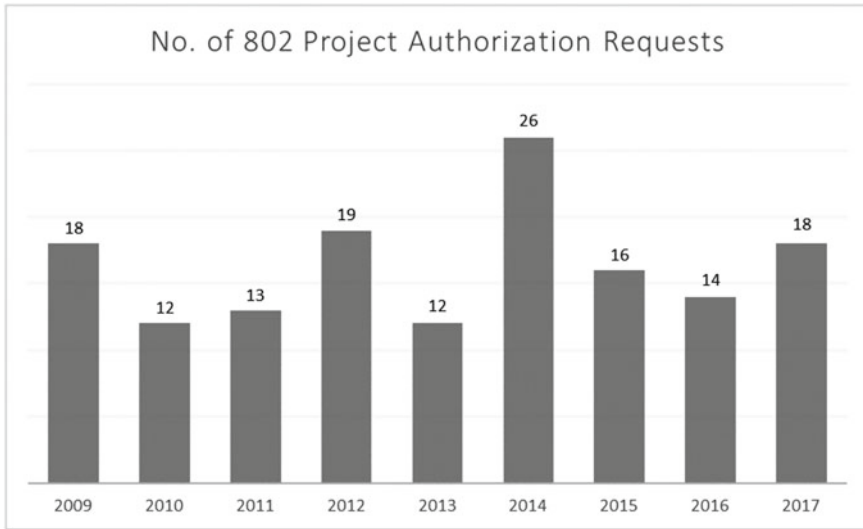


Fig. 6 No. of 802 Project Authorization Requests. *Source* Kirti Gupta, ‘IEEE Patent Policy Revisions: An Empirical Examination of Impact’ (American Bar Association)

patents, impose unconstitutional limits on patent rights, and end the traditional market-based negotiation process for these patents by imposing what amount to *de facto* compulsory licensing.’¹⁴⁰ The IEEE has failed to give any definitive clause on how they plan to deal with known but unpledged SEPs. However, FAQ 13 states that the PatCom ‘will review the circumstances and make a recommendation to the IEEE-SA Standards Board.’¹⁴¹

6 Shift in US Antitrust Enforcement *vis-à-vis* SSO IPR Policies

A series of recent developments on competition policy and antitrust enforcement, in the US, coupled with the views echoed by the newly appointed Assistant Attorney General (AAG) of the US Department of Justice, Makan Delrahim, carve out a fresh strategy to embrace technological changes led by innovation, patents and digitization. Some of the speeches delivered by the new antitrust chief are so powerful that they have come to not just redefine a new path for policymaking in antitrust and IP, but to also reignite the fire on technology and innovation. Since his confirmation as the new AAG on 27 September 2017, Mr. Delrahim has made nine

¹⁴⁰Walko (n 74).

¹⁴¹Katznelson (n 52).

speeches, out of which he has touched upon several aspects of the current IP policy of the US antitrust division in at least five of them. Introducing the new IP policy for the first time in November 2017, the AAG stressed the need to revive appreciation of the rights of innovators to boost innovation.¹⁴² In the context of SEPs, he recognized that leaning of the US. Department of Justice towards implementers of standards could potentially damage future innovation, and that competition authority ‘must exercise greater humility’ in the application of antitrust laws to SEPs.¹⁴³ Building upon his ideas in his address at the US Embassy in Beijing in February 2018, the AAG noted that the focus of competition authorities must be on the promotion and growth of innovation rather to short term pricing. He built upon the idea of protection and promotion of rights of SEP holders, which is at the core of the new policy. The policy change envisages that competition laws should not work to stifle innovation by creating disincentives for innovation. In furtherance of this view, he also placed emphasis on IP courts, as they would be better equipped to resolve disputes between implementers and SEP holders.

The right of SEP holders to exclude others from the use of their patented technology has long been lost in the tussle between implementers, innovators and standards setting bodies. In a series of recent speeches, the head of the Antitrust Division, Makan Delrahim, has claimed that patentees have an absolute ‘property right to exclude’ that is automatically followed by an injunction. He has questioned the existence of patent hold-up (by which patentees demand supracompetitive royalties after their patents are incorporated into industry standards). Because these views represent a significant divergence from the broad, bipartisan consensus that has emerged over the past decade, former FTC Chairman Tim Muris and Michael Carrier from Rutgers Law School have written a three-page letter in response.¹⁴⁴ AAG Delrahim reinstated this principle and was of the belief that:

patents are a form of property, and the right to exclude is one of the most fundamental bargaining rights a property owner possesses. Rules that deprive a patent holder from exercising this right—whether imposed by an SSO or by a court—to innovate and worsen the problem of hold-out.¹⁴⁵

¹⁴²Makan Delrahim, Assistant Attorney General, Antitrust Division, US Department of Justice, ‘Competition, Intellectual Property and Economic Prosperity’ (Speech delivered at US Embassy, Beijing, 1 February 2018) <<https://www.justice.gov/opa/speech/file/1030496/download>>.

