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# Over and under-disclosure of standard essential patents: An EU approach to its effects on innovation and competition

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# Over and Under-disclosure of Standard Essential Patents: An EU approach to its Effects on Innovation and Competition

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# Over and Under-disclosure of Standard Essential Patents: An EU Approach to its Effects on Innovation and Competition

*Vicente Zafrilla Díaz-Marta**

# Chapter 1: Introduction

## 1. Introduction

The need of standardisation in an interconnected world is not under discussion. Standards are needed to ensure the connectivity, compatibility and interoperability of different products and devices. Standards can be as simple as a common format of paper sheets so that they can be properly stored or used in any printer all over the world, or as obvious as defining at international level the dimension of shipping containers to enable their transportation by different ships and trucks and to facilitate the freight handling in any port.[1]

Information and Communication Technologies (ICT) standards tend to be more sophisticated. They usually require a combination of different technologies – some of them protected by patents – to achieve widely accepted technical solutions. Such standards *inter alia* allow smartphones from different manufacturers to communicate between each other or any device to access the telecommunications network of different countries.[2]

On top of ensuring connectivity and interoperability, telecommunications standards pave the way for new uses, products and services which require better performance, more reliability, latency or an

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[1] This resulted in a substantial reduction of transaction costs and modified the worldwide transport infrastructure. Frank AG den Butter and Stefan Groot, *The Transaction Costs Perspective on Standards as a Source of Trade and Productivity Growth* (2007) Discussion paper TI 07-090/3 <http://personal.vu.nl/f.a.g.den.butter/TIstandards07090.pdf> accessed 1 November 2022.

[2] Although this might sound ridiculous today, consumers in the past had to buy different mobile phones in different parts of Europe before the creation of the GSM standard. 'Before there were wireless cellular standards, mobile phone users could not travel to another country and still make calls. Different technologies were used by different countries and firms, each requiring large investments.' Alexander Galetovic and Kirti Gupta, 'Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry' (2016) 19 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2790347&download=yes> accessed 1 November 2022.

increasing volume of data.[3] Therefore, all the ICT related industries are pushing constantly to improve the existing standards and create new ones.

Hence, in the ICT sector, the pre-existence of standards is not only desirable, but a truly necessary condition for innovation - ie the creation of new products and services, and even new markets.[4] It is not surprising that interoperability, both within and across technologies, is decisive for all the sectors[5] chosen by the European Commission in its 'Communication on ICT standardisation priorities for the Digital Single Market'.

As a result, the ICT sector has pushed the boundaries of standardisation beyond the traditional understanding of what a standard was. An ICT standard is not a mere decision about what is the appropriate length or size of a screw, neither a codification of the common practices in a given sector. Rather, ICT standardisation is an innovative process, which takes place in parallel to the development of new products and technologies that build on the standard. That is why Ullrich refers to this type of standardisation as 'innovative standardisation'.[6]

## 1.1. From standard setting to standard developing

The difference between traditional standardisation and innovative standardisation corresponds largely to the distinction between standard setting and standard development, which has motivated a terminological (low intensity) conflict[7] between the use of Standard Setting Organisations (SSOs) and Standard Developing Organisations (SDOs) to refer to the institutions in whose framework standards are created. Generally speaking, SEP holders are more prone to use SDOs while implementers and tech giants prefer SSOs.

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[3] For an overview of the evolution of wireless standards and some of its technical implications see Haris Tsilikas, 'Huawei v. ZTE in Context – EU Competition Policy and Collaborative Standardization in Wireless Telecommunications ' (2017) 48 International Review of Intellectual Property and Competition Law 151, 153ff; Kirti Gupta, 'How SSOs Work: Unpacking the Mobile Industry's 3GPP Standards' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 31ff.

[4] The Commission argued similarly in Rambus: 'an effective standard-setting process is, in the sector relevant to the present case, a precondition to technical development and the development of the market in general to the benefit of consumers'. European Commission, *Rambus* (Case COMP/ 38636) Commitment Decision of 9 December (2009) OJ C30/17, para 3 (summary version) and https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf, para 29 (long version).

[5] Including 5G communication, cloud computing, Internet of Things, Big Data Technologies and cyber security. European Commission, 'ICT Standardisation Priorities for the Digital Single Market' COM(2016) 176 final.

[6] Hanns Ullrich, 'Technology Protection and Competition Policy for the Information Economy. From Property Rights for Competition to Competition Without Proper Rights?' (2019) Max Planck Institute for Innovation & Competition Research Paper No 19-12, 7ff.

[7] As it has been argued, the selection of words in this environment is nothing but innocent, and wording matters in standardisation. See the analysis of Heiden and Petit of the alleged misuse of the economic term 'hold-up' in standardisation-related literature. Bowman Heiden and Nicolas Petit, 'Patent Trespass and the Royalty Gap: Exploring the Nature and Impact of Patent Holdout' (2017) 34 Santa Clara High Tech LJ 179, 202.

Borghetti et al[8] raise an argument in favour of using SDO instead of SSO. They argue that the term 'setting' might be slightly misleading inasmuch SSO do not actually 'set' in the meaning of 'imposing' standards but rather provide the environment where standards are created and developed.[9] Consequently, it is the market who 'sets' standards – or alternatively governmental bodies, by approving mandatory standards. Paradoxically, in their paper, the authors prefer to use the term SSO 'due to widespread use in the literature'.

Nevertheless, the literature is split between both terminologies.[10] While in the past 'SSO' was more commonly preferred, it seems that the term 'SDO' is gaining more and more traction. Nor have policy makers remained immune to this trend. The European Commission also referred to SSOs in the past,[11] it has switched to 'SDOs' in its most recent publications.[12] The US Federal Trade Commission and the Department of Justice are less consistent in this regard and they have been referring to either one or another along the last two decades.[13]

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[8] Jean-Sébastien Borghetti, Igor Nikolic and Nicolas Petit, 'FRAND Licensing Levels under EU Law' (2020) 1, fn 3 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3532469> accessed 1 November 2022.

[9] 'It is worth emphasising here that SSOs do not actually set standards. Rather, they act as a venue for the development and creating of technical specifications after which it is for the market to decide whether the standard will be widely adopted or not'. ibid.

[10] On the one hand authors using the term SDO are Knut Blind and Axel Mangelsdorf, 'Motives to standardize: Empirical evidence from Germany' (2016) 48-49 Technovation 13, Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) <http://compass-lexecon.s3.amazonaws.com/prod/cms-documents/c88320bcaebcb04d/CL_Economic_Impact_of_Technology_Standards_Report_FINAL.pdf> accessed 1 November 2022; Justus Baron *et al*, *Making the Rules: The Governance of Standard Development Organizations and their Policies on Intellectual Property Rights* (2019) JRC Science for Policy Report <https://ec.europa.eu/jrc/en/publication/making-rules-governance-standard-development-organizations-and-their-policies-intellectual-property> accessed 1 November 2022. On the other, some examples of use of the expression SSO are Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2333445> accessed 1 November 2022; Josh Lerner, Haris Tabakovic and Jean Tirole, *Patent Disclosures and Standard-Setting* (2016) NBER Working Paper No 22768 <https://www.nber.org/papers/w22768> accessed 1 November 2022; Jay P. Kesan and Carol M. Hayes, 'Standard Setting Organizations and FRAND Licensing' in Robert D. Anderson, Nuno Pires De Carvalho and Antony Taubman (eds), Competition Policy and Intellectual Property in Today's Global Economy (Cambridge University Press WTO and WIPO, 2021) 272. Contreras refers to SSOs in one publication and to SDOs in another one, both published the same year. Jorge L Contreras, 'Technical standards, standards-setting organizations, and intellectual property: a survey of the literature (with an emphasis on empirical approaches)' in Peter S Menell and David Schartz (eds), *Research Handbook on the Economics of Intellectual Property Law* (Edward Elgar Publishing 2019); Jorge L Contreras, 'Private Law, Conflict of Laws, and a Lex Mercatoria of Standards-Development Organizations' (2019) 27 European Review of Private Law 245.

[11] See European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1.

[12] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 <https://ec.europa.eu/docsroom/documents/26583/attachments/1/translations/en/renditions/native> accessed 1 November 2022.

[13] See US Department of Justice and Federal Trade Commission, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition* (2007) <https://www.justice.gov/atr/antitrust-enforcement-and-intellectual-property-rights-promoting-innovation-and-competition> accessed 1 November 2022; US Department of Justice - Antitrust Division, 'Antitrust Division Manual - Fifth edition' 2013 <https://www.justice.gov/atr/file/761131/download> accessed 1 November 2022; Makan Delrahim, '"Don't Stop Thinking About Tomorrow": Promoting Innovation by Ensuring Market-Based Application of Antitrust to Intellectual Property', Speech delivered before the OECD (6 June 2019)

Biddle has proposed a different taxonomy where SSO is the generic term – including SDOs, consortia or even single promoters – and SDOs refer to organizations with a more formal and structured governance model.[14] Yet this approach does not capture the structural differences between the two definitions.

There is another argument to plead in favour of a more differentiated use of the two terms: while 'setting' reflects better the situation where the role of the organization is merely to select which of the already existing technologies must be included within the standard, 'developing' is more suitable when the standardisation entails additional efforts to go beyond the state-of-the-art and therefore innovate within the standardisation process (hence, referring to innovative standardisation).

Both terms can coexist if they are used properly and with awareness of their meaning and implications.

One of the main implications, which explains largely the standpoints of SEP holders and implementers, is related to the appropriability of the value derived from standardisation. If the standardisation consists in a mere selection of technologies, SEP holders should not be entitled to capture such value.[15] On the contrary, if the technology is developed in parallel or as part of the standardisation efforts, there will be legitimate reasons for the SEP holders to claim part of this value.[16]

Arguably, the case in the ICT sector – and notably in the telecommunications subsector – is closer to the 'developing' scenario than to the 'setting' scenario: the companies participating in technical committees do no limit their contribution to pre-existing technologies but engage in truly innovative efforts in parallel or in cooperation with other participants.[17] In the same fashion, the standardisation efforts are neither limited to a mere selection of technologies but rather try to combine different technologies to achieve a better technical result. Hence, it is more coherent to adhere to the Standard Developing Organisation nomenclature in this work.

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<www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-organisation-> accessed 1 November 2022.

[14] C Bradford Biddle, 'No Standard for Standards: Understanding the ICT Standards-Development Ecosystem' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 18.

[15] Bekkers links the appropriation of the mere value of the inclusion in the standard by the SEP holders to hold-up. Yet he takes for granted that the technology pre-existed the standard. In addition, hold-up is rather linked to other factors such as sunk costs, switching costs and path dependence, as is analysed in Chapter 5 below. Rudi Bekkers, 'Where patents and standards come together' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 247.

[16] These issues are addressed in more detail in subsection 3.2.2.1 of Chapter 5.

[17] 'In the ICT sector especially, standards not only need to change to reflect continuous technical advances, they also incorporate technical advances. There is an interaction between the standard-setting process and the process of technical discovery. New technology within a standard changes that standard and also changes the incentives for technical progress for complementary products within and outside that standard.' Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 29. See also Kirti Gupta, 'How SSOs Work: Unpacking the Mobile Industry's 3GPP Standards' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 33.

## 1.2 Collaborative standardisation, blocking patents and competition law

Innovative standardisation presents specific challenges as compared to traditional (*ex post*) standardisation with regard to the selection of the standard and the eventual existence of blocking (patented) technologies.

In traditional settings, the standardisation decision usually merely entails choosing among a fistful of technologies with a proven record in the market. Consequently, companies and governmental bodies involved in traditional standardisation are already knowledgeable about the available technologies. Similarly, they are aware of eventually blocking technologies and therefore can act in accordance – requiring the owner of the technology to enter into a non-enforcement commitment, or grant more favourable licensing conditions (eg FRAND or royalty free). If the patent owner refrains from offering such conditions, the organisation will be able to opt for an alternative technology, if available. Not surprisingly, *ex post* standardisation initiatives have usually been reluctant to include patented technologies within the standard.

Conversely, innovative standardisation entails parallel development of the technology and the standard. The process is therefore more complex and uncertain, in particular when the standard is created as a result of an open standardisation process[18], where virtually any company can make its contribution to the creation of the technology and the development of the standard.

Although there are different governance models for standardisation[19], the telecommunications sector has mostly opted for industry-driven SDOs[20] such as IEEE[21] or the European Telecommunications Standards Institute (ETSI).[22] The standard development includes agreements among competitors, which in certain circumstances can produce restrictive effects on competition in the sense of Article 101 TFEU.[23] However, such agreements are tolerated and even encouraged by competition

[18] Strictly speaking, an open standard is a standard whose innovative process, standardisation *iter* and exploitation terms are open. In a broader sense, it is also possible to use the term 'open standard' when at least one of these three dimensions (innovation, standardisation or exploitation) is open and the rest of them are partially open. See Vicente Zafrilla Díaz-Marta and Carlos Muñoz Ferrandis, 'Open standards and open source: characterization and typologies' (2020) 15 JIPLP 700, 701ff.

[19] For an overview of the different institutional and organisational approaches to standardisation see C Bradford Biddle, 'No Standard for Standards: Understanding the ICT Standards-Development Ecosystem' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 17.

[20] As opposed to government driven standardisation. The evolution of mobile telephone standards from a government-driven process to an industry-driven process is summarised by Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 8ff.

[21] Formerly standing for Institute of Electrical and Electronics Engineers. IEEE, 'Home page' (<https://www.ieee.org/index.html> accessed 1 November 2022.

[22] ETSI, 'Home page' (<http://www.etsi.org/> accessed 1 November 2022.

[23] Treaty on European Union and the Treaty on the Functioning of the European Union [2012] OJ C326/1.

authorities due to the positive economic effects associated to innovative standardisation.[24]

The almost mandatory inclusion of cutting-edge technologies brings patent-protected technologies to the standard, the so-called Standard Essential Patents (SEPs).

The essentiality of a patent is a dynamic reality, which evolves along the creation of the standard. A patent that reads on a preliminary version of the standard may not necessarily read on the final version and *vice versa*. Equally, the status of standard essentiality is influenced by events in the course of the prosecution of the patent; any modification in the claims can affect the essentiality of the patent.

The interest in SEPs is justified by the ever-growing relevance of interoperability standards in the ICT sector: being or not standard-compliant represents the difference between entering into a market or not. Whenever the technologies included in the standard are covered by patents it is not possible to implement it without infringing the patents.

It is not very likely that a smartphone manufacturer can even consider starting to compete in such market if its devices do not include WiFi, LTE (4G) or NR (5G) standards. Additionally, with the advent of the Internet of Things, the need of accessing connectivity technologies is not anymore constrained to traditional ICT sectors[25]: now cars, household appliances, smart meters or any kind of wearables require connectivity.

For this reason, SEPs have a gatekeeping effect for an increasing number of markets, conferring market power to its owner and, in many cases, a dominant position. In such cases, the abusive behaviour of a SEP holder can trigger competition law intervention by virtue of Article 102 TFEU.

Nevertheless competition law is not – and should not – be the instrument of first choice to control the exercise of rights conferred by SEPs, notably because in many of the cases, these behaviours do not produce any anticompetitive effects. As part of their intellectual property rights policies (IPR Policies), SDOs try to address the challenges arising from the current ICT standardisation, characterised by the development of the standards covered by huge numbers of SEPs held by a multitude of companies.

## 1.3 Disclosure rules and deviations

Disclosure rules included in IPR Policies are an attempt to address one of these specific challenges, namely to flag other participants in the standardisation process that a proposed technical solution can potentially read in one or more patents. In addition to the disclosure, the SEP holder can declare its willingness to license such patent – shall it become

[24] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, paras 263 and 264.
[25] Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 137ff.

truly essential for the standard – in fair, reasonable and non-discriminatory (FRAND) terms.[26]

With this information, the participants in the standard development can decide whether to include the patent into the standard or alternatively to design around the patented technology – as it happened in traditional standardisation.

Usually, the words declaration and disclosure are indistinctly used to refer to a communication of the SEP holder who informs the SDO – and the rest of participants in the market– of the existence of (potentially) essential patents and of its willingness to license such patents on FRAND terms.[27]

Rather than a single conduct, it is proposed to distinguish between two different actions that do not necessarily take place at the same time:[28] the commitment to license any patent that turns out to be essential (declaration) and the communication to the SDO of which patents are deemed to be potentially essential by the SEP holder (disclosure).

Although the wording differs from SDO to SDO, some IPR policies are supportive of or at least compatible with this understanding. For example, the wording of the IETF IPR Policy makes a distinction between disclosure and declaration[29], and similarly VITA distinguishes between the disclosure of patents[30] and the declaration of licensing commitments.[31] ETSI also refers to disclosure in its IPR policy,[32] explicitly mentioning 'declaration' in connection to licensing commitments in the licensing form.[33] Finally, the IEEE Standards Board Bylaws do not refer to disclosure, nor to declaration, but include both disclosure of patents and licensing terms and commitments within the so-called 'letters of assurance'.[34]

Consequently, this study refers to the problems of over and under-disclosure to include over and under-declaration[35], insofar over or under-

[26] Or any other predefined licensing terms, such as 'royalty free'.

[27] Or more generally, on pre-established licensing terms as defined by the SDO

[28] Although sometimes both take place at the same time, which might justify why these terms are frequently used as synonyms.

[29] See, eg, Section 5.5. Scott Bradner and Jorge Contreras, 'BCP 79/RFC 8179 Intellectual Property Rights in IETF Technology' (*IETF*, 2017) <https://www.rfc-editor.org/info/bcp79> accessed 1 November 2022.

[30] Arts 10.2.1 and 10.2.2 VITA, 'Policies and Procedures' (VSO, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022.

[31] Ibid, Art 10.3.2.

[32] Art 4 ETSI, 'IPR Policy' <https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf> accessed 1 November 2022.

[33] See Art 6 bis and the IPR licensing declaration forms in Annex A. Ibid

[34] Art 6 IEEE-SA, 'Standards Board Bylaws' (2019) <standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf> accessed 1 November 2022.

[35] Some of the authors who prefer the terms over or under-declaration are, among others, Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) <http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=9028&lang=en> accessed 1 November 2022; Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2951617> accessed 1 November 2022; Reiko Aoki and Yasuhiro Arai, *Strategic Declaration of Standard Essential Patents* (2018) <https://econpapers.repec.org/paper/etidpaper/18035.htm> accessed 1 November 2022.

disclosure[36] can also occur when the SEP holder has declared its willingness to license all or some specific patents that are essential for the standard. For the same reason, it is more coherent to speak of 'blanket declarations' rather than 'blanket disclosures'.[37]

While in the early 2000s the major concern relating to the disclosure duty was under-disclosure enabling patent ambush, in recent times scholars[38] and the Commission[39] alike have raised their voices concerning the eventual harms that over-disclosure may cause to the standardisation process.

Under-disclosure occurs whenever a SEP holder remains silent about the essentiality of one of its patents. The causes of under-disclosure can range from the mere lack of awareness to opportunistic behaviours, and its consequences substantially depend on the behaviour of the SEP holder after the standard has been approved and implemented in the market. As regards the consequences, an under-disclosing company can virtually paralyse (or alternatively extract excessive royalties from) an industry which is locked into a standard[40], without the possibility of such industry of either designing around or creating an alternative standard in the short or medium term.

Concerns related to under-disclosure are not merely theoretical. The Commission dealt with patent ambush in the renowned Rambus case.[41] Patent ambush is a paradigmatic example of opportunistic under-disclosure whereby a company conceals a (or some) patents which are likely to be essential for a standard in the course of the standardisation process. Once the standard is approved and the industry gets locked-in, the SEP holder tries to extract excessive royalty rates from implementers

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[36] In contrast, other authors choose to use the terms over and under-disclosure. See Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 60ff; Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 113ff; Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 248.

[37] A similar line of reasoning can be found at C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead) - Working paper' (2015) 1 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2669893> accessed 1 November 2022.

[38] See David J Teece and Edward F Sherry, 'Standards setting and antitrust' (2002) 87 Minnesota Law Review 1913, 1948; Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 62; Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017) 12 accessed 1 November 2022; Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 248.

[39] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 5. Similarly, the Japan Patent Office also echoed such concerns. See JPO, 'Guide to Licensing Negotiations involving Standard Essential Patents', 2 <http://www.meti.go.jp/english/press/2018/0604_001.html> accessed 1 November 2022.

[40] See Section 3 in Chapter 2 for an analysis of the lock-in effect and its practicalities in connection with dominance in Chapter 5, subsection 2.1.2 .

[41] European Commission, *Rambus* (Case COMP/ 38636) Commitment Decision of 9 December (2009) <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636(38636-1203_1.pdf> 18 July 2022.

by challenging them with injunctions to stop the alleged patent infringement.

In contrast, over-disclosure can be defined as disclosing patents as essential although they in fact lack standard essentiality.[42] When SEPs are counted, it is important to bear in mind that the numbers do not refer to actually essential patents but to those that have been declared – or more precisely disclosed[43] – by the SEP holders, while their actual essentiality may only be verified at a later stage.[44]

Some studies have quantified that only a 20%-50%[45] of disclosed SEPs are actually essential – depending on the standard analysed and the methodology. While the accuracy and methodology of these studies cannot be assessed properly – eg the criteria for assessing essentiality, or the time devoted to it -, the studies point to an actual divergence between the number of disclosed essential patents vis-à-vis the number of actual essential patents.

Whether this divergence is only explained by (wilful) over-disclosure and whether over-disclosure results in negative effects that should be further addressed by SDOs' IPR Policies – and ultimately by competition law – is less clear.

Over and under-disclosure are two opposing trends: measures targeted at reducing under-disclosure might promote over-disclosure and vice versa. As a result, it is paramount to analyse which of those trends can potentially provoke more negative effects and, if so, under which circumstances.

To a large extent, over-disclosure is problematic only if it is tacitly or explicitly assumed that the role of disclosure is not exhausted by its informative function towards other participants in the standard development but also extends to licensing. This understanding is particularly intuitive in a sector where (essential) patent counting is one of the criteria for portfolio valuation. Yet it might be too far-reaching to understand that SEP disclosures rules' main aim is to provide prospective

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[42] These overly simplified definitions do not capture the circumstances that surround the disclosure of SEPs as discussed in Chapter 3, nor its actual consequences – or absence thereof – which are mostly addressed in Chapter 5.

[43] 'Standard essential patents are badly named. "SEPs" are in fact patents which are declared as essential by their owners without any independent check of that claim.' Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 32.

[44] Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 60.

[45] David J Goodman and Robert A Myers, '3G Cellular Standards and Patents', in IEEE (ed), *Communications and Mobile Computing – 2005 International Conference on Wireless Networks* (IEEE 2005) 415 <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1549445> accessed 1 November 2022; Fairfield Resources International, *Analysis of Patents Declared as Essential to GSM as of June 6, 2007* (2008) <https://www.scribd.com/document/91311335/GSM-FINAL> accessed 1 November 2022; Fairfield Resources International, *Review of Patents Declared as Essential to LTE and SAE (4G Wireless Standards) Through June 30, 2009*, (2010) <https://vdocuments.site/review-of-patents-declared-as-essential-to-lte-and-saewwwfrlicensecomlte-final.html?page=1> accessed 1 November 2022; Cyber Creative Institute, Evaluation of LTE essential patents declared to ETSI (2011) < http://www.cybersoken.com/file/lte01EN.pdf> accessed 1 November 2022; Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017).

licensees with a perfect picture of the patents they need to be licensed to implement the standard.[46]

Hence if disclosure rules' goal is to protect the standard development – ie prevent under-disclosure – then the appropriate strategy is to disclose as many patents as possible[47] to ensure wide freedom to operate for the standard development – at the risk of causing over-disclosure. On the contrary, if the goal is to provide information to licensees, SEP holders should be more restrictive in the patents they disclose – increasing the likelihood of under-disclosure.

## 1.4 Research question and scope of the thesis

The present work aims to answer the research question of whether European competition law should and can address the negative effects on innovation and competition caused by over- and under-disclosure of SEPs.

Against the backdrop of the complexity of the institutional, legal, technical and business dynamics surrounding over and under-disclosure of SEPs, answering the research question requires a multifaceted analysis of all the dynamics that cause or explain under and over-disclosure, as well as an assessment of the effects that over and under-disclosure can cause in different circumstances. Ultimately, the thesis has to explore the suitability of competition law to prevent potential negative effects caused by the two phenomena.

This thesis substantially focusses on (collaborative) SDO-based standardisation as opposed to *de facto* standardisation.[48] It is this framework where disclosure rules are used and therefore where over and under-disclosure can take place.

The research starts from the premise that both over and under-disclosure can result in positive and negative effects. Some of these effects may potentially impact competition and innovation and therefore be relevant for competition law and policy. Moreover, the effects can also negatively affect business performance of the companies, or concern industrial policy in a broader sense. Nor is competition law the only means to address such effects: unfair competition law, patent law or contract law may equally have a say in this regard. These branches of law, at least under certain circumstances, could address some of the concerns more effectively than competition law.

However, the relevance of European competition law cannot be neglected. Compared to the United States, where doctrines such as patent misuse or implied waiver[49] have been effectively used to address

[46] As argued for example, by Biddle. C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' Working Paper (2015) 7.
[47] Or merely issue a blanket declaration.
[48] *De facto* standardisation refers to the situation where a technology becomes a standard thanks to its widespread acceptance by the market.
[49] In the US the Federal Circuit considered that lack of timely disclosure of a patent (under-disclosure) is an implied waiver of the right to enforce it. *Core Wireless Licensing S.A.R.L v Apple Inc*, 899 F.3d 1358 (Fed. Cir. 2018)

SEPs issues[50], SEPs related-cases in Europe cases were addressed by the Commission[51] and the Court of Justice of the European Union[52] (CJEU) within the competition law framework. Moreover, the Commission devotes an entire chapter of the Horizontal Co-operation Guidelines[53] to standardisation agreements. Although the thesis does not include a proper comparative analysis insofar as it is focused on EU competition law, appropriate consideration is given to the law in other jurisdictions – notably the US – when relevant.

## 2. Structure of the thesis

With all these considerations in mind, the research question is tackled along six chapters plus a conclusion. Chapter 2 addresses the relationship between innovation and standardisation with a focus on the contrast between the effects on innovation of *de facto* standards vis-à-vis SDO-based standardisation. Such contrast illustrates why, under certain circumstances, SDO-based standardisation produces pro-innovative effects beyond those produced by *de facto* standardisation.

Chapter 3 deepens the different understandings and implications of standard essentiality and disclosure from a theoretical and practical standpoint. It explores why the SEPs' definition and scope provokes that, in practice, essentiality is a dynamic reality which evolves over time. This fact, together with the – usually vague – disclosure rules set by SDOs and the intrinsic limitations of companies to deal with these streams of information are systemic causes that might explain the existence of over and under-disclosure beyond the existence of opportunistic behaviours.[54]

Chapter 4 takes a normative approach to the status of IPRs – SEPs in particular – when confronted with competition law. The chapter includes an analysis of some selected case-law and tests that address the interrelation between IP and competition law and might be relevant for SEPs cases, including disclosure-related ones. The Chapter finally addresses the workability of the theory of complementarity to deal with cases in the IP-competition intersection.

Chapter 5 analyses these behaviours under the lenses of Article 102 TFEU. Both under and over-disclosure are addressed separately but following a similar structure: first it is analysed what are the incentives for SEP holders to rationally engage in over and under-disclosure. Second,

[50] Despite some early cases that adopted an antitrust approach to SEP cases, the US has been more prone to address them from an IP perspective. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 301ff and 342..

[51] In decisions such as European Commission, *Google - Motorola Mobility* (Case No COMP/M.6381) Decision of 13 February 2012, C(2012) 1068; *Samsung Enforcement of UMTS Standard Essential Patents* (Case AT.39939) Decision of 29 April 2014, C(2014) 2891 final; *Motorola - Enforcement of GPRS standard essential patents* (Case AT.39985) Decision of 29 April 2014, C(2014) 2892 final

[52] Case C-170/13 *Huawei v ZTE* EU:C:2015:477.

[53] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1.

[54] The internal motivations for over and under-disclosure are analysed in Chapter 5.

what are the eventual harms to competition or innovation that such deviation might cause? And third, is Article 102 TFEU able to tackle these behaviours and under which circumstances?

Chapter 6 takes a prescriptive approach to the problematics associated to SEPs over and under-disclosure. Given the limitations of Article 102 TFEU referred in the previous chapter, this chapter now addresses the possible solutions to over and under-disclosure and their negative effects by critically analysing the already proposed solutions and proposing a coherent set of measures in the framework of SDOs.

Although most of the solutions have to be approved and implemented by SDOs, still competition policy or more specifically competition law can play a role. SDOs are subject to the scrutiny of the Commission on the basis of Article 101 TFEU[55], and therefore the Commission can, in theory, promote the adoption of measures in the framework of the SDOs to address some of the distortions that over and under-disclosure may cause.[56] Nevertheless, the Commission, in applying – or threatening to apply – Article 101 TFEU to SDOs must be particularly careful to limit its intervention to clear competition problems. It should not use its power to engage in industrial policy beyond its mandate and competences. Thus, Chapter 6 includes a normative analysis of the legitimation of the Commission to pursue such goals by ordering the SDOs to adopt measures addressing over and under-disclosure.

# 3. Methodological remarks

The current work is the result of three years of research which have been funded by the European Commission (DG Research) in the framework of EIPIN Innovation Society (H2020- Marie Skłodowska-Curie Action). The Commission has had access to the content of the thesis once finished and no instructions, guidelines or attempts to influence the research have been made by the Commission before, during or after the research period. Therefore, views are exclusively from the author.

This thesis cannot be understood as an attempt to "solve" the over and under-disclosure problem. Such overly ambitious objective would disregard the complexities of the SDO-based standardisation in the ICT industry. Indeed, such approach would underestimate the work of some hundred scholars who have published a few thousand papers[57] dealing with many problems in the standardisation field. Rather, the thesis aims

[55] See the chapter on standardisation in the Horizontal Cooperation Guidelines. European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1.

[56] As Commission did its ETSI/Sun Microsystems case. European Commission, *ETSI/Sun Microsystems* (Case COMP/C-3/37926) Commission Communication [2001].

[57] Choi et al, found that in the period 1995-2008 528 papers they were published only in the field of standardisation and innovation, and the publications´ pace has continued growing since then. Dong Geun Choi, Heesang Lee and Tae-kyung Sung, 'Research profiling for 'standardization and innovation'' (2011) 88 Scientometrics 259.

to contribute to the existing body of literature related to SEPs and SDOs by comprehensively addressing from a competition law perspective the legal, business and technological dynamics of a very specific – yet relevant – issue in the SEPs arena: the deviations from SEPs disclosure rules.

The myriad of publications in the field cannot be explained only by a genuine academic interest in the topic, which is indeed interesting, but also by the strong interest of companies, policy makers and other stakeholders, which have funded academic and non-academic research in the field, defining, in some cases, the research agenda. Such fact does not argue against the merits of such publications – some of them are plainly brilliant – yet from a pure academic perspective requires an extra dose of critical thinking to differentiate between well-grounded arguments and the ones put forward by the companies' or policymakers' agenda.

In addition, competition law analysis requires constant recourse to economics when analysing the effects of a given behaviour and therefore this thesis builds on the extensive and rich (economic and legal-economic) literature in the field. This, however, does not mean that any assertion is taken for granted and the author has proceeded to analyse and challenge the findings whenever appropriate.

The thesis has enormously benefited from the knowledge acquired along the research stays in ETSI and Ericsson, to which the author is extremely grateful for their willingness to share information, the lively discussions, the enriching insights and, most importantly, exquisite respect of academic independence.

The author has complemented his knowledge of the business, legal, policy and technical dynamics of standardisation in the ICT industry with more than forty informal interviews and conversations with stakeholders, including *inter alia* SEP holders, vertically integrated companies in various ICT-related industries, pure implementers, policy makers and representatives of SDOs.

The interviews have been one of the most challenging aspects for the research. The initial approach was to obtain qualitative data through semi-structured interviews. However, a very strict approach to the interpretation of the General Data Protection Regulation (GDPR)[58] resulted in a consent form that almost no interviewee was willing to sign, despite the intention of using the data anonymously. At the risk of losing valuable insights for the research, the author has based his findings in face-to-face and online conversations with the abovementioned stakeholders. Anonymised quotes from these conversations have been included in the thesis on an individual authorisation basis.

As a result, the final outcome is not as rigorous and replicable as it was planned to be. Therefore the work should not be deemed to be a proper legal empirical research, but rather a traditional black-letter legal

[58] Inasmuch in the view of the author, the scope and nature of the data collected were sufficiently covered by the 'legitimate interest' justification. Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data [2016] OJ L 119/1.

research, which has substantially benefited from practical insights from the industry and other stakeholders.

# Chapter 2: Standardisation and innovation

## 1. Introduction

The crucial role of standards in the ICT sector has been briefly recalled in the introductory chapter – and some examples of standards have been provided therein. The starting point for this Chapter is to define what a standard is. There is a large number of definitions of what a standard is. For example, ITU defines a standard as a:

> 'document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is not mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.'[59]

In contrast, the European Union definition is:

> 'a technical specification, adopted by a recognised standardisation body, for repeated or continuous application, with which compliance is not compulsory (…)'.[60] Thereby, a technical specification 'means a document that prescribes technical requirements to be fulfilled by a product, process, service or system'.[61]

The focus of this thesis is substantially on ICT technological standards, understood as a set of (technical) specifications aiming at achieving connectivity, interoperability, compatibility or portability among devices by means of widespread adoption by a substantial part of the market. This definition allows for the inclusion of *de facto* standards that are adopted by the market without intervention of or approval by any formal or informal organisation. The differences between *de facto* and *de iure* standards are analysed in Section 2 below.

Connectivity, interoperability, compatibility or portability are critical features for the innovative performance of ICT industries and explain – by themselves – the relevance of standards for innovation. However, the interaction between innovation and standardisation goes beyond the

[59] ITU, 'Standard' <https://www.itu.int/net/ITU-R/asp/terminology-definition.asp?lang=en&rlink={33456FFA-4D20-4500-A52B-129401C7E7C2}> accessed 1 November 2022.
[60] Art 2(1) Regulation No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation [2012] OJ L316/14.
[61] ibid, Art 2(4).

mere provision of enabling technologies in the case of innovation-intensive industries.

The aim of this Chapter is to analyse the interaction among standardisation and innovation (Section 3) with a special focus on the main differences between *de facto* and *de iure* standards in terms of competitive dynamics and innovation effects.

## 2. *De iure* and *de facto* standards

Standards can be created and adopted under different approaches. *De facto* standards are technologies that become the standard as a result of competition among technology providers following widespread acceptance by the market[62], such as Windows OS or Android. *De iure* standards are technologies that are designed with the ultimate goal of becoming a standard and are therefore either proposed to or even imposed on the market participants.

Among *de iure* standards there are two different types: government-driven (top down) and industry-driven (bottom up) standards. The former are standards developed by governmental bodies that become the standard thanks to government endorsement – either by making them mandatory or by giving them a more favourable treatment.

Industry-driven standards are created by a number of companies[63] – usually in the framework of SDOs or consortia[64] – and later offered to the market participants (manufacturers) who are in principle free to implement them or not. However, the endorsement of the companies involved in the standard's creation – and sometimes the absence of competing technologies – increases the chances of the technology to become the standard in the market.

More and more frequently standards developed in the framework of SDOs face the same competitive pressure in the market than *de facto* standards (inter standard competition). In other words, sometimes the endorsement of key players in the market does not suffice to reach the critical mass required to become the standard, in particular if there are other competing technologies or standards.