¹⁴³Makan Delrahim, Assistant Attorney General, Antitrust Division, US Department of Justice, ‘Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law’ (Speech delivered at USC Gould School of Law, California, 10 November 2017) <<https://www.justice.gov/opa/speech/file/1010746/download>> 10.

¹⁴⁴Michael Carrier and Timothy Muris letter to Makan Delrahim, Assistant Attorney General, Antitrust Division, US Department of Justice.

¹⁴⁵Makan Delrahim, Assistant Attorney General, Antitrust Division, US Department of Justice, ‘Good Times, Bad Times, Trust Will Take Us Far: Competition Enforcement and the Relationship Between Washington and Brussels’ (Speech delivered at College of Europe, Brussels, 21 February 2018) 4.

He observed that if the innovators are deprived of rights over their property by means of controlling their licensing agreements and use of information without correct licensing, then such practices will have a severe impact on the quality and quantity of innovation. In the case of SEPs, many a times the SEP holders have been deprived of their right to exclude under the garb of FRAND licensing, and have also been denied their right to injunctions, making FRAND a unilateral obligation. In Mr. Delrahim's view, this right of exclusion granted by IP law should not be taken away in the name of utilitarian policies of technical standardization. This trend is also problematic as the innovators of standardized technologies are faced with a lower value and unfair commercialization of their invention. In the long run, lower returns on patents that are critical to the working of key technical standards are likely to reduce investment in future innovation.

Subsequently, the AAG's delivered remarks in Brussels where he acknowledged that bridging the gap between 'policy and substance' is essential for enforcement of competition laws in the European Union (EU) and US.¹⁴⁶ He stressed on the goal of competition policy in protection of consumers and market competition, rather than protection of competitors, which is a policy stand espoused by both the EU and US antitrust establishments. Reiterating the long-standing view of the antitrust division of DOJ that (a) patent laws incentivize innovation for the benefit of consumers, and (b) licensing of patent rights is generally pro-competitive, the AAG indicated an approach that is quite different from the one that prevailed during the Obama administration. He underscored the fact that antitrust enforcement in the current and earlier regimes has 'strayed too far'¹⁴⁷ in their protection of the rights of implementers (of patent-based technical standards), at the expense of rights of innovators (holders of patents that become a part of the standard).

In his latest speech in March, the AAG drew attention to the enduring belief underlying the American innovation ecosystem that the rights over IP belongs to the inventor as much as they belong to the public. He referred to a 'new Madison approach', after James Madison, who is considered by the AAG to be the true founding father of US patent law.¹⁴⁸ The AAG is attempting to recreate an environment where the rights of patent holders are respected, in order to move away from a 'retro-Jefferson' view that patents confer too much power that should be curbed.¹⁴⁹ The new Madison approach seeks to regulate the innovation environment in a way that preserves sufficient incentives to innovate. He relates the premise of Madison's theory with issues around SEP licensing, regulation of SSOs, and the role of antitrust law in regulating patents. The Madison approach forms part of the

¹⁴⁶ibid 13.

¹⁴⁷Delrahim (n 142).

¹⁴⁸Makan Delrahim, Assistant Attorney General, Antitrust Division, US Department of Justice, 'The "New Madison" Approach to Antitrust and Intellectual Property Law' (Speech delivered at University of Pennsylvania Law School, Philadelphia, March 16, 2018).

¹⁴⁹ibid 3-4.

basic argument of Delrahim, which is centered on the fundamental right of the patent holder to exclude.¹⁵⁰

In addressing the misplaced role of antitrust law in policing the hold-up problem, the AAG restates that when antitrust agencies scrutinize private contracts in the context of patent licensing, it adversely affects innovation and market competition.¹⁵¹ The AAG succinctly alluded to the following:¹⁵² First, that application of antitrust laws to the issue of hold-up has, so far remained devoid of empirical data, and, therefore, an evidence-based enforcement of antitrust is called for. Second, antitrust law enforcement bodies should ensure that their actions do not transform a private voluntary licensing regime for SEPs into a regime of compulsory licensing. Third, in line with the Madison approach, it is important to look at regulation of SSOs to deter any possibility of collusive behavior.