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[62] '(D)e facto standardisation often occurs when a particular firm's proprietary methods become so popular that it is commercially desirable for other firms to interoperate with those methods.' Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 100.

[63] Companies that simultaneously cooperate and compete (ie coopete). Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 45.

[64] Consortia are settings with a more flexible organisational structure that are not necessarily open to any interested party.

The so-called 'new approach'[65] to standardisation of the Commission has partially blurred the lines between governmental and non-governmental standardisation.[66] The European Standards (ES) are the epitome of this approach.[67]

For setting an ES, the Commission, instead of developing the standard by itself, defines the needs and objectives that it wants to achieve with the ES. Once it is approved, the Commission, rather than making it mandatory[68], favours its implementation by means of a 'comply-or-explain' approach – ie operators in the market and the society are entitled to not-comply with the standard if they prove that they have been able to fulfil the same requirements without using the standard specifications.

This comply-or-explain approach is very effective to ensure the standard adoption for two main reasons. First, it is more cost effective – in most of the cases – to comply with the standard than to figure out how to meet the requirements out of the standard and then proof its fulfilment; and, second, standard compliance is usually a good defence in cases of liability derived from malfunctioning.

In the ICT sector, government-driven standardisation lost traction in the late 1980s,[69] being substituted by industry-driven (SDOs' based) standardisation. The latter remained the most widespread model[70] till the early 2010s when the complexities of business models, the softwarisation trends and the platform dynamics have opened new fields where *de facto* standardisation – either company sponsored or supported by Open

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[65] Ultimately crystallised in Regulation No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation [2012] OJ L316/14.
See Christian Joerges, Harm Schepel and Ellen Vos, 'The law's problems with the involvement of non-governmental actors in Europe's legislative processes: the case of standardisation under the "New Approach"' (EUI Law Working Paper 1999/09); Harm Schapel, 'The new approach to the new approach: The juridification of harmonized standards in EU law' (2013) 20 Maastricht Journal of European and Comparative Law 521.

[66] Making it more similar to the US way of creating government-endorsed standards. Emily S Bremer, 'Government Use of Standards in the United States and Abroad' in Jorge L. Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Further Intersections of Public and Private Law*, vol 2 (Cambridge University Press 2019) 29.

[67] Based on the following principles '(i) legislative harmonization in the EU is limited to essential requirements that products and services placed on the Community market must meet if they are to benefit from free movement within the Community; (ii) the essential requirements are set out in (annexes to the) relevant directives concerning the product. Although no detailed manufacturing specifications are included in the essential requirements, the degree of detailed wording differs between directives; (iii) the technical specifications of products meeting the essential requirements set out in the directives are laid down in harmonized standards drafted and produced by organizations competent in standard-setting. Application of harmonized or other standards remains voluntary, and the manufacturer may always apply other technical specifications to meet the requirements; however (iv) products manufactured in compliance with harmonized standards benefit from a presumption of conformity with the corresponding essential requirements, and thus with the right to be freely circulated in the EU.' Björn Lundqvist, 'Public Law, European Constitutionalism and Copyright in Standards' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Further Intersections of Public and Private Law*, vol 2 (Cambridge University Press 2019) 127.

[68] Still a number of standards are mandatory in certain critical areas such as safety, health or the environment.

[69] In Europe, see Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 8ff.

[70] Yet coexisting with well-known *de facto* standards.

Source Communities – has experienced a boost.[71] However, standardisation in the telecommunications subsector, which strongly depends on hardware-based technologies, is still today mostly driven by SDOs.

# 3. Standardisation effects on innovation

Paradoxically, standards have traditionally been considered an innovation constraint.[72] This assumption lowered the interest of scholars and policymakers in analysing and exploring how standardisation interacts with innovation, and the use of standards as an innovation-promoting tool.[73]

Indeed, standardisation efforts could harm innovation if they, for example, exclude a superior technology from the standard.[74] However, this is something that the market may also do at a later stage once the market has adopted a *de facto* standard. History shows that the market is not always the best framework for identifying the 'superior' technology: the QWERTY keyboard[75] is a sounded example of an inferior technology that prevailed over technologically superior alternatives.[76]

Particularly, traditional approaches to the relationship between standardisation and innovation have either considered a very narrow concept of innovation or focused on a very specific consequence of standardisation. From a more global perspective, Swann found that standards both enable and constrain innovation – by creating an infrastructure for trade and innovation and by limiting (innovative) activities, respectively.[77]

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[71] For an analysis of the dynamics and trends associated to the relationship between Open Source standardisation and traditional SDO-based models see Vicente Zafrilla Díaz-Marta and Carlos Muñoz Ferrandis, 'Open standards and open source: characterization and typologies' (2020) 15 JIPLP 700.

[72] See, among others, Ole Hanseth, Eric Monteiro and Morten Hatling, 'Developing information infrastructure: The tension between standardization and flexibility' (1996) 21 Science, Technology & Human Values 407; Dominique Foray, 'Standards and innovation in technological dynamics' (1998) 6 StandardView 81.

[73] Alexander Brem, Petra A Nylund and Gerd Schuster, 'Innovation and de facto standardization: The influence of dominant design on innovative performance, radical innovation, and process innovation' (2016) 50-51 Technovation 79, 80.

[74] Josef Drexl *et al*, 'Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements' (2010) 41 International Review of Intellectual Property and Competition Law 948; European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 264. In addition, Maxwell, using a theoretical model, shows that minimum quality standards can hinder welfare enhancing innovation John W Maxwell, 'Minimum quality standards as a barrier to innovation' (1998) 58 Economics Letters 355

[75] Paul A David, 'Clio and the Economics of QWERTY' (1985) 75 The American Economic Review 332.

[76] Whether the alternatives were superior at that moment is not that clear since in times of old typewriters preventing typos was as valuable as typing speed.

[77] GM Peter Swann, *The economics of standardization* (2000) 24. <https://webarchive.nationalarchives.gov.uk/ukgwa/20070628230000/http://www.dti.gov.uk/files/file11312.pdf> accessed 31 October 2022.

It has been proposed that standardisation, by itself, is a structural component of innovation.[78] Starting from a broad concept of standard, Hawking develops a model where the entire innovation cycle is subject to a duality of stability v instability[79] – where standards are a structural component of the former.[80] However, this virtuous cycle of innovation, standardisation and again innovation might be slowed down due to the insufficient agility of institutions and lack of clarity of licensing conditions.[81]

This approach complements the Schumpeterian approach to innovation, which is not exhausted with the disruption of the technology but extends also to its acceptance and implementation by the market until a new disruptive technology emerges. However, this approach might overlook the situation where standardisation is not produced *ex post* to the innovative effort, but rather simultaneously – which is the case for most ICT SDO-based standards.[82]

Standards work as barriers to innovation in low uncertainty markets, whereby the higher the uncertainty in the market, the more positive are the standardisation effects for innovation efficiency.[83] Therefore, when analysing the impact of standardisation on innovation, it is more relevant to analyse the trade-off between negative and positive effects, and the overall impact on the innovation ecosystem.

## 3.1 Network effects and path dependence

Although sometimes neglected in favour of other proxies, such as R&D expenditure or IPR protection, the implementation in the marketplace of an idea or technical solution is the last step of the innovation cycle, and usually the most difficult one - crossing the so-called 'valley of death'.[84] Successful implementation of a technology is even more critical in sectors that are characterised by network effects.

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[78] Richard Hawkins, 'Standards, systems of innovation and policy' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 63ff.

[79] Paradoxically, Foray found the contradition between these same points the reason of their incompatibility Dominique Foray, 'Standards and innovation in technological dynamics' (1998) 6 StandardView 81, 81.

[80] '(S)tandardization represents the epitome of the innovation dynamic: that an innovation becomes fully efficient (in generating economic growth) only when it has become "the standard", supported by a broad configuration of standardized components, interfaces and practices, such that it has crowded out all other solutions and maximized returns for adoption:' Richard Hawkins, 'Standards, systems of innovation and policy' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 73.

[81] Carl F Cargill, 'Standardization, innovation and reality: matching theory and practice' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 424.

[82] See for example the characterisation of ICT standards creation as the interaction between two parallel and iterative processes (standard development and R&D) in Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 4.

[83] Knut Blind, Sören S Petersen and Cesare AF Riillo, 'The impact of standards and regulation on innovation in uncertain markets' (2017) 46 Res Policy 249.

[84] The valley of death metaphorically refers to the intermediate step between the development and the commercialisation of a product. Many companies fail to cross it, usually due to financial or organisational constrains.

Network effects are an important market efficiency[85], defined as the increasing utility of a technology resulting from the increase of users of such technology.[86]

Within interoperability-dependent industries, standardisation and network effects create continuous feedback.[87] The variety reduction function of standardisation entails both direct and indirect network effects by increasing the incentives for suppliers to join the market and, at the same time expanding the number of users on the demand side.[88]

From the demand side – where increasing numbers of connected users lead to direct network effects –, once a critical base of users has acquired standard-based products, purchasing standard-compliant products becomes almost mandatory for the rest of potential customers.[89] Interoperability in network-based sectors is nowadays an important driver of welfare as well as a key factor for consumers when making purchasing decisions.

From the supply side, indirect network effects enhance economic welfare. The increasing number of users stimulates both competitors and suppliers of complementary products to enter the market, thereby increasing the overall attractiveness for customers.

Standards facilitate compatibility[90] both horizontally (competing products and technologies) and vertically (complementary products and technologies). They can also enhance transition between generations of technological systems in terms of backward compatibility.[91]

However, achieving the positive effects derived from a wide base of implementers – either from the demand or the supply side – requires that many operators in the market adopt the technology, ruling other competing technologies out. The more adopters use one technology, the less feasible it is to switch to other technologies.

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[85] Carl Shapiro and Hal R Varian, *Information rules: a strategic guide to the network economy* (Harvard Business Press 1998) 189ff.

[86] Michael L Katz and Carl Shapiro, 'Network externalities, competition, and compatibility' (1985) 75 The American Economic Review 424

[87] 'Network effects arisen from interoperability and standardisation create a continuous feedback among them, since standardisation spurs networks effects while network effects incentive standardisation.' Robert P Merges and Jeffrey M Kuhn, 'An Estoppel doctrine for patented standards' (2009) 97 California Law Review 1, 4.

[88] Knut Blind, 'The economic functions of standards on the innovation process' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 42.

[89] Jae-Yun Ho and Eoin O'Sullivan, 'Strategic standardisation of smart systems: A roadmapping process in support of innovation' (2016) 115 Technological Forecasting and Social Change 301, 302.

[90] An analysis of the negative effects of incompatibility in the presence of network effects can be found at Jay Pil Choi, 'Network externality, compatibility choice, and planned obsolescence' (1994) 42 The Journal of Industrial Economics 167.

[91] Backward compatibility entails positive effects for consumers by favouring a gradual obsolescence of products. In exchange, the suppliers also benefit from maintaining a substantial part of the users' base, gradually transferring them from an existing, well-implemented technology to a new one. Although desirable, backward compatibility is not always feasible due to the different interests of the sponsors of the new and the old technology, see Michael L Katz and Carl Shapiro, 'Product introduction with network externalities' (1992) 40 The Journal of Industrial Economics 55, 68.

Path dependence is a metaphorical term to reflect how opting for a specific technology (path) among different technological alternatives gradually makes unviable the rest of them.

Path dependence implies that, once the industry standard is adopted by the market, all implementers will invest their resources in the standard technology, achieving higher degrees of efficiency and technological development. However path dependence can lead to lock-in situations, where all the alternative technologies lose their attractiveness, and it is no longer feasible to switch to them because the costs associated to switching become unbearable. Therefore, fully benefiting from network effects involves exclusion of competing technologies from the market to the point where the standardised technology is the only feasible alternative.

These dynamics illustrate the delicate balance of pro and anti-innovative effects for technologies that are dependent of network effects to subsist. The question therefore is not whether standards have positive or negative effects on innovation but rather under what conditions standardisation contributes more to the innovative performance of an industry.

### 3.1.1 Increasing efficiencies

Defining the technology required to operate on a given market, standards increase the efficiencies of the resources used for research and for the developments of products and services, signalling the path that companies should take on their innovation efforts.[92]

In this regard, both SDO-based standardisation and *de facto* standardisation contribute to more efficient allocation of resources, although in a different fashion and with a different timing. Arguably, *de facto* standardisation is more effective in terms of time: SDO-based standardisation has been criticised for being particularly slow.[93]

Conversely, SDO-based standardisation is more efficient in the use of resources. By putting together a substantial part of the key players at a very early stage of the creation of the technology, it ensures that cohesion between approaches is reached faster, and, moreover, reduces duplication of efforts resulting from parallel research in incompatible technologies.[94]

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[92] '(S)tandards have significant influence on guiding the allocation of resources and other innovation efforts in certain directions, facilitating the function of "resource mobilisation"'. Jae-Yun Ho and Eoin O'Sullivan, 'Strategic standardisation of smart systems: A roadmapping process in support of innovation' (2016) 115 Technological Forecasting and Social Change 301, 302

[93] See, among others, Carl F Cargill, 'Standardization, innovation and reality: matching theory and practice' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 424; Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017); David Lopez-Berzosa and Annabelle Gawer, 'Innovation policy within private collectives: Evidence on 3GPP's regulation mechanisms to facilitate collective innovation' (2014) 34 Technovation 734, 739 and 741.

[94] Knut Blind, *Standardisation as a Catalyst for Innovation* (2009) ERIM Report Series Reference No EIA-2009-LIS, 14 <https://ssrn.com/abstract=1527333 > accessed 1 November 2022

SDO-based standards tend to perform better in terms of market acceptance than *de facto* standards, since they usually enjoy broader support from the industry – particularly where there is a significant number of key players involved in the development of the technology –, while *de facto* standardisation often results in fierce and inefficient standard wars.

Standard wars occur when two (or more) technologies compete in the market for becoming the standard where the market – due to network effects – will finally choose a single technology. The battle between video technologies VHS and Beta is a paradigmatic example of a standard war.[95]

Under these conditions, such wars typically result in a winner-takes-all situation, while other technologies are ultimately expelled from the market. Aside from the obvious inefficiencies derived from the parallel development of mutually excluding technologies and their commercialisation, standard wars between technologies cause inefficiencies for the companies, which produce complementary products (eg the Betamax videotape producers) and also for the consumers who opted for the technology which is expelled from the market (eg Betamax users).[96]

This does not mean that standard wars cannot occur in the context of SDO-based standardisation. However individual companies are hardly willing to take the risk of competing against collaborative standardisation. Technology providers are more likely to compete within the SDO-based standardisation process. Since this competition takes place at the stage of technology development and not in the market, eventual rejection of technologies does not have a negative impact – in terms of obsolescence and efficiency losses – on manufacturers of complementary products, neither on users.

In conclusion, *de facto* standards only contribute to build cohesion and focus once they been accepted by the market[97] while SDO-based standardisation creates such cohesion from the very beginning of the process of the technology development.

### 3.1.2 Lock-in effect

The lock-in effect is the price that a sector needs to pay for fully benefiting from the positive externalities of network effects. As explained above, capturing them requires that a substantial part of the market opts for a technology.

Even in the cases where opting for a technology does not require substantial investments, resistance to change among current users can prevent the market to switch to another alternative, eventually forcing

[95] Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 37.

[96] Moreover, *de facto* standardisation can negatively affect consumers that prefer to wait until one of the technologies becomes the standard. Brian Dean Abramson, 'The Patent Ambush: Misuse or Caveat Emptor' (2011) 51 IDEA 71, 75.

[97] Knut Blind, 'The economic functions of standards on the innovation process' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 39.

other users to implement the 'standard' technology as well. These dynamics explain, for example, why WhatsApp is the dominant messaging app in Europe whereas WeChat is the one in China. Individuals preferring other apps still need to install the dominant ones if they want to communicate with a substantial part of their contacts. In this case, neither the costs nor the complexity or the learning curve will prevent users from constantly switching between such technologies or even using both simultaneously.

The situation becomes even more critical when 'choosing' a technology does not consist of merely opting for a non-excluding alternative. The more incompatible a technology is with its alternatives and the higher the specific investment in such technology is, the stronger the lock-in effect will be.

The lock-in effect, therefore, can be defined as the situation where the level of technology adoption and investment made makes it impossible – or at least highly inefficient – to switch to an alternative technology. From a microeconomics point of view, the lock-in effect can be equated to a high, or even perfect, price inelasticity from the demand side – ie even great increases in the price will not substantially reduce the demand for the technology.

The existence of lock-in is explained by a series of factors or, more likely, a combination thereof: the users' resistance to switch, sunk costs, switching costs or losses of compatibility, among others.[98]

Nevertheless, the mere existence of a lock-in effect does not necessarily provoke negative effects on innovation. Yet a lock-in effect might aggravate those effects under certain circumstances. There are two aspects where the lock-in effect is relevant: one is perpetuating (inferior) technologies as the standard and, second, its role as a source of market power.

#### 3.1.2.1 Network effects and technology selection

Network effects can also play against the innovative performance in an industry, particularly when the technology chosen is not the superior one, or, being the superior at the moment of its selection, it will not be superior taking account of its potential in the long run.[99] Arthur introduced this seminal idea taking into consideration that historical facts or opportunity reasons could give an inferior technology an early lead position that – in case of increasing returns (network externalities) – could suffice to expel superior technologies from the technological race. When

[98] This sources will be analysed more in detail when evaluating SEPs as a cause of market power and hold-up in Chapter 5, Sections 2 and 3 – for a comprehensive analysis of these sources of lock-in (although focused in hold-up) see Thomas F Cotter, Erik Hovenkamp and Norman Siebrasse, 'Demystifying Patent Holdup' (2019) 76 Washington & Lee Law Review 1501.

[99] Likely the case of the QWERTY keyboard, see above in section 3.

network effects are in place, the technological race can switch from a best-takes-it-all to a fastest-takes-it-all scenario.[100]

A case where a standard was used to exclude a superior technology was the US Supreme Court case in *Allied Tube & Conduit v Indian Head*. Here, the defendant used the National Fire Protection Association standard to exclude PVC conduits, which were technically superior to pre-existing steel conduits.[101] Nonetheless, this case cannot be generally understood as an example of the harmful effects of standardisation *per se*, but as an example of standards misuse.

Support from market operators can indeed alter the selection of market standard: Katz and Shapiro present a model where two incompatible technologies compete, with and without sponsor[102], concluding that in absence of sponsors the superior technology – in static terms – prevails. If any of them is sponsored, it will very likely prevail, even if the sponsored technology is inferior, while, if both are sponsored, the superior technology in dynamic terms has a strategic advantage.[103]

The selection of an inferior technology[104] is potentially detrimental to innovation for a number of reasons: it may reveal itself as insufficient to meet the demand of the market. It may discourage follow-on innovators and put the innovative focus on a sub-optimal path.[105] Such effects would be more intense in case of strong network effects – which increase switching costs – leading to an overall poorer innovation performance. Therefore, and with an exclusive view to innovation performance, superior standards should be preferred.

As a result, under certain circumstances, network effects can contribute to the adoption or consolidation of an inferior technology. In sectors with strong network effects, therefore, choosing the superior technology is of the utmost importance: in this regard, SDO-based standardisation arguably performs better than *de facto* standardisation.[106]

The reasons seem obvious: a single company´s R&D department cannot compete against a few dozens of them participating in an open innovation

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[100] W Brian Arthur, 'Competing technologies, increasing returns, and lock-in by historical events' (1989) 99 The Economic Journal 116, 126ff.

[101] *Allied Tube & Conduit Corp v Indian Head Inc,* 486 US 492 (1988).

[102] Broadly understood a sponsor is a company that is proactively involved in supporting the adoption of its technology in the market. Strategies for supporting such adoption can be as evident as leveraging from market power in connected market or as subtle as financing consortiums to encourage the use of the sponsored technology.

[103] Michael L Katz and Carl Shapiro, 'Technology Adoption in the Presence of Network Externalities' (1986) 94 Journal of Political Economy 822.

[104] GM Peter Swann, *The economics of standardization* (2000) 5.

[105] Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 18.

[106] For example, Rysman and Simcoe found substantial evidence of the good performance of SDOs choosing important technologies, relying in forward patent citations. Similarly, Farrel and Saloner found that committee-based standardisation, although slower, performs better than the market – ie *de facto* standardisation. Marc Rysman and Timothy Simcoe, 'Patents and the Performance of Voluntary Standard-Setting Organizations' (2008) 54 Management Science 1920, 1932; Joseph Farrell and Garth Saloner, 'Coordination through committees and markets' (1988) 19 The RAND Journal of Economics 235.

effort.[107] Neither the diagnosis nor the solutions can be as rich and broad as the ones derived from a collaborative effort. On top of that, a single company trying to create a standard, would be much more focused on producing a standard that fits its needs and business model, potentially overlooking some other needs and potential synergies. For example, a car-maker focused on creating a dominant ICT standard, would easily miss to spot potential synergies with sectors other than autonomous cars.[108]

An interesting explanation of why, in sectors characterised by strong network effects, collaborative standardisation performs better than de facto standardisation is that such networks effects prevent the (consumers´) "trial and error" approach that characterises competition as a process.[109]

#### 3.1.2.2 Lock-in and the standards' replacement rate

Similar effects could take place if the market is locked into an outdated technology resulting in an undue prolongation of the technology lifecycle. The lock-in effect can compromise incumbent's incentives to innovate once the standard is widely accepted, negatively impacting innovation. The underlying logic is evident: once a standard becomes widely accepted, their promoters prefer to milk its old cow before investing in a new one. This temptation is likely to take place in both *de facto* an SDO-based standardisation.

Particularly, in the case of the former, such situation may be more likely to arise because, as long as the technology has not yet emerged as the standard, the sponsor devotes its economic efforts to ensuring that it becomes the standard, with little incentives to find a technology that will replace it.[110] Once the technology turns into a dominant *de facto* standard, the sponsor has even less incentives to challenge its own dominant position. Standards that require IPRs to be implemented intensify those trends, since IPR protection implies higher initial costs and provide for the right to exclude third parties.[111]

Padilla et al exemplify such trend by comparing the ratio of introduction of new chips in 'semi-open' Microsoft-based computers with 'closed' Apple computers, concluding that the former historically tended to renew the chips more frequently. The authors also understand that higher degree of openness also results in faster innovation in associated

[107] See Henry W Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology (HBSP 2003) 40.
[108] See the consequences of knowledge exchange and its pro-competitive effects in sections 3.2 and 3.3 below.
[109] Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 111.
[110] '(B)ecause it replaces "itself" rather than potentially replacing a rival.' Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 36. Similarly David Alban, 'Rambus v. Infineon: Patent Disclosures in Standard-Setting Organizations' (2004) 19 Berkeley Technology Law Journal 309, 314.
[111] Patents and transaction costs could discourage disruptive innovators. James Bessen and Eric Maskin, 'Sequential innovation, patents, and imitation' (2009) 40 The RAND Journal of Economics 611

markets, stressing the role of open-source platforms such as Linux in cloud computing.[112]

Brem et al[113] found a negative correlation between the existence of a dominant design[114] in the industry and its innovative performance, but not a significant correlation between the existence of a dominant design and radical innovation. They argue that such lack of correlation might be explained by the dynamics of technological developments, which in the course of the last thirty years had it increasingly difficult to set a dominant design.

These findings, however, cannot be extended to all sectors. They certainly do not apply to the ICT sector, since the generally agreed threshold for holding that there is a dominant design is that a patent is cited by at least 50% of patents from the same patent class in a year. Such threshold, which may suffice in the case of discrete technology markets[115], cannot capture the particularities of the ICT sector, where patent activity tends to be more intensive and incremental and where standards – and therefore dominant designs[116] – are composed by a bundle of hundreds or even thousands of patents.

In the specific case of SDO-based standardisation, incumbents participating in SDOs try to promote the reading of their technologies on subsequent generations of the standard[117] and might at the same try to delay the final approval of the next generation, if it entails the risk of losing their position or their income via royalties, similar to the behaviour of the sponsor of a *de facto* standard trying to extend the duration of its standard.[118]

Yet in SDOs there are two forces, which are absent in de facto standardisation, pushing towards a standard replacement. First, companies that are vertically integrated – ie those that also compete in

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[112] Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 11.

[113] Alexander Brem, Petra A Nylund and Gerd Schuster, 'Innovation and de facto standardization: The influence of dominant design on innovative performance, radical innovation, and process innovation' (2016) 50-51 Technovation 79.

[114] Which, to these effects, can be equated to a standard.

[115] '(T)he key difference between a complex and a discrete technology is whether a new, commercializable product or process is comprised of numerous separately patentable elements versus relatively few. New drugs or chemicals typically are comprised of a relatively discrete number of patentable elements. In contrast, electronic products tend to be comprised of a larger number – often hundreds – of patentable elements and, hence, may be characterized as complex.' Wesley M Cohen, Richard R Nelson and John P Walsh, *Protecting their intellectual assets: Appropriability conditions and why US manufacturing firms patent (or not)* (2000) NBER Working papers 7552, 19 <https://www.nber.org/papers/w7552> accessed 1 November 2022.

[116] Alexander Brem, Petra A Nylund and Gerd Schuster, 'Innovation and de facto standardization: The influence of dominant design on innovative performance, radical innovation, and process innovation' (2016) 50-51 Technovation 79, 80

[117] Blind and Mangelsdorf empirical study 'to ensure that company-specific interests are included in the standard document' ranks 2nd among the motivations to participate in standardisation process. Knut Blind and Axel Mangelsdorf, 'Motives to standardize: Empirical evidence from Germany' (2016) 48-49 Technovation 13, 20.

[118] Although delays are not always linked to strategic reasons. Timothy Simcoe, 'Delay and de jure standardization: exploring the slowdown in internet standards development' in Shane Greenstein and Victor Stango (eds), *Standards and Public Policy* (Cambridge University Press 2007) 260.

downstream markets – and companies whose income stream does not depend on royalties, might be more interested in a performance improvement and therefore advocate for a standard evolution. Secondly, some SEP holders that are not particularly happy with the standard royalty allocation or have heavily invested in R&D for the next standard generation would also be willing to switch to a new standard.[119]

Hence SEP holders, and particularly those with a higher stack of patents in the existing standard, also face a tension in two opposite directions. Since delaying the adoption of a new standard does not depend exclusively on them, delaying its adoption too much may allow other companies to take the lead in the next generation. Thus, the net effect of SDO standardisation on radical innovation will depend on which of these two tensions is stronger.

For ICT standards covered by patents, Pohlmann and Blind conclude that declared SEPs imply more incremental updates of standards – but less disruptive changes of generations.[120] Similarly, Baron also empirically analyses the effects of SEPs – finding that they reduce the likelihood of standards' replacement.[121] Such trend (internalization effect) can be explained by the higher incentives of SEP holders to invest in already existing standards and is more accused in case of more concentration of SEP ownership.[122]

On the contrary, Tsilikas observes that standardisation in the ICT sector represents an obvious case of disruptive innovation, somehow shadowed by the way ICT standards are created – along a complex process and – once released – through subsequent updates and generations.[123] The author sums up his views by considering that 'technological achievements in the context of standardisation are more often than not drastic rather than incremental; but, more importantly, disruptive in the sense that standardisation brings down barriers to entry, challenges established business models and powerful incumbents in remote markets, spurring competition and innovation'.[124]

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[119] Similarly, Padilla et al argue that 'the implementer side of the market will in general prefer continued technical advance. Secondly, an innovator with a share of the value of a standard is in a very different position from a monopoly owner of a proprietary standard. Just as in competitive product markets, there is an incentive to innovate to form part of the next standard (and the common desire of multiple suppliers each to capture a larger share will drive them each to competitive innovation).' Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 43.

[120] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016), 2 <http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8981> accessed 1 November 2022.

[121] Justus Baron, 'Innovation and Coordination for ICT Standards: the Role of Essential Patents' (Thesis, École nationale supérieure des mines de Paris 2013) 151.

[122] Justus Baron, Tim Pohlmann and Knut Blind, 'Essential patents and standard dynamics' (2016) 45 Research Policy 1762, 1768,

[123] Haris Tsilikas, 'Huawei v. ZTE in Context – EU Competition Policy and Collaborative Standardization in Wireless Telecommunications' (2017) 48 International Review of Intellectual Property and Competition Law 151, 161.

[124] This statement was included by the author in a prior working paper version, which I take the freedom to quote because of its clarity. Haris Tsilikas 'Collaborative Standardization and Disruptive Innovation: The Case of Wireless Telecommunication Standards' Max Planck Institute for Innovation and Competition Research Paper No. 16-06 5 <http://ssrn.com/abstract=2783372> accessed 31 October 2022.

The author hints at one of the problems when assessing the nature of innovation in the ICT sector. The dichotomy of incremental v disruptive can easily be perceived in the so-called discrete industries – such as pharma –, while the borderline between both is blurred in the case of complex industries. If the threshold of disruptiveness is stablished from a strict Schumpeterian perspective – in the sense of destructive innovation – one would have to conclude that just a few innovations have been truly disruptive on the connectivity standards technology.

The innovation path in the connectivity-focused ICT sector is much more incremental and usually needs to grow based on pre-existing technology, sometimes even ensuring backward compatibility. Consequently, the changes usually associated with disruptive innovation – entrance of new players, lower access barriers, replacing incumbents, opening of new markets etc – also take place, yet in a more gradual way.

These innovation efforts are a pre-requisite for disruptive – in the Schumpeterian meaning – product and process innovation in downstream markets. Without connectivity standards, the success and even the existence of online marketplaces, smartphones or automated cars would be a chimera. The Internet of Things dynamics strongly suggest that few or no innovation at all will be produced without the existence of connectivity and interoperability.

Hence, when analysing the nature of innovation on ICT sector, the concepts 'disruptive' and 'incremental' should be used with caution. This also applies to the equations of standard updates with incremental innovation and new generations of standards with disruptive innovation, as suggested by Pohlmann and Blind[125], since sometimes a 'mere' update can enable disruptive innovations. Taking perspective, it is very difficult not to conclude that the telecommunications sector has been one of the most disruptive sectors in the beginning of XXI century.

In conclusion, although both *de facto* and SDO-based standardisation can hinder radical innovation by artificially prolonging the lifecycle of the dominant standard, in SDO standardisation some incumbents might be interested in pushing for updates and new generations from within the SDO, while in the case of *de facto* standardisation such forces can come at best from external market actors. This might partially explain why the society had witnessed a sustained innovation pace in the ICT sector during the last thirty years.

#### 3.1.2.3 Lock-in and market power

The lock-in effect and market power are tightly linked.[126] The absence of substitutes and the existence of barriers of access to the market are

[125] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 2.

[126] Ullrich considers that network effects are the root of market dominance by a standard. Hanns Ullrich, 'Patents and Standards - A Comment on the German Federal Supreme Court Decision Orange Book Standard' (2010) 41 International Review of Intellectual Property and Competition Law 337, 338.

among the most relevant sources of market power:[127] the lock-in effect consists precisely in the foreclosure of technological alternatives – ie substitutes.

In sectors where the industry is strongly locked into a technology, and IPRs protect such technology, IPR owners hold considerable market power, insofar as they can restrict access to the technology and its dependent market(s).

Yet there are different sources of lock-in: sometimes it is the decision of an SDO, together with the absence of competing standards, what 'forces' the market to adopt a technology as the standard such as in the case of the LTE cellular telecommunications standard. In other cases, it is the market that decides to move to a particular technology as the standard, such as in the case of the Windows or Android operating systems.

In these two scenarios, there are no – neither literally nor virtually – alternatives to the standardised technologies since the strong network effects dissuade participants from looking for substitutes and therefore the owners of such technologies are true gatekeepers controlling access to the market.[128]

However, lock-in effects can also arise regardless of the existence of competing standards, in particular when the implementation of a standard requires a specific (irrecoverable) investment. In such cases, the greater the investment the higher the negotiation power of the gatekeeper(s).

Therefore, lock-in effect can affect an entire sector, a market or even a single company with comparable effects of those of market power.[129] Nevertheless, the situation of an individual undertaking that is locked-in as a result of its own specific investments does not result in market power stricto sensu – as the owner of the technology does not necessarily have market power over the companies that do not have to make such investments and therefore can freely opt for other substitute technologies. In Chapter 4 it is discussed how Article 102 TFEU could (not so easily) capture such situation.

## 3.2 Codification and diffusion of knowledge

Another relevant contribution to a sector´s innovative performance of SDO-based standardisation is to codify technical information.[130] By codifying and disseminating knowledge, the participants in standardisation contribute to bridge the gap between research and subsequent stages of the innovative process. One of the main advantages

[127] For a detailed analysis of SEPs as a source of market power see Section 2 of Chapter 5. European Commission, 'On the definition of relevant market for the purposes of Community competition law' Commission Notice [1997] OJ C372/5.

[128] This situation was a major concern in the Google Android and in the Microsoft case. European Commission, *Google Android* (Case AT.40099) Decision of 18 July 2018, C(2018) 4761 final.

[129] Carl Shapiro and Hal R Varian, *Information rules: a strategic guide to the network economy* (1998) 103ff.

[130] Mostafa H Sherif, 'A framework for standardization in telecommunications and information technology' (2001) 39 IEEE Communications Magazine 94, 100.

of codified knowledge is that it is easier to share and make available to operators other than the original creator.[131]

The technical specifications of standards are perhaps the most evident example of codified knowledge derived from standardisation efforts, providing almost an entire roadmap for those manufacturers that need to implement a given standard in their products.[132] In certain cases, SDOs go a step further and do not only provide for such codified knowledge but also allow manufacturers to test whether the product meets the functional specifications of the standard through, for example, ETSI's Plugtests.[133]

However, limiting the positive impact of consensus-based creation of standards to the codification of explicit knowledge will ignore the innovation-relevant effects arising from the collective efforts related to tacit knowledge.

Despite being more difficult to share, tacit knowledge has also a collective dimension that could accrue to all participants in standard developing. Leonard and Sensiper identify three aspects in which tacit knowledge could positively impact innovative collective efforts: problem solving, problem finding, and prediction/anticipation.[134] It is not hard to imagine how these three specific aspects could benefit from tacit knowledge coming from the different companies involved in SDOs standardisation processes, particularly within the discussions between engineers in technical committees.

In addition, the tacit knowledge sharing dimension can also explain why SDO standards perform better in innovative terms than *de facto* standards: companies are able to grasp the problems to be solved and potentially offer a wider range of solutions. In addition, the participation of vertically integrated companies and implementers supports the identification of further needs and synergies.[135]

Not surprisingly, companies appreciate the information advantages flowing from standardisation. From a dataset of German manufacturing companies in the electrical engineering and machinery sectors, Blind and

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[131] Ikujiro Nonaka and Hirotaka Takeuchi, *The knowledge-creating company: How Japanese companies create the dynamics of innovation* (Oxford university press 1995).

[132] '(S)tandard efficiently encapsulates technical or managerial information that can be used quite directly in formulating products, processes and business practices.' GM Peter Swann and Ray Lambert, 'Standards and innovation: a brief survey of empirical evidence and transmission mechanisms' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 27. Similarly Mostafa H Sherif, 'A framework for standardization in telecommunications and information technology' (2001) 39 IEEE Communications Magazine 94, 100.

[133] ETSI, 'Plugtests' <http://www.etsi.org/about/what-we-do/plugtests> accessed 1 November 2022.

[134] Dorothy Leonard and Sylvia Sensiper, 'The role of tact knowledge in group innovation' (1998) 40(3) California Management Review 114ff.