What is put forth now is a new evidence-based approach in the application of antitrust law to the needs and concerns of both implementers and SEP holders to facilitate a symmetric application of the law. This brings a significant change in the industry by introducing much needed clarity in the roles of implementers and innovators. It also brings to the fore the often neglected issue of 'hold-out'.¹⁵³ According to Mr. Delrahim, patent hold-out poses a more serious challenge than hold-up as it arises due to under-investment by implementers or their refusal to take a license. He states, 'It is important to recognize that innovators make an investment before they know whether that investment will ever pay off. If the implementers hold-out, the innovator has no recourse, even if the innovation is successful.'¹⁵⁴ The potentially serious impact on the market and on the consumers of such opportunistic behavior in the industry is a critical issue that will be focused upon in the new policy. Mr. Delrahim's emphasis on the symmetric nature of patent hold-up and hold-out as a recurring issue in his speeches throws light on several thought-provoking issues. If implemented, not only is it likely to broaden the scope of antitrust scrutiny, it would also restore balance to an otherwise imbalanced discourse prevailing today. The actions of implementers, including unnecessary delays in the licensing process, patent trespassing, unresponsiveness to negotiation and placing all liability of FRAND on the innovators, will also be under the scanner, as proposed by the AAG. The earlier stand of DOJ was that the involvement of antitrust agency was necessary in investigating FRAND commitment for SEPs to judge the actions of SEP holders,¹⁵⁵ but now the department is

¹⁵⁰ibid 5.

¹⁵¹Delrahim (n 148) 9.

¹⁵²Delrahim (n 145) 4.

¹⁵³Ashish Bharadwaj, 'A Note on the Neglected Issue Of Reverse Patent Hold-up' (2018) 13(2) Journal of Intellectual Property Law & Practice 3.

¹⁵⁴Delrahim (n 145) 6.

¹⁵⁵*Dell Computer Corp.* (1996) Federal Trade Commission 121 F.T.C. 616; *Union Oil Company of California* (2005) Federal Trade Commission 140 F.T.C. 123; *Rambus Inc.* (2006) Federal Trade Commission 142 F.T.C. 98.

seeking to regulate the actions of SSOs. Intervention by an antitrust agency is called for where anticompetitive actions and collusive behavior by prospective licensees is detected, including restricting royalty rates and diluting right to seek injunctive relief by SSOs. Other than minimizing unnecessary intervention by antitrust authorities, such narrowing of the scope of antitrust investigation is said to open the larger market to more competition and innovation. The aim of correcting market distortions arising from any asymmetry in bargaining power may not be fulfilled using antitrust law, and may, in fact, may lead to an adverse impact on innovation. Under the new policy highlighted by the AAG, focus will shift to include the actions of SSOs and implementers, which may be anticompetitive, and require interference of antitrust authorities. This will see the antitrust authorities taking cognizance of, and carefully scrutinizing any anticompetitive behavior of implementers and SEP holders.

The new policy change also focuses on ‘other remedies’, including civil and contractual reliefs, in place of antitrust law. Observing unwarranted involvement of antitrust agencies in certain disputes related to patents in high technology, AAG Delrahim stated that remedies, other than those offered under antitrust law, could be relied upon to ensure that interests of all parties are preserved. The reason is that several issues involving implementers and SEP holders are largely associated with some form of contractual arrangement. In cases where such contracts are breached or contractual duties are reneged, damages and injunctions should be the primary source of relief instead of antitrust remedies under common law. Common law remedies for contractual disputes (including those around licensing of essential patents under terms that are fair, reasonable, and non-discriminatory) allow both parties a chance to present their case and have a dialogue on the interpretation and implication of each prong of ‘FRAND’.¹⁵⁶ Common law remedies allowing settlement of a contractual dispute between private individuals better serves the interests of the parties without an interference of public regulatory bodies.