[135] This understanding was key for Chesbrough's conceptualisation and definition of open innovation that happens when `(t)he distribution of knowledge has shifted away from the tall towers of central R&D facilities, toward variegated pools of knowledge distributed across the landscape [...] Companies must structure themselves to leverage these distributed pools, instead of ignoring them in the pursuit of their internal R&D agendas'. Henry William Chesbrough, *Open innovation: The new imperative for creating and profiting from technology* (Harvard Business Press 2003) 40.

Mangeldorf[136] concluded that knowledge seeking is ranked third among the motivations to participate in standardisation.[137] In addition, they found that R&D intensive and small firms participating in standardisation processes are more strongly motivated by knowledge seeking than less intensive R&D-firms and bigger firms.[138]

SEP holders have incentives to disclose their know-how in order to convince the participants in the different technical committees that their specific technical solution fits best the purposes of the standard.[139] Hence, consensus-based standardisation give participants the opportunity to access knowledge that would probably be kept secret by the sponsor of *de facto* standards.

In addition, consumers also benefit from standards codification, although in a different fashion. Namely standards, or more precisely standards' names or brands[140], also provide consumers with information 'about the properties of goods, services or trading partners in a way that enables them to adopt products and processes or enter into trade with confidence'.[141] Although such functions have been traditionally linked to measurement and quality standards, nowadays connectivity standards, such as Bluetooth or 5G, can strongly condition the purchasing decision of a specific device.

## 3.3 Creation of an innovation infrastructure

This knowledge-gathering effort presents further procompetitive effects. Access to such a pool of knowledge provides companies with insights that allows them to identify the limitations of the current technology and how to overcome those limitations.[142]

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[136] Knut Blind and Axel Mangelsdorf, 'Motives to standardize: Empirical evidence from Germany' (2016) 48-49 Technovation 13, 19ff.

[137] Riilo highlights that experts participating in technical committees' activities acquire not only technical knowledge but also strategic knowledge. Cesare AF Riillo, 'Profiles and Motivations of Standardization Players' (2013) 11 International Journal of IT Standards and Standardization Research 17, 18ff.

[138] Similarly, using data from the UK, Frenz and Lambert recall the role of standards for acquiring external (codified) knowledge. Moreover, they suggest that codified knowledge plays a key role in cooperative innovation efforts by facilitating its exchange. Marion Frenz and Ray Lambert, *Innovation Dynamics and the Role of the Infrastructure, Report on a research and evidence analysis for the Innovation Infrastructure Project* (2012) BIS Occasional Papers No 3, 7 and 30 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/34586/12-1035-bis-occasional-paper-03.pdf> accessed 1 November 2022.

[139] '(I)n an emerging field the risks may be so high that firms prefer to share their knowledge selectively to stimulate the market and/or discover unanticipated applications. Standardisation may also help legitimize a new technology and allow the organization owning or mastering this new technology to gain a central position.' Mostafa H Sherif, 'A framework for standardization in telecommunications and information technology' (2001) 39 IEEE Communications Magazine 94, 95.

[140] An overview of the relationship of trade marks with standard names and house marks can be found at Jorge L Contreras, 'Trademarks, Certification Marks and Technical Standards' in Jorge L. Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Further Intersections of Public and Private Law*, vol 2 (Cambridge University Press 2019) 217ff.

[141] Marion Frenz and Ray Lambert, *Innovation Dynamics and the Role of the Infrastructure, Report on a research and evidence analysis for the Innovation Infrastructure Project* (2012) BIS Occasional Papers No 3.

[142] 'As a widely-agreed and implemented baseline of accumulated technological experience, a standard provides an essential platform on which new technologies and processes can build, supporting further

Standards create a structure for subsequent trade and innovation, which defines the (technical) rules of the game and the playground in which the different companies will compete within a specific technology.[143] This infrastructure tends to somehow homogenise the starting point for the companies designing and implementing the standard, impacting on how the companies innovate and compete in the market.

### 3.3.1 Levelling the playing field in the innovation dynamics

Even in *de facto* standardisation, the firms implementing the standardized technology benefit from the know-how derived from the standard. This allows them to innovate in complementary areas and, subsequently, to compete with already existing incumbents – as studied in the case of IBM (theory of indirect entry).[144] This is very likely one of the reasons why Microsoft was very reluctant to disclose relevant information about the Windows architecture[145] (a *de facto* standard) – which was relevant for achieving interoperability with competitors' group servers.

In the same fashion, Galvin and Rice[146] reflect on how the involvement of leading companies in SDO-based standardisation processes impacts their technological leadership. Focusing on the cases of Ericsson and Nokia, the authors analyse the underlying knowledge structure and their strategy that combines diffusion and protection of different layers and types of knowledge – concluding that such strategy has allowed both Scandinavian companies to lead in the 2G technology markets without the risk of losing their dominance.

Nevertheless, more than 10 years later, the conclusion of the case study may no longer hold today. Although Nokia and Ericsson are still among the leading companies as regards ICT standardisation in absolute terms, they now share this leading position with companies such as Samsung or Huawei - whose contributions to 2G were at best negligible.

Letting aside the implications for assessing the pro-competitive effects of standardisation, these findings strongly support that knowledge sharing in the framework of standards, either by *de facto* or consensus-based standardisation, allow participants to build the basis of new and disruptive innovation that may challenge incumbents' position, and the dominant technology itself.

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innovation' Jae-Yun Ho and Eoin O'Sullivan, 'Strategic standardisation of smart systems: A roadmapping process in support of innovation' (2016) 115 Technological Forecasting and Social Change 301, 303.

[143] '(An) indirect, but important function of standards is that they level the playing field and therefore promote competition and consequently innovation.' Knut Blind, *Standardisation as a Catalyst for Innovation* (2009) ERIM Report Series Reference No EIA-2009-LIS, 22.

[144] See Timothy F. Bresnahan and Shane Greenstein, 'Technological Competition and the Structure of the Computer Industry' (1999) 47 The Journal of Industrial Economics 1, 20.

[145] Case T-167/08 *Microsoft v Commission* EU:T:2012:323. See section 2.1 in Chapter 4 for a broader account of the case and its implications.

[146] Peter Galvin and John Rice, 'A case study of knowledge protection and diffusion for innovation: managing knowledge in the mobile telephone industry' (2008) 42 International Journal of Technology Management 426.

Both examples show that the development and implementation of a standard provokes a flow of knowledge from sponsors and incumbents to the rest of participants regardless of the control of technology thanks to a *de facto* standard – as in the IBM case – or thanks to a thoughtfully knowledge management strategy – as in the case of Ericsson and Nokia.[147]

In the case of SDOs-based standardisation processes access to knowledge is potentially wider: all participants, and notably those involved in technical committees, have first-hand access to their competitors' technical solutions and knowledge, including, in some cases, not only to the technologies that finally are included within the standard, but also to those that are rejected.

A very promising technology which is not included in the standard due to its price, lack of efficiency or lack of suitability for the purposes of the standard might work as an invitation to research how to improve it in terms of costs, efficiency or relevancy, thanks to the knowledge acquired along the standardisation process.

Indeed, this innovation dynamic encourages more efficient R&D efforts which does not only impact incremental innovation but also has potential to promote disruptive innovation thanks to knowledge spill overs.[148]

### 3.3.2 Levelling the playing field in the market: enable specialisation

The standard as a common starting point also conditions how the companies compete in the market. The standard serves as a fast-track for small companies that do not have to create certain technical specifications for their products starting from scratch. Padilla illustrates this case by using the example of Android app developers (around 380,000 in 2014).[149]

Swann and Lambert explain that standardisation imply a reduction of transaction costs, which leads to division of labour (specialisation) and subsequently to innovation.[150] Stoll found that standardisation facilitates the division of 'innovative labour' by providing inventors the opportunity of accessing and recombining ideas from other areas of expertise.[151]

Therefore, companies can focus on the areas where they have more expertise, relying on the rest of participants in the standardisation

[147] The flows of knowledge in connection to disclosures are addressed in Section 4, Chapter 3.
[148] See also Benjamin Chiao, Josh Lerner and Jean Tirole, 'The rules of standard-setting organizations: an empirical analysis' (2007) 38 The RAND Journal of Economics 905; Knut Blind and Axel Mangelsdorf, 'Alliance Formation of SMEs: Empirical Evidence From Standardization Committees' (2013) 60 IEEE Transactions on Engineering Management 148.
[149] Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 34.
[150] GM Peter Swann and Ray Lambert, 'Standards and innovation: a brief survey of empirical evidence and transmission mechanisms' (2000) 29, 29.
[151] Thimo P Stoll, *Essays on the Economics of Patents, Standards, and Innovation* (1st edn, Verlag Dr. Hut 2015) 83, 83.

environment to provide them with other inputs, either abstract knowledge or physical components. By so doing, they benefit not only from choosing the field where they are more competitive but also from increasing their efficiency in a learning-by-doing process.

Additionally, the impact of standardisation on specialisation affects how the companies are structured and compete in the market: in other words, their business model. In this respect, using the case of Intel, Gawer has analysed how the technical and business model design are very closely connected:

> Looking at the transformation of the computer industry through both a technological and an economic lens, we can see that what seemed to be purely a problem of technical design — the allocation of features in functional blocks — has induced a radically different partitioning of the space of economic activity between different firms.[152]

Delaere and Ballon identified up to four areas where standardisation influences business models: functional architecture, value network, costs and revenues as well as value proposition.[153] In most of the cases changes in any of these areas imply, process and organisational innovations. Such changes can also substantially influence what and how products reach the market, for example, in the case of open source-based standards as compared to proprietary standards.

Therefore, standardisation does not only influence the level of innovative performance in a sector but also shapes the infrastructure and environment in which such innovation takes place, affecting both the knowledge flows within an industry, and the strategies and business models of the participants.

# 4. Conclusion

There are different types of standardisation efforts: *de facto* standards compete in the market to be adopted as a standard, whereas *de iure* standards aim at becoming the standard from their very conception. Among *de iure* standards, it is possible to distinguish between governmental standards – created and subsequently proposed to or imposed on the market by governmental bodies – and industry driven (SDO or consortia-based) standards, which are developed in the framework of a pre-market competitive process.

The analysis above points to the critical role of standards for the innovative performance of entire sectors. Standardisation – either *de*

[152] Annabelle Gawer, *The organization of platform leadership: an empirical investigation of Intel's management processes aimed at fostering complementary innovation by third parties* (Citeseer 2000) 63.
[153] Simon Delaere and Peter Ballon, 'Standards, innovation and business models: the case of digital radio' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 325 ff.

*facto* or consensus-based – is a precondition for technical development in industries where network effects are strong. The ICT sector – and, in particular, the telecommunications sub-sector – is one of these cases due to the need of interoperability, compatibility and connectivity.

Nevertheless, the needs in the ICT sector cannot be met by mere enabling technologies as a smallest denominator. The sector requires truly innovative solutions that can support follow-on innovation, ie the path of development of telecommunications-dependent technologies – such as connected cars.

Standards in the ICT sector fulfil both functions: they work as enabling technologies and promote innovation. Some of the positive effects for innovation of standards are that they contribute to create focus, leading to a more efficient allocation of resources. They allow to fully benefit from network effects, attracting demand and supply alike. They codify and disseminate tacit and explicitly knowledge and they create an innovation infrastructure.

On the other hand, standards can also entail negative effects for innovation, notably due to the lock-in effect. The lock-in effect is a source of market power – insofar it reduces the number of competing alternatives. Additionally, the lock-in effect can negatively affect the standard replacement ratio, which will be particularly harmful if the standardised technology happens to be technologically inferior. As seen above, companies' interests could influence the election and the replacement rate of a technology based on non-technical strategic decisions, leading to the selection or the maintenance of a sub-optimal technology.

While negative and positive effects of standardisation are present in both *de facto* and SDO-based standardisation, the former by comparison tends to enhance the positive ones more and reduce the likelihood or intensity of the negative ones, particularly when the technologies are protected by IPRs and when there are high switching costs. Shapiro argues that an initial industry-wide standard will positively impact welfare and efficiency for three reasons:[154] '(1) cooperation may lock in a different product design than would emerge from competition' (enhancing innovation); '(2) cooperation may eliminate a standards war waged prior to tipping' (improving efficiency and reducing transaction costs); and '(3) cooperation is likely to enable multiple firms to supply the industry standard product, whereas a standards war may lead to a single, proprietary product' (stimulating competition).

As a result, it is coherent that the Commission positively evaluates SDO-based standardisation[155], and at the same time monitors that the

[154] Carl Shapiro, 'Navigating the patent thicket: Cross licenses, patent pools, and standard setting' in Adam B Jaffe, Josh Lerner and Scott Stern (eds), *Innovation policy and the economy*, vol 1 (MIT Press 2001) 108.

[155] 'Standardisation agreements usually produce significant positive economic effects, for example by promoting economic interpenetration on the internal market and encouraging the development of new and improved products or markets and improved supply conditions. Standards thus normally increase competition and lower output and sales costs, benefiting economies as a whole. Standards may maintain and enhance quality, provide information and ensure interoperability and compatibility (thus increasing

standardisation process in the framework of SDO promotes the pro-competitive and pro-innovative effects while limiting the negative ones.

value for consumers).' European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 263.

# Chapter 3: Disentangling essentiality and disclosure

## 1. Introduction

Legal discourse makes substantial use of conventionally accepted terminology – with terms that have a common meaning for a given legal community. Similarly, economics and engineering rely on their respective conventions. However, when the three fields converge, it is very likely that what an engineer understands one way is understood in a different way by a lawyer.

Some of these misunderstandings can bear enormous consequences and it is therefore important to address them. Moreover, at a legal level, terminological precision is tightly linked to legal certainty, making clarity on terminology even more desirable. This chapter aims to contribute to the discussion revolving around terminological precision and misunderstandings in the SEP arena.

The world of SDO-based standardisation is hugely complex and SEP disclosure is not an exception. One of the main challenges is that disclosure consists in a statement at a given moment in time[156], whereas essentiality is a dynamic reality, which can evolve during the patent's and the standard's lifecycle. Moreover, there are different understandings as regards the scope of essentiality (Section 2 below).

Therefore, the static nature of disclosure is not able to capture the dynamics of essentiality. SDOs have tried to bridge this deficiency by designing disclosure rules within their IPR policies which are broad and flexible enough to allow SEP holders to adapt their disclosure practices to this reality (Section 3 below). However, the SDO IPR policies represent the result of a consensus – or majority support – of the SDO members.[157] Therefore, they also reflect these members' underlying interests and business models, which do not necessarily coincide. Neither are their interests always aligned with the interest of consumers[158], nor effective competition or the public interest.[159] It is very unlikely that SDOs members will vote in favour of imposing on themselves additional and costly obligations[160] to prevent a few of the members from unduly benefiting from the shortcomings of the existing disclosure system.

[156] Provided that there is no obligation to update the disclosures, as it will be analysed below in section 3.
[157] For example, ETSI requires a qualified majority (71 %) for any modification of the Rules of Procedure and its Annexes (including the IPR Policy). Art 19 ETSI Rules of Procedure (as of 8 October 2018).
[158] Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' (2007) 74 Antitrust Law Journal 603, 609.
[159] David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 116; Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 135.
[160] The costs and uncertainties associated to identifying potential SEPs and their disclosure to the SDO in a rigorous way have been largely reiterated by the literature, particularly when linked to internal patent

As a result, disclosure practices take place within a broad framework, and SEP holders are relatively free to make their disclosures according to their understanding of what disclosure is and in line with their business interests, giving rise to a wide range of disclosure strategies even as regards the same SDO.

Such different – even dissonant – disclosure practices lead to a heterogeneous picture of disclosed SEPs, which sometimes is of little use for prospective implementers. Furthermore, this diversity is likely to contribute to increase, rather than to reduce, asymmetries of information among participants in the sector. In addition, SEP holders are exposed also to high degrees of uncertainty concerning the – eventual – essentiality of their portfolio: aside from the exogenous dynamics of essentiality, SEP holders face also challenges regarding the internal management of information flows related to the (non) essentiality of their patents. Consequently, SEP holders' information regarding their own portfolio is less perfect than it is usually assumed (section 4).

# 2. Defining essentiality

The standard essentiality of a patent – or absence thereof – is the cornerstone of the disclosure of standard essential patents system and, even more, of the SDO-based standardisation as we know it nowadays. Any effort from patent holders devoted to find and declare essential patents would be meaningless if there is no consensus on what is essential for a specific SDO or technology. Although essentiality can also be referred to other IPRs, usually copyrights or even trade marks[161], this Section will only focus on patent essentiality.

The definition and scope of essentiality has evolved from the second half of the XX century and, even today, its scope differs from SDO to SDO.[162] Before, during and after the adoption of the term 'essential', different wording was used within IPR policies and the rules of patent pools, such as 'necessary to compliance', 'no alternative methods or devices' or 'no realistic alternative'.[163]

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searches or essentiality checks. See, among others, Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 712, fn 95; Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 23; Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 258; Daryl Lim, 'Patent Holdups' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 250.

[161] ETSI includes copyright within its definition of IPRs pursuant to Art 15(7) IPR Policy Annex 6 (as of 29 November 2017). IETF includes certain clauses on copyright and trade marks in the framework of contributions to the standard development, Scott Bradner and Jorge L Contreras, 'RFC5378 Rights Contributors Provide to the IETF Trust' (*IETF*, 2008) <https://tools.ietf.org/html/rfc5378#page-9> accessed 1 November 2022.

[162] See Rudi Bekkers *et al*, 'Disclosure Rules and Declared Essential Patents' (2017) NBER Working Paper No 23627, 6ff <https://www.nber.org/papers/w23627> accessed 1 November 2022.

[163] See Jay P Kesan and Carol M Hayes, 'FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments' (2014) 89 Indiana Law Journal 241.

Back in 1959, the American Standards Association IPR Policy included the term 'covered' by patents to refer to items that potentially might be included in the standard.[164] This is deemed to be one of the first attempts to signal the relevance of a patented technology for the standard.

It was not until 1985, when in the framework of the Digital Cellular Radiocommunications (DCR) Agreement[165] the first definition of essentiality appeared, meaning: 'patents for which the standard is essentially derived but also as the patents which could be considered as absolutely necessary for the realization of the standard'. Gradually, the concept was adopted – although US-based SDOs were more reluctant – and nowadays a substantial number of SDOs include the term 'essential' in their IPR policies.

However, still in 2017, Ohana and Biddle[166] questioned whether the criterion for disclosure should be (potential) essentiality or the (potential) relevance of the patent for the standard. Pointing out that such decision entails a trade-off between a narrower scope that ensures a higher relevance of disclosures – at the same time increasing the risk of under-disclosure – and a wider one, that reduces the likelihood of patent ambushing, while giving room to over-disclosure.

Based on a study of the definitions of a group of selected SDOs Bekkers and Updegrove define an essential claim as

> an intellectual property ownership right that allows the owner to control the use of an invention required to practice a given industry standard, making it impossible to implement the standard without infringing the essential claim. In other words: there are no alternative ways to implement a particular element of a standard without infringing the protected technology.[167]

Nonetheless, the relationship between infringement and essentiality does not operate equally in both directions: while an essential claim would always be infringed by the implementation of a standard, not all standard implementations automatically infringe all essential patents. This becomes particularly apparent when differentiating between standard essentiality *stricto sensu* and market/implementation essentiality.

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[164] A brief account of the evolution of the essentiality requirement in ANSI, IEEE and ETSI can be found at Jorge L Contreras, 'Essentiality and Standards-Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 210.

[165] The DCR Agreement was an agreement between the German, French, Italian and United Kingdom telecommunications authorities that led to the development of the GSM standard.

[166] Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 250.

[167] Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 6, fn 6. The criteria of selection being (1) including organisations with the largest global impact and relevance in the field of standards and IPRs, (2) diversity of approach, (3) diversity in size of membership, scope of activity, and number of standards produced, (4) diversity in temporal scope (e.g., institutionalized organisations addressing a domain vs. SDOs created to develop and maintain a single standard), (5) diversity in technology area addressed, (6) diversity in geographic reach, and (7) diversity in regional context and policies.

Moreover, the second part of the proposed definition – 'making it impossible to implement the standard without infringing the essential claim' – fails in those cases where the SDO, tacitly or explicitly, permits the inclusion of substitute technologies and considers both alternative implementations as essential: in such cases it will be feasible to implement a standard without infringing some 'essential' patents.

Finally, another controversial debate concerning the scope of essentiality, refers to whether essentiality should be understood to also cover features that are necessary for the commercial implementation of the standard.

## 2.1 Shooting at a moving target: the dynamics of essentiality

Assessing whether a patent is essential has accurately been compared to shooting at a moving target.[168] Essentiality is a dynamic reality which occurs when both the scope of the claim and the standard specification overlap. This has been the traditional understanding of what essentiality is.

However, this approach focuses too much on a single side of a two-faceted reality. For a patent to be truly essential, it is not enough that the specification reads on the patent (essentiality *stricto sensu* or standard/specification essentiality). If the patent later is not infringed by any of the standard compliant products, essentiality will remain largely formal.

Therefore, there is another – usually overlooked – prong of essentiality: market essentiality or implementation essentiality, which refers to the actual need of infringing the patent to offer standard-compliant products to the market. This differentiation is far from being a mere theoretical exercise insofar it has key practical implications: a patent which is *stricto sensu* essential, yet it is not market essential, does not have any blocking effect. Conversely, a patent which is market essential but does not read on any standard specification – ie it is not standard essential *stricto sensu* – might not be bound to the obligations derived from SDOs' IPR policies (including the FRAND commitment).

There are two stages where the actual essentiality of a patent can be at stake: before the standard has been released and the patent has been granted – more linked to standard essentiality – and after, when it is more relevant to evaluate the market (or implementation's) essentiality.

### 2.1.1 Standard essentiality or specification essentiality

There are two facts which are self-explanatory of why it is difficult to assess whether a patent is essential to a given standard with a relatively degree of accuracy at earlier stages: both of them are related to the

[168] Wilson K, 'Designing a Standard Essential Patent (SEP) Program' (2018) 53(3) les Nouvelles-Journal of the Licensing Executives Society 203 204.

dynamic nature of the patent prosecution process and of the standardisation process.[169]

First, usually technical specifications for a given standard evolve gradually till the moment they are adopted. During the discussions in technical committees (TC) it is relatively common that the engineers involved opt for technologies which are different from the initially proposed ones – if the new ones are better in order to perform a specific function. Along this time, a participant can disclose in good faith a patent that reads in some of the prior versions but that finally does not read in the final version.[170]

Similarly, during the prosecution phase the patent claims could be amended to overcome some of the objections of the patent examiner, in the framework of third-party opposition proceedings or just because the patent holder unilaterally decides to do so. Hence, its scope of protection[171] – defined by the claims – can be modified to a point where the patent does not read into the standard specification anymore.

Hence, when assessing whether a patent is standard essential one has to hit not only one, but two moving targets, namely, the scope of the patent claim and the standard specification drafting, in the precise moment that the two of them overlap.

The only moment when anybody – including the SEP holder – could properly assess whether a patent is essential for a standard it is once the patent has been granted and the version of the standard has been approved. Prior to this situation the SEP holder level of certainty concerning the essentiality is comparable to the level of information of the rest of participants including prospective implementers.[172]

As a consequence, SEP holders only have the opportunity to have a more or less accurate picture at a relatively late stage – once the patent is granted and standard released – while disclosure of SEPs takes place usually earlier.

### 2.1.2 Market essentiality or implementation essentiality

Even in the cases where a patent has been proven to be essential *stricto sensu* for a standard, there are cases – not usually reflected in the literature – that might question the actual essentiality of a patent. That is the case when patents that are both valid and read on a technical

[169] And, if its disclosure as essential is not removed, considered to be over-disclosed.

[170] Jorge L Contreras, 'Essentiality and Standard Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 223.

[171] Note that when referring to the scope of a patent, reference is made to the scope of the different patents within the same patent family, whose country-by-country prosecution can lead to different scopes of protection. Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 10 <https://www.econstor.eu/handle/10419/174809> accessed 1 November 2022.

[172] A SEP holder who is very active in the technical committee that deals with the technology protected by the patent might have some insights with regard to the prospective essentiality. Yet prior to the approval of the standard there will only be mere expectations that the patent will become standard essential.

specification are not used in the real-life implementations of the standard.[173] In such event it is possible to speak of absence of the market essentiality of a patent (or absence of specific implementation essentiality).[174]

This usually happens with specifications in earlier versions of a given standard which are maintained within the subsequent versions of the standard – while the implementers are not using it anymore because the technology or the functionality itself has turned to be obsolete, or because technological workarounds to perform the same function have been found inside or outside of the standard.[175]

Far from being a theoretical possibility, Justice Birss reflected such reality in IPCOM v HTC:

> the invention claimed in the patent is an unusual one because it is possible to make a phone which works with the relevant telecoms standard but does not use the invention. Such a phone does not infringe and the courts have made binding declarations to that effect. They can be called "workaround phones".[176]

In addition, certain technical specifications that have been included within the standard as 'mandatory' might not be needed for certain products. For example, a functionality which increases the level of reliability might be indispensable for uses which require a high degree of precision but might not be needed for simpler products. In these cases, a 'mandatory' technology becomes de facto 'optional'.

Contrary to what happened in earlier telecommunications standards, such as GSM, the last generations of telecommunications standards are not intended to be implemented on a single type of product – ie a phone – and therefore the specifications, technological requirements and ultimately patent exposure may vary depending on the implementation.

This reality became more apparent from release 13 of LTE onwards when machine-to-machine (M2M) protocols were included in the standard: such protocols are needed only in those products which need M2M communication while they are useless in the rest of the cases – and consequently non-essential – and vice versa.[177] This represents a breach

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[173] This point has been made explicit in conversations with various patent engineers working for both SEP holders and implementers. See also Kelce Wilson, 'Designing a Standard Essential Patent (SEP) Program' (2018) 53(3) les Nouvelles – Journal of the Licensing Executives Society 203, 206.

[174] The concept of market essentiality – although in a slightly different context – have been used by Conde Gallego and Drexl to explain that a patent that reads in a given standard is arguably not essential in the event that the standard on itself is not 'market essential' because there are other competing standards. Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 142.

[175] Drexl pointed out this reality, by arguing that 'the concept of standard-essentiality is also time-dependent. A given patent may be standard essential at one time and lose that feature later, namely, when a new technology emerges that can be used as a technological substitute within the standard.' Josef Drexl, 'Standard setting organizations and processes: Challenges and opportunities for competition and innovation – Introduction' (New Frontiers of Antitrust, Munich, 2015) 12 fn 36.

[176] IPCOM v HTC [2020] EWHC 2941 (Pat) para 3.

[177] This point was raised by a patent engineer who participated in such release.

of the equation standard compliance = patent infringement[178], and the advent of the IoT will only deepen this trend.

This might explain why Lemley and Simcoe have found that essential patents are less likely to be considered infringed than non-essential patents.[179] Even a SEP holder with a deep knowledge of the standard essentiality of its portfolio can miss the shoot when it comes to analyse whether a specific implementation actually infringes the standard[180] – and consequently the patent.[181]

Conversely, there can be technologies that have not been included in the standard but still turn out to be essential. In particular, patented technologies may become 'mandatory' at a later stage patents due to follow-on innovations, that may not have been included in subsequent versions of the standard.

Both realities are not necessarily captured by the SDO standardisation process, inasmuch as they concern specific new forms of implementations that only emerge after the release of the standard.

### 2.1.3 Essentiality in licensing and litigation: a subjective matter

In addition, there is another factor that runs against considering essentiality an immutable, objectively verifiable reality. The essentiality of a patent, particularly, when the patent claim does not literally read on the specification, relies to a certain extent on subjective interpretations.

In some cases, the interpretation of the disclosing company does not necessarily coincide with the judges' interpretation. The causes of this dissonance can lie, first, in the inherent difference between technical and normative (legal) approaches: sometimes, what is obvious to an engineer it is not that much obvious for a judge and *vice versa*. A second reason can be diverging approaches to patent infringement in different jurisdictions: aspects such as narrow or broad claim construction or the application of the doctrine of equivalents can lead to a situation where quasi identical national patents – belonging to the same patent family -

[178] Jorge L Contreras, 'Essentiality and Standard Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 227.
[179] Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608.
[180] Contrary to what it is usually assumed. See, for example, Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 142.
[181] Assessing infringement in highly complex products might not be an easy task for SEP holders. Wilson and Tapia differentiate five different levels of infringement detection. `(1) Implementation of the invention can be detected, even without possessing an accused device. (2) Implementation of the invention can be detected easily with typical consumer use of an accused device. (3) Detecting implementation of the invention within an accused device requires commonly available test equipment and technicians, but no significant expense. (4) Detecting implementation of the invention within an accused device requires specialized, uncommon test equipment or inordinately expensive procedures. (5) Implementation of the invention cannot be independently detected with reasonable efforts, but instead requires an admission by an accused infringer.´ Kelce Wilson and Claudia Tapia, 'Patent Application Prioritization And Resource Allocation Strategy' (2011) 46(2) les Nouvelles-Journal of the Licensing Executives Society 87 88.

are considered infringed in one jurisdiction and non-infringed in a different one.[182]

Similarly, in licensing negotiations the interpretation of the scope of a claim and whether it reads in a specification or an implementation depends also in the subjective interpretations of both parties.

## 2.2 The essentiality requirement: complementarity, substitutability and blocking effects

ICT standards build on interrelated technologies that are typically protected by patents. Whenever two or more technologies are jointly needed to achieve a technical result, they are deemed to be complementary (or 'complements'). On the contrary, if several technologies are able to achieve the same technical result, they are regarded as substitutes.

In principle, the definition of essentiality excludes all the patents for which there are substitutes insofar each of the substitutes achieves the same result and, therefore, none of them – individually considered – will be necessarily infringed if somebody implements the standard specification. Rather, it will only infringe just one of the substitute patents.

Ruling out the essentiality of patents for which substitutes exist, is exclusively based on the dichotomy of substitutes and complements and not that much on the actual blocking effect of the different patents. In addition, this dichotomy is inspired by the competition law principles applicable to patent pools. Those principles are however based on certain assumptions that do not necessarily serve the purpose of identifying standard essentiality.

### 2.2.1 Complements and substitutes: changing the focus to their blocking effect

At a theoretical level, the difference between complementarity and substitutability is crystal-clear. Yet, in practice, the complexity of technologies in the ICT sector, where the interrelation among technologies is not unambiguous, blurs the boundaries between the two concepts.

Andewelt proposes to distinguish between blocking, complementary, competing (or substitute) and unrelated patents to better describe the relationship between patents. From a technological perspective, blocking patents are those that must be used when somebody want to implement the blocked technology, including technology covered by a dependent patent. In contrast, complements allow to reach a completely different

[182] Linguistic differences will always prevent the claims to be univocally identical, although the EPO, WIPO and IP national offices have made remarkable contributions to create and promote 'translation-proof' concepts from both a legal and a technical perspective.

result. Finally, substitute patents are those that achieve the same result if applied independently.[183]

For the sake of completeness, optional patents should also be considered.[184] Optional patents are referred to those technologies that are not needed for implementing the standard itself but for implementing additional standard-related functionalities that may or may not be of interest for all the prospective licensees. In other words, optional patents relate to technologies that are not mandatory to produce a standard compliant product, but that are necessary to perform certain functionalities on a standard-compliant, or at least standard-compatible, basis. One example of optional technology is the CD rewriting functionality that might have been needed for computers but not for music portable players.

According to Andewelt's classification only blocking and complementary patents are truly essential. However, this classification does not entirely solve the issue of delimiting when a patent is purely complementary or a substitute: 'Intermediate cases between perfect complements and perfect substitutes are far more numerous and also more complex. For example, patents may block one another in some uses but not others and even patents that are predominantly substitutes can have blocking claims, requiring that they be used together.'[185]

The European Technology Transfer (TT) Guidelines,[186] when analysing the nature of the technologies that can be included within a patent pool to benefit from the exemption without violating Article 101 TFEU, establish that

> (w)hen due to efficiencies stemming from the integration of two technologies licensees are likely to demand both technologies, the technologies are treated as complements, even if they are partly substitutable.[187]

Thus, the fact that technologies are partially substitutable does not prevent to treat them as complements and, therefore, potentially essential.[188]

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[183] Roger B. Andewelt, 'Analysis of Patent Pools under the antitrust laws' (1984) 53 Antitrust Law Journal 613.

[184] In their study Bekkers and Updegrove found out that most of the analysed SDOs permit the inclusion of optional technologies within their standards. Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 41.

[185] Erik Hovenkamp and Herbert Hovenkamp, 'Patent Pools and Related Technology Sharing' in D. Daniel Sokol and Roger D. Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 363.

[186] European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3 (hereinafter the 'TT Guidelines').

[187] Ibid para 254.

[188] Conversely there are also real-life examples of partly complementary technologies, as explained by Hovenkamp and Hovenkamp: 'One of the patents at issue employed an analogue method for locating the stylus on the disc, while another patent employed a digital method. A manufacturer would use one of these technologies or the other, but not both. However, the analogue method wrote on at least one claim in the digital patent, meaning that one could not practice the analogue patent without licensing the digital patent. That is, the patents functioned as both substitutes and as one-way complements with respect to the blocking claim.' Erik Hovenkamp and Herbert Hovenkamp, 'Patent Pools and Related Technology

The logic is that use of the two patents allows for better results than those that might be achieved by only using both technologies separately. Thus, when assessing the essentiality of ICT-related patents, it might be more workable to put the focus on the blocking nature of the patent for implementing the standard.

Accordingly, a patent should be considered essential whenever it is needed to implement a standard as a stand-alone feature – as a blocking patent *stricto sensu* – or in conjunction with other technology(ies) – as complementary blocking patents. In the case of 'optional' patents, they should not be considered essential if the 'optionality' is referred to the patent itself – ie implementers can freely choose whether to use it or not –, whereas they should be considered 'essential for an optional feature', if they are needed to implement such feature. In this latter case, the patent would have a blocking effect only on part of the standard-compliant products.

While the blocking effect of 'essential patents for an optional feature' is more restricted than in the case of blocking patents *stricto se*nsu – and therefore the market power associated with their ownership is less intense –, it still makes sense to include them within the 'essential' category to prevent licensing-related problems.

Substitute patents do not have a blocking effect if considered individually: if one patent holder does not want to license the patent A for which there is a substitute B, the standard implementer can simply approach B's holder to get a licence and ultimately offer a fully standard-compliant product. Conversely, if neither A's holder nor B's holder wants to grant a licence to the implementer, then the patents – considered collectively – have a blocking effect.

If holding a blocking patent *stricto* sensu can be compared to have the key of the door giving access to a technology, owning a technology that is needed for the implementation of a standard when such technology has N substitutes represents having the key of one of the N doors which grants access to the required technology: implementers only need one of these keys.

Hence, the fact that a group of substitute patents can have a blocking effect argues for a more careful consideration on whether they should be excluded from definition of essentiality.

### 2.2.2 Substitutes in patent pools and standards

The inclusion of substitute patents into standards has not been studied in depth. Conversely, the effects of their inclusion on patent pools have much more attracted the attention of scholars[189] and competition

Sharing' in D. Daniel Sokol and Roger D. Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 361.

[189] See Josh Lerner and Jean Tirole, 'Efficient patent pools' (2004) 94 American Economic Review 691; Joshua A Newberg, 'Antitrust, patent pools, and the management of uncertainty' (2000) 3 Atlantic Law Journal 1.

authorities. In Europe, the TT Guidelines[190] deal with technology pools from its paragraph 244 onwards. In general, the Commission understands that patent pools can play a beneficial role in the implementation of pro-competitive standards.[191] Nevertheless, such assertion does not prevent from considering other negative effects depending on the composition of the patent pool.