AAG’s remarks rekindles the belief that public law regulation of private contracts may create more market distortions, including the problem of under-investment or reverse patent hold-up, instead of solving them. The intervention of antitrust enforcers should be limited or ‘exercised with humility’ to avoid any adverse effect on market competition. Antitrust law should be expanded to include ‘non-competition public interest factors that balance competition and non-competition factors with equity.’¹⁵⁷ It can also be inferred from Mr. Delrahim’s speeches that his new policy proposal supports self-regulation of SSOs. A regulatory approach followed by the SSOs that is more precautionary of

¹⁵⁶*Telefonaktiebolaget LM Ericsson v Mercury Electronics & Anr* (2014) High Court of Delhi, I.A No. 3825 of 2013 and I.A No. 4694 of 2013 in Civil Suit (Original Side) No. 442 of 2013; *Telefonaktiebolaget LM Ericsson (Publ) v Intex Technologies (India) Limited* (2015) (62)PTC90 (Del); *Microsoft* (n 56).

¹⁵⁷Koren W. Wong-Ervin, ‘Protecting Intellectual Property Rights Abroad: Due Process, Public Interest Factors, and Extra-Jurisdictional Remedies’ George Mason University Law & Economics Research Paper Series 17-18.

assessing their own rules *vis-à-vis* antitrust laws would result in less intrusion of antitrust authorities in standard setting and development processes. In sharp contrast to the beliefs of Mr. Delrahim's predecessors, the new approach restores faith in free market and throws light on equality in the treatment of parties. The new approach lays emphasis on a harmonious application of both these principles to allow the market to function smoothly without an overreach of antitrust laws to unilateral conduct of implementers and innovators.¹⁵⁸

7 Conclusion

While it cannot be denied that innovation is the driving force behind economic growth in ICT and allied sectors, it is a fact that in spite of this, the patent holders receive only a small fraction of the social benefits attached to their patented inventions. Hence, any potential situation leading to the reduced return on these inventions would automatically result in an adverse effect on innovation ecosystem in ways that might be societally undesirable.¹⁵⁹ The benefit that a claimed invention can offer to an end product seems to have been ignored by the changes made in the existing policy.

It has also excluded the value of Essential Patent Claim's technology in the IEEE standard from the scope of 'reasonable rates'.¹⁶⁰ This may possibly result in all the implementers being benefited, leaving patent holders at loss with respect to the gains from standardization. This will be a huge blow on the patent holder as their investment in research and development of technology will not gain them any profit. This will inevitably lead to patent holders settling for rates negotiated *ex-ante*, before the incorporation of the technology in the standard. One may argue this is a possible way of shutting down a hold-up, but nonetheless it is unfair and undesirable as the fair share in overall gains is denied.¹⁶¹

The changes in the policy creates an imbalance between the rights of innovators, in which they lose value on their patents, and the implementers of technologies. This may lead to market imbalance as there is interference in the market processes by incongruously restricting the terms of licensing negotiations. The incentives to create technology then becomes considerably less which is a matter of concern. The consequences of which is reduced economic incentives to contribute technology to efforts of standardization, which is very likely to be the deciding factor to the progress of technology.¹⁶²

¹⁵⁸Delrahim (n 145).

¹⁵⁹Abbott (n 84).

¹⁶⁰Badin (n 102).

¹⁶¹Abbott (n 84); *ibid*.

¹⁶²*ibid*.

The need of the hour is to strike the right balance, in both government intervention and SSO's IPR policies between the interest of implementors and innovators.¹⁶³ The balance is important in order to determine 'a practical and fair definition of what fair and reasonable is and what amounts really to non-discriminatory licensing'.¹⁶⁴ In the absence of balance, the investments will not be made in open standards which will result in a lot of proprietary standards instead of proprietary technologies.¹⁶⁵ The imbalance will lead to reverse hold-up or hold-out, increased SEP litigation, a reduction in SSO participation, reduced arm's length SEP licensing and cutting of R&D expenditure from SEPs to unencumbered non-essential technologies.

The importance of IPR policies of SSOs should never be ignored while considering the entire system of things involving standardization. In case of an imbalance of incentives between the patent holders and the implementers, then there is a likelihood of some of the foremost contributors of technological advancement and standardization becoming unresponsive in future standard setting process of a SSO, and in few cases, there persist a risk of these contributors diverting their technological contributions to standard setting activities in other SSO's.

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¹⁶³Gupta (n 30).

¹⁶⁴ibid.

¹⁶⁵ibid.

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