Particularly, the Commission notes that a pool comprising several substitute technologies for enabling the same function can constitute collective bundling (ie a price-fixing cartel in economic terms) in its paragraph 255:[192]

> The inclusion of substitute technologies in the pool generally restricts inter-technology competition since it can amount to collective bundling and lead to price fixing between competitors. As a general rule the Commission considers that the inclusion of significant substitute technologies in the pool constitutes a violation of Article 101(1) of the Treaty.

Moreover, the Commission rejects upfront that such a behaviour could generate positive externalities, fulfilling the conditions laid by Article 101(3):

> it is unlikely that the conditions of Article 101(3) will be fulfilled in the case of pools comprising to a significant extent substitute technologies. Given that the technologies in question are alternatives, no transaction cost savings accrue from including both technologies in the pool. In the absence of the pool licensees would not have demanded both technologies.

In other words, licensees, absent the pool, would not have demanded licences for several patents enabling the same function. Interestingly enough, independent licensing will not redeem such shortcoming in the eyes of the Commission.[193]

> To alleviate the competition concerns it is not sufficient that the parties remain free to license independently. This is because the parties are likely to have little incentive to license independently in order not to undermine the pool's licensing activity, which allows them to jointly exercise market power.'

A similar conclusion is reached by the Commission when evaluating the efficiency gains in standards – pursuant to Article 101(3) TFEU – namely in connection to the indispensability of restrictions in para 317 of the Horizontal Cooperation Guidelines:[194]

> Including substitute IPR as essential parts of a standard while at the same time forcing the users of the standard to pay for more

[190] European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3.
[191] Ibid para 245.
[192] Ibid para 246 and 255.
[193] Ibid para 255.
[194] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 317.

> IPR than technically necessary would go beyond what is necessary to achieve any identified efficiency gains. In the same vein, including substitute IPR as essential parts of a standard and limiting the use of that technology to that particular standard (that is to say, exclusive use) could limit inter-technology competition and would not be necessary to achieve the efficiencies identified.

The Commission notices another potential anticompetitive effect: undue foreclosure of competing technologies. Pools that only include one of several substitute patents may foreclose alternative technologies. In such case, the licensee will have no incentive to take an additional licence for the excluded substitute patent.[195] Likewise, the licensee might be forced to take a licence for a patent that is not absolutely needed. Hence, such joint licensing of a substitute patent with essential patents forces the licensees to pay for technologies that they may not need, which in turn amounts to anticompetitive collective bundling.[196]

A more sophisticated version of this scenario takes place where the patents are essential for an optional part of the standard: if the pool does not differentiate between different uses, some implementers will be forced to pay for technologies that, while being essential for the standard, are not needed for their specific products.[197] This explains why, on the other side of the Atlantic, the DOJ has approved pooling agreements subject to the requirement of including only essential – in the meaning of complementary – patents within them, for instance in the letters of approval for MPEG[198], DVD[199] or 3GPP.[200]

Both the EU and US authorities substantially agree on equating patent essentiality and complementarity for the purposes of the inclusion within a technology pool and identify potentially negative effects associated to the inclusion of substitute technologies in pools.

Generally speaking, patent pools are viewed positively[201], however, the inclusion of substitute technologies in pools might stifle innovation or raising prices.[202] Gilbert argues that, for the purpose of reaping efficiencies from saving transaction costs, non-essential patents should be allowed in patent pools if the latter are composed of at least one valid essential patent, and the owners of the non-essential patents are allowed to license

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[195] Ibid para 246 and 262.

[196] Ibid para 262.

[197] Richard J. Gilbert, 'Collective Rights Organizations: A Guide to Benefits, Costs and Antitrust Safeguards' in Jorge L. Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 135

[198] US Department of Justice - Antitrust Division, 'MPEG Business Review Letter' 1997 <https://www.justice.gov/sites/default/files/atr/legacy/2006/10/17/215742.pdf> accessed 1 November 2022 10.

[199] See US Department of Justice - Antitrust Division, 'DVD-6C Business Review Letter' 1999 <https://www.justice.gov/sites/default/files/atr/legacy/2012/08/01/2485.pdf> 11.

[200] US Department of Justice - Antitrust Division, '3GPP Business Review Letter' 2002 <https://www.justice.gov/sites/default/files/atr/legacy/2006/04/27/200455.pdf> accessed 1 November 2022 10.

[201] Jorge L Contreras, 'Essentiality and Standards-Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 214.

[202] See also Carl Shapiro, 'Setting compatibility standards: cooperation or collusion' (2001) 81 Expanding the Boundaries of Intellectual Property 112.

their patents independently. However, he also recognises that there are potential negative effects that should be assessed under a rule of reason.[203]

However, the argument of transaction cost savings is not that convincing. It may hold true in competitive markets with perfect information. But market power and information asymmetries severely challenge such general assumption. In this sense, Rey and Tirole[204] demonstrate that in the case of a joint marketing alliances (JMA)[205] the independent licensing requirement, i.e. the retention of the right of owners of non-essential patents to license the invention outside the pool, shields its pro-competitive effects even from the lack of essentiality of all or part of its patents constituting a 'perfect screen'[206], unless companies with weak substitutes take advantage from the JMA to raise prices.[207]

Although patent pools and standards differ on their nature and functions, some of these negative effects of pools are present in standards. This raises the question of whether, whenever there is a substitute technology for the patent-protected one, this will automatically render the patent non-essential.

Obviously, standards cannot be seen as a 'price fixing mechanism' *per se*, since patents are independently licensed by each SEP holder. However, independent licensing does not prevent other concerns. The first one refers to forcing licensees to 'pay for more IPR than technically necessary', which 'would go beyond what is necessary to achieve any identified efficiency gains', as the European Commission argues with respect to technological standards.[208] However, the asymmetries of information and uncertainties associated to the dynamics of essentiality[209] might make it very burdensome to assess whether a patent has or not substitutes which are declared to be essential.

There is an additional (potential) restriction linked to 'foreclosing of alternative technologies'[210], which might affect both competition and innovation, in particular limiting inter-technology competition.[211] This is the case where only one (substitute) patent is included in the standard,

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[203] R. J. Gilbert, 'Ties That Bind: Policies to Promote (Good) Patent Pools' (2010) 77 Antitrust Law Journal 1, 10-12.

[204] Patrick Rey and Jean Tirole, *Cooperation vs. collusion: How essentiality shapes co-opetition* (2013) TSE Working Paper <http://www2.aueb.gr/conferences/Crete2015/Papers/Rey.pdf> accessed 3 August 2022 33.

[205] JMA can be considered as an equivalent to patent pools.

[206] 'The requirement is then a perfect screen in that it enables a no-brainer approval of pools even in the absence of good estimates of essentiality.' Ibid 25.

[207] Such perfect screen allows, following a prior article from Lerner and Tirole, to assess whether a joint marketing alliance should be allowed without assessing the essentially of the patents included, subject to the absence of tacit coordination. Josh Lerner and Jean Tirole, 'Efficient patent pools' (2004) 94 American Economic Review 691, 710.

[208] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 317.

[209] Analysed in section 2.1 above.

[210] European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ 89/3, para 242.

[211] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 317.

whereas its substituting technologies are excluded – tacitly or expressly – from the standard.

On the contrary, if all or part of the possible substitutes are included within the standard, this might negatively affect follow-on innovation, and, in any case, actual and potential inter-standard competition. Including substitute patents may disincentivise the creation of alternative standards, since part of the technical alternatives will somehow be captive of the pre-existing standards (ie their owners do not have any incentives to create another standard). In sum, the effects of disclosing a substitute patent as essential for a standard are not necessarily the same as those of the inclusion of a substitute patent in a pool.

Asymmetries of information may cause an equivalent effect on non-independent licensing: licensees will pay for substitute technologies to patent holders, while they only need one of them. Thus, the inclusion of substitute technologies within a standard as if they were essential– or, more precisely, including technologies for which there are substitutes within the scope of standard essentiality – must be carefully considered.

### 2.2.3 A new approach: coessentiality of substitute patents

Despite the risks associated to the disclosure of various substitute technologies as essential – which hereinafter will be referred to as coessentiality –, such disclosure may also have some positive effects.

The Commission understands that sometimes the inclusion of 'partly substitutable' technologies in pools can produce pro-competitive efficiencies – notably if the synergies between them exceed the benefits of using them separately. In such cases the Commission suggest treating them as complements.[212]

From a practical point of view, preventing the disclosure of coessential (substitute) patents is equivalent to banning the inclusion of substitutes within standards. This situation presents major drawbacks for the development and licensing of the standard.

Within the standard development, the disclosure of coessential patents simplifies the day-by-day work of technical committees. Excluding substitute patents from disclosure would put the burden on the technical committees to look for patents that might read on practically each single line of the standard specification to draft the specification in a way that each technical requirement in the specification is tailored to just one patent or claim.

In other words, this approach would force engineers not only to disclose their companies' patents that might read on the standard, but to search on a worldwide basis if there are any other patents that might read in the

[212] European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements [2014] C 89/03, para 254.

proposed draft of the specification regardless of whether their owners participate in the technical committee concerned or not.

It should be recalled that, although it is desirable to request engineers involved in the standard development to have a certain degree of knowledge of the patents that might be potentially essential, increasing the level of knowledge required from them to abovementioned point exceeds by far the goals of a technical committee, whose function remains to be to develop part of the standard from a purely technological perspective.

A simple counterfactual exercise, justifies why coessentiality rules should be – in most cases – preferred than its absence: if a given specification S reads on a patent A, this patent will be considered essential. However, a patent B achieving the same technical result as patent A and whose holder has remained unaware of the specification, will also read on specification S. In this case, the existence of B does not render A non-essential, because the implementers will need either A or B to implement S. In this case, it makes more sense to consider both coessential and let the market decide which one is preferred.

The alternative to this scenario is that, once that the existence of B is noticed, the SDO – regardless of whether the standard is approved or released – redrafts the specification in a way that leaves B outside of its scope. Such solution can only be supported by those who wilfully ignore how standardisation, SDOs and technical committees' work.

At the licensing level, disclosure of coessential patents makes sense too, particularly when opposed to consider both A and B as non-essential. If none of the substitute patents that allow for the implementation of a specification is disclosed as essential, implementers will not have the means to at first instance to detect a potentially needed licence and subsequently obtain a licence on FRAND terms. The alternative solution of not affirming the essentiality of the disclosed patent could in turn result in a situation where a simultaneous refusal-to-license on FRAND terms from both patent holders might prevent the implementation of the standard in its entirety. In terms of net efficiency gains and minimising foreclosure risks, it is preferrable to have more than one substitute technologies encumbered by the FRAND commitment, rather than none of them.

Then market dynamics will also contribute to discipline the price of substitutes.[213] In the case of coessential patents' disclosure both the owners of A and B would be interested in offering their technologies at a competitive price to attract implementers – even beyond FRAND terms. A different issue is that A and B would have a lower blocking effect compared to other essential patented technologies that do not have substitutes.

Moreover, nowadays standards are implemented in a wide range of products whose characteristics, specifications and needs substantially

[213] Although asymmetries of information might prevent totally or partially such increase of the consumer surplus.

differ, and therefore two patents which are perfect complements for a specific product, might be substitutes, optional or even not relevant for another one.[214] The assessment of these subtleties goes far beyond of the sphere of competences and knowledge of engineers working in a standard specification, since most of these dynamics take place at the product development phase, which is conducted by implementers.[215]

The balance between pros and cons related to the inclusion of substitute patents within standards leans clearly to the pro side. It is therefore advisable for SDOs to permit the disclosure of coessential substitute patents within standards. The Commission rightly noted most of the negative aspects of including substitutes in pools – in the TT Guidelines – and in standards – in the Horizontal Cooperation Guidelines, yet it did not rule out including them whenever this leads to net efficiency gains.

Actually, the advocacy for the inclusion of substitutes as coessential patents is not a merely theoretical stance: it is rooted in SDO practices. For example, ETSI explicitly takes a coessentiality approach in its IPR Policy: 'For the avoidance of doubt in exceptional cases where a STANDARD can only be implemented by technical solutions, all of which are infringements of IPRs, all such IPRs shall be considered ESSENTIAL.'[216]

At this point, the author must dissent with the Commission – who advocates for non-inclusion of substitutes in standards.[217] Arbitrarily choosing one patent among the competing ones subtracts such decision from the market. It is also highly impractical. Coessentiality of substitutes simplifies the work of technical committees and has the advantage of encumbering all the patents with a FRAND commitment – promoting price competition among them.

The negative externality of coessentiality is the risk for licensees of paying for two or more alternative technologies while they only need one of the alternatives to produce a standard compliant product. Thus, any measure directed to increase the level of information of licensees to detect alternative implementations would contribute to reduce the likelihood of

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[214] 'For example, the MPEG-LA pool licenses thousands of digital video patents to a wide variety of manufacturers of cell phones (both traditional and smart phones), cameras, televisions, computer displays, digital storage devices, video and other image editing and processing software, and so on. Some of these products both generate and display video content. Some do only one and a few do neither. Not all licensees from MPEG-LA use every patent or perhaps even more than a small number. Some may incorporate both of two particular patents; others may incorporate one but not the other. As a result, for one manufacturer two patents may operate as complements while for another they are either substitutes or unrelated.' Erik Hovenkamp and Herbert Hovenkamp, 'Patent Pools and Related Technology Sharing' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 363..

[215] '(S)ubstitutability of patents might not be immediately obvious when a standard is being set, but may become easier to determine after the standard has been implemented.' Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 111.

[216] Art 15 ETSI, 'IPR Policy' (2019) <https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf> accessed 1 November 2022.

[217] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 317.

the abovementioned negative effects – more clarity on disclosure rules can indeed contribute to achieve this objective.[218] By, for example, mandating the inclusion of the part of the specification in which the claim reads, substitutes will be easier to detect – usually claims reading in the same phrase of the specification will likely be substitutes.

## 2.3 Technical v commercial essentiality

Another key aspect for the definition of the scope of essentiality is whether it expands to commercial essentiality and, consequently, what should be understood as commercial and technical essentiality.

A clear delimitation of the scope of essentiality in this regard is of the utmost importance for all participants in standardisation: SEP holders need to know which patents they need to disclose and implementers require information about the patents they need to license in to commercialise standard compliant products.

Indeed, choosing between limiting essentiality to technical aspects or expanding it to commercial ones is not a minor issue, since this produces a direct impact on the SEP portfolio composition, conditions participants' strategies and modifies the approach to the standard development in SDOs.

While some SDOs specifically state whether essentiality within their standard development process is limited to pure technical aspects or expands to commercially essential patents, others do not refer explicitly or implicitly to what must be understood as essential. For example, ETSI[219] explicitly excludes commercial essentiality from its definition. Bekkers and Updegrove[220] found that only ETSI out of ten analysed SDOs explicitly exclude commercial essentiality, both IEEE and VITA allowed for it whereas the rest do not explicitly state whether commercial essentiality is included.[221]

### 2.3.1 Delimiting technical and commercial essentiality

Not surprisingly, there are different definitions of commercial and technical essentiality, which are sometimes split into different subcategories. Kesan and Hayes distinguish between core essential

[218] Section 3.1 in Chapter 6 includes a specific proposal to improve disclosure rules.

[219] ibid, Art 15.6.: 'Essential, as applied to IPR means that it is not possible on technical (but not commercial grounds), taking into account normal technical practice and the state of the art generally available at the time of standardisation to make, sell, lease otherwise dispose of, repair, use or operate equipment or methods which comply with a standards without infringing that IPR. For the avoidance of doubt in exceptional cases where a standard can only be implemented by technical solutions, all of which are infringements of IPRs shall be considered essential.'

[220] Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 40.

[221] Still today VITA and IEEE include commercial essentiality pursuant Art 10.2.1 VITA, 'Policies and Procedures' (VSO, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022; and Art 6.1. IEEE-SA Standards Board Bylaws (2015).

patents, non-core essential patents and commercially essential patents.[222] The first one relates to technically indispensable patents when the standard is implemented. Non-core essential patents relate to 'optional' features of the standard, while commercially essential patents do not cover any essential feature but are necessary to commercialise it. For example, Apple's 'slide-to-unlock' technology is a purely commercial feature.[223]

In a later work, the same authors further elaborated their approach to commercial essentiality distinguishing three forms thereof: broad (nearly unanimous market demand for the technology), intermediate (needed to obtain interoperability among complementary technologies); and narrow (the technology would only be commercial essentially if either the alternatives are prohibitively expensive or the option is so preferred to the alternatives that it is not commercially feasible to implement any other).[224]

Bekkers and Updegrove distinguish between 'commercial essentiality' (the alternatives are very expensive and/or perform worse) and 'commercially essential patents' (which cover features that, despite not being mandatory, are very valuable for consumers).[225] They propose a couple of examples where they confront a technology with other two implementation options that respectively double the costs of producing the phone – regardless of fees – and entail to reduce the battery duration by a half.[226]

Thus, Bekkers' and Updegrove's definition of commercial essentiality revolves around two poles: on the one hand, the preferences of the market and, on the other hand, considerations related to cost-efficiency and/or performance. The abovementioned examples substantially concentrate the debate on the question of whether (technical) essentiality should be understood in the sense of excluding any economic consideration.

The answer must be a straightforward no. Some of the claimed-to-be-commercial aspects could also be addressed from a technical perspective. Think of the case of two technologies protected by patents A and B, which compete in a standard development procedure where the adoption of one or the other leads to a different specification – excluding the other technology, respectively. Within this case, three subcases can be distinguished:

+ differences among royalties,

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[222] Jay P Kesan and Carol M Hayes, 'FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments' (2014) 89 Indiana Law Journal 241.
[223] Ibid 243.
[224] Jay P. Kesan and Carol M. Hayes, 'Standard Setting Organizations and FRAND Licensing' in Robert D. Anderson, Nuno Pires De Carvalho and Antony Taubman (eds) Competition Policy and Intellectual Property in Today's Global Economy (Cambridge University Press WTO and WIPO, 2021) 254.
[225] Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 40, fn 54.
[226] ibid 39.

- differences in performance (the reduction of duration of the battery case)
- differences in costs of the final product (the case of doubling the costs of producing the phone).

On top of them, the authors mention another case, which is not related to the decision in the technical committee: a patent C which does not read on the standard but whose simultaneous implementation with the standard is highly appreciated by consumers.

As regards the first case (differences among royalties), although the definitions of commercial essentiality are to a certain extent linked to the costs of the technology, such costs should be understood as the costs associated with the implementation of the technology[227] and not with the royalties to be paid for the technology. In other words, essentiality – technical or commercial – is linked to the need of accessing the technology required to create standard-compliant products or, more specifically to compete in the market for standard-compliant products and not to the terms of such access. The latter should better be addressed in the context of SDOs pre-required licensing terms (eg FRAND).

There is no doubt that the second case – differences in performance – is a purely technical matter that must be excluded from the scope of commercial essentiality. And arguably the same applies to the third case (differences in production costs), since, from a technical efficiency perspective, it is possible to take into account production costs in the same fashion as size, durability or range.[228]

As a result, the conclusion is that it is better to understand technical essentiality broadly – ie including cost-efficiency considerations – and to refer to commercial essentiality only in the cases where market preferences are involved – ie patent C case which from now on will be referred to as purely commercial essentiality.

### 2.3.2 A plea in favour of technical essentiality as a default rule

Pursuant the scope of technical and commercial essentiality, as it has been defined, the follow-up question then is whether there are reasons to prefer technical essentiality in standardisation settings, or on the contrary, to advocate for the inclusion of commercial considerations too. This debate is of particular importance in cases where SDOs have not properly delimited the scope of essentiality.

As it happens in the case of substitutes and complements – analysed in the preceding section – the scope of essentiality has been slightly different

[227] Eg choosing a technology whose configuration costs X, whereas the alternative technology configuration costs 2X.
[228] It would be too naïve to assume that engineers working in technical committees do not take account of the implementation costs and performance consequences when choosing between technologies.

in the case of mere standards and standardized technologies which are commercialized by means of patent pools.[229]

Kesan and Hayes analysed the essentiality scope of some well-known pools such as MPEG-2 using the concept of 'essential to compliance' as linked to technical essentiality, in the First DVD Letter using 'necessary (as a practical matter) to compliance' as including technically essential patents, optional patents and even commercially essential patents; and in the Second DVD Letter using 'no realistic alternative' – which may also include commercially essential patents.[230] In contrast, while some SDOs have explicitly excluded or included commercial essentiality, others do not make any explicit mention to the scope of essentiality.[231]

In absence of an explicit mention, what should be the default rule? Contreras[232] favours a wide approach to essentiality, including commercial essentiality, relying on the approval of the DOJ of certain patent pools that provide for commercial essentiality either implicitly (DVD-6C, 1999)[233] or explicitly (RFID, 2008).[234] He argues that technical essentiality cannot be understood as the default rule, and that the inclusion of commercial essentiality should be allowed if it is aligned with the expectations of individual participants. For him, the exclusion of commercial considerations might lead to absurd situations. In particular, he poses the example of both aluminium ($ 0,15 per meter) and gold ($ 2000 per meter) meeting certain specifications for a conduits' standard. In this case, a strictly technical assessment of essentiality will render aluminium non-essential, since there is a substitute.

However, as analysed in the preceding section, if SDOs provide for the possibility of disclosure of coessential substitute patents, this example loses a substantial part of its relevance. In any case, it is not very clear whether Contreras' metaphor refers to the royalty to be paid for the technology or to the implementation cost. As argued above, if it refers to royalties, this issue must be dealt with from an access-to-technology perspective (ie FRAND commitment) more than from an essentiality perspective. Moreover, this situation does not seem acute when dealing

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[229] 'Technology pools are defined as arrangements whereby two or more parties assemble a package of technology which is licensed not only to contributors to the pool but also to third parties. In terms of their structure technology pools can take the form of simple arrangements between a limited number of parties or of elaborate organisational arrangements whereby the organisation of the licensing of the pooled technologies is entrusted to a separate entity. In both cases the pool may allow licensees to operate on the market on the basis of a single licence.' European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3.

[230] Jay P Kesan and Carol M Hayes, 'FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments' (2014) 89 Indiana Law Journal 241.

[231] ETSI excludes commercial essentiality while VITA and IEEE include it. Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 40.

[232] Jorge L Contreras, 'Essentiality and Standards-Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 219.

[233] US Department of Justice - Antitrust Division, 'DVD-6C Business Review Letter' (1999).

[234] US Department of Justice - Antitrust Division, 'RFID Business Review Letter' (2000) 9 <https://www.justice.gov/sites/default/files/atr/legacy/2008/10/21/238429.pdf> accessed 1 November 2022 ('...but also essential to the standard as a practical matter because there are no economically viable substitutes for the patents').

with non-exhaustible inputs, such as licences, whose price is not determined by scarcity as in the case of gold. In an equivalent case based on licences, with a 'gold patent' and an 'aluminium patent' being almost perfect substitutes, the holder of the 'gold patent' will be forced to set the price at a more competitive level to prevent its technology from falling into oblivion.

If the metaphor is meant to refer to the implementation costs, it will not be problematic, as a matter of efficiency, to deal with it from a technical perspective. If the performance of both technologies is equal, an engineer would always choose the one whose implementation is less costly.

In any event, some of the arguments that might justify the inclusion of commercial considerations within pools shall– *contrario sensu* – justify their 'exclusion' from the standards: standards deal with the creation of technologies, whereas pools deal with the licensing of standardised technologies. Pools therefore aim to offer a one-stop solution for licensing and therefore it makes sense that they include any feature that implementers are interested in, regardless of whether it is of a technical or commercial nature.

When it comes to standards, there is a number of reasons in favour of preferring technical essentiality to commercial essentiality and to advocate for technical essentiality (on its broadest meaning) as the default criteria in cases where the SDO has not specified it.

First, patents protect solutions to technical problems, therefore it is much more coherent with the scope patents (technical solutions) and standards (technical specifications) to understand essentiality in technical terms.

Second, and closely related to the former, SDOs have been traditionally reluctant to deal with aspects other than purely technical ones. Introducing a commercial dimension in technical committees will foster the number of strategic behaviours, apart from unduly extending the anyhow excessively long standard developing processes.

Third, according to the above-proposed definition, purely commercial essentiality is defined by the market. Usually, the standard development takes place before the market for standard compliant products is created, and arguably, the engineers who develop the standard are not in the best situation to decide beforehand which are the technologies that they should prescribe to users outside of the mere technical sphere.

Fourth, as analysed earlier, the cases where purely commercial essentiality is relevant are not that numerous and, furthermore, a technical approach to essentiality does not preclude to include certain economic aspects such as cost/efficiency or performance-related ones.

Finally, broadening the scope of essentiality is very likely to increase the number of disclosed SEPs. As it will be analysed in Chapter 5, the high number of patents is generally perceived to be one of the causes of the problems affecting standardisation environments – notably concerning the essentiality assessment, licensing negotiations or the large number of

patents included in SDO databases, among others concerns linked to over-disclosure of patents.

Apart from giving room to strategic behaviours, including commercial essentiality is very likely to increase dynamism within the standard, which is already a per se dynamic environment: what today has 'no realistic alternative' at commercial level might be ignored by customers few months later. For example, the abovementioned slide-to-unlock, has currently been substituted by unlocking systems based on fingerprint or facial recognition. It therefore makes little sense to fossilize such technologies within the standard specifications.

Against all these considerations, the only advantage – for implementers – of including purely commercial SEPs within the standard specifications is that the purely commercial SEPs will turn to be a FRAND-pledged patent. Yet it makes little sense to force the patent holder of a commercially successful patent to license it on FRAND terms just because customers prefer or demand such specific implementation.

Arguing in favour of a technical approach to essentiality as default rule does not leave implementers helpless in cases where a technology becomes commercially essential to compete in a given market. In the case that competitors cannot invent around or achieve a comparable result through other technical means, they can resort to competition law, as show in the IMS Health[235] or Microsoft[236] cases, analysed in Chapter 4. Nevertheless, competition authorities are not very likely to – and should not – act against commercial success – unless it constitutes a true abuse of dominant position.

Thus, it is more efficient and coherent with the nature of standardisation itself to limit the scope of essentiality to technical considerations[237], particularly when referred to standards that group some hundreds of proprietary technologies. Hence, in absence of explicit mention, technical essentiality should be considered the rule.[238]

It may however be possible, or even advisable, to include commercial essential patents under certain circumstances – for example, standards created with a clear commercial focus, or those that intend to be licensed as a pool or under an aggregated royalty cap, or even those that are composed by a limited number of proprietary technologies.

This inclusion should be made explicitly. Although Contreras' suggestion of interpreting the concept in the light of the understanding and expectations of individual SDO participants may be useful for ongoing

[235] Particularly, the IMS Health case is very relevant inasmuch as it arguable deals with a case of purely commercial essentiality – ie based on the users preferences rather than on technical limitations. Case 418/01 *IMS Health* [2014] ECR I-5039 = EU:C:2004:257.

[236] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 = EU:T:2007:289.

[237] Against Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 348.

[238] As also advocated by Jay P Kesan and Carol M Hayes, 'FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments' (2014) 89 Indiana Law Journal 241, 244.

cases[239], a higher level of precision in IPR policies of SDOs is highly desirable. Presumably, in case of conflict as regards the essentiality of a given patent the 'understandings and expectations' of the SEP holder will be the opposite of prospective licensee ones.

In sum, there are good reasons to prefer technical essentiality and, in absence of an explicit rule, to advocate for it as the default rule. However, this does not rule out the inclusion of commercial essentiality in certain SDOs or standards where such inclusion might have a positive effect. Most importantly, legal certainty might be a decisive factor to prevent disputes arising from lack of clarity as regards the concept of essentiality. Therefore, SDOs' IPR policies should define not only whether they opt for both technical and commercial essentiality or limit it to the technical one, but also what should be understood by 'technical' and 'commercial' within technical committees or working groups.

# 3. Disclosure rules: genesis, scope and practicalities

The uncertainties related to disclosure of essential patents is not exhausted by the multiple understandings of what an essential patent is or should be. Even if the criteria to assess essentiality were perfectly defined, SEP holders would usually face a number of uncertainties regarding to whether to disclose an SEP or not, and moreover, regarding what, who, what, how and when to make a disclosure.

Therefore, the scope of disclosure rules is also a field which leaves room for interpretation – and consequently to legal uncertainty. This vagueness can be explained by the source of disclosure rules as a 'legal' obligation.

Primarily, the genesis of the disclosure obligation in the EU starts with a group of non-binding instruments of the Commission – such as Communications[240] and Guidelines[241] – which expose the (policy) views of the Commission. There are no EU Regulations neither CJEU case law that would explicitly establish the obligation for SDOs to provide for disclosure rules. The most 'compelling' Commission actions with regard to disclosure rules are its consideration within the 'safe harbour' included in the Guidelines on Horizontal Cooperation and two cases – Rambus[242]

[239] Jorge L Contreras, 'Essentiality and Standards-Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 219.

[240] Namely European Commission, 'Standardization in the European economy (Follow-up to the Commission Green Paper of October 1990)' [1992] OJ C96/2; European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final.

[241] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1.

[242] European Commission, Rambus (Case Comp/38636) Commitment Decision of 9 December 2009, <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022. See also Chapter 5 below.

and Sun Microsystems/ ETSI[243] – which resulted with a commitment from Rambus to license at lower rates and the modification of ETSI IPR Policy, respectively. Moreover, the Commission's understanding of the scope and purpose of disclosure rules has evolved over the last three decades.

As a result, disclosure rules are essentially contractual obligations whose scope is largely defined by each SDO. Such scope is mostly the result of the technological and standardisation dynamics in the sector concerned and is strongly conditioned by the membership and voting rules of the SDOs.

## 3.1 The approach of the European Commission to disclosure rules

The undeniable importance of standardisation for the European Union[244] has resulted in the direct involvement of the Commission in the regulation and development of different aspects of the standardisation framework. Today, at least three Directorates General (DGs) are involved in the regulation of standardisation. While DG Connect deals with its technical aspects, DG Growth focused on the issues related to the impact of standardisation on the internal market and, more broadly, the European economy. Finally, DG Competition takes care of its competition dimension[245] with a dual role as enforcer and policymaker.[246]

These different perspectives have shaped the current standardisation environment in Europe, and arguably worldwide, resulting in a quite comprehensive and multi-faceted framework, which may however lack coherence.

### 3.1.1 Initial approach

Back in 1992[247], the Commission identified late disclosure of or failure to disclose a proprietary right as a 'potential source of difficulties' for standardisation, if later the patent rights are enforced.[248] The Commission therefore proposed internal SDO procedures to penalise patent holders that have actual or presumed knowledge during the creation of the standard about holding patents on the standard, leaving the eventual bad faith behaviours to be adjudicated by courts in the framework of civil or

[243] European Commission, ETSI/Sun Microsystems (Case COMP/C-3/37926) Commission Communication (2001). See also Chapter 6 below.

[244] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 1.

[245] DG Trade and DG Research have also been involved in certain specific aspects related to standardisation within their areas of competence.

[246] The cases where DG Competition acted as an enforcer in connection with disclosure rules are addressed in Chapters 5 and 6, respectively.

[247] In the US he first attempts to regulate collaborative standardization in the framework of joint research cooperation, were the 1984 National Cooperative Research Act and its subsequent amendment in 2004 by the Standards Development Organization Advancement Act. See Björn Lundqvist, Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation (Edward Elgar Publishing 2014) 149ff.

[248] European Commission, 'Standardization in the European economy (Follow-up to the Commission Green Paper of October 1990)' [1992] OJ C96/2, 17.

criminal proceedings. Moreover, the Commission stressed that failure to disclose can arise from the difficulty to extract information from large portfolios.[249]

### 3.1.2 Disclosure obligations in the Horizontal Cooperation and Technology Transfer Guidelines

While the 2001 Guidelines on Horizontal Cooperation[250] did not include any specific reference to disclosure obligations, the 2011 Guidelines on Horizontal Cooperation[251] reflect the actual concerns of the Commission, by devoting an entire chapter to standardisation agreements.[252]

In particular, the Commission understands that a system where 'potentially relevant IPR(s)' are disclosed upfront might increase the probability of effective access to the standard, enabling the participants to foresee its effects on the technology´s final price or, at least, verify the holder´s willingness to license.[253]

The Guidelines on Horizontal Cooperation endorse a 'good faith disclosure' approach[254] with the objective of providing better information on the selected technology and effective access to the standard. Nevertheless, the Commission also includes an example where, even in the absence of a disclosure obligation, a standardisation agreement is not very likely to be considered anticompetitive[255] and, moreover, establishes that the assessment of whether a given model of disclosure provides for effective access to the standard should be done on a case-by-case basis.[256]

Contrary to the 1992 Communication, where the Commission was reluctant to place the burden either on patent holders or on SDOs[257], the Guidelines on Horizontal Cooperation seemed much more concerned

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[249] ibid 18.

[250] European Commission, 'Guidelines on the applicability of Article 81 of the EC Treaty to horizontal cooperation agreements' [2001] C3/2.

[251] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1.

[252] Drexl *et al* were reluctant to include the chapter on standardisation in the Horizontal Cooperation Guidelines to the extent that Chapter 7 presupposes responsibility of the SDO and its members for unilateral behaviour of individual patent holders. See Josef Drexl *et al*, *Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements* (2010) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper Series No 10-12, 14. Bonadio, on the other hand, considers that the Horizontal Cooperation Guidelines are applicable also to Art 102 TFEU. See Enrico Bonadio, 'Standardization agreements, intellectual property rights and anti-competitive concerns' (2013) 3 Queen Mary Journal of Intellectual Property 22, 27 fn 23. Lundviqst has welcomed such chapter as a „good start". See Björn Lundqvist, 'Competition Law as the Limit to Standard-Setting' in Josef Drexl and Fabiana Di Porto (eds), *Competition Law as regulation* (Edward Elgar Publishing 2015) 393.

[253] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 268.

[254] Disclosure can be gradual and follows a 'reasonable efforts' standard, ibid para 286.

[255] In particular, if it very likely that all technologies under evaluation for their inclusion in the standard are protected by IPRs. ibid para 327.

[256] Ibid para 298.

[257] To which the Commission referred as to 'manufacturers' and 'standard making bodies' back then. European Commission, 'Standardization in the European economy (Follow-up to the Commission Green Paper of October 1990)' [1992] OJ C96/2, 18

by the anticompetitive restrains that competitors participating in an SDO might provoke. This perspective addresses the competitive harm from a horizontal perspective but oversees the harm of vertical nature, excessively putting the focus on the IPR policies to address a conduct that is driven by intentional acting patent holders.[258]

At horizontal level, the purpose of the Guidelines is only to provide a 'safe harbour' for SDOs.[259] This may be criticised for providing little guidance to SDOs on how to establish a proper disclosure system.

Overall, this evolution shows a shift from a clearance approach[260], whose main objective is to ensure that no IPR could block the standard, to a more comprehensive one based not only on effective access to the technology but also on the information concerning the selected technology.

### 3.1.3 SEP disclosure and abusive behaviours

In 2009, the Commission published the 'Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings'[261] (hereinafter Guidance Paper) whose aim was two-fold. First, it pursued a 'signalling' function by identifying the areas and exclusionary conducts that were more likely to attract the enforcers´ interest; secondly, a 'guiding' function for both the Commission and market operators, aimed at achieving a higher degree of consistency and legal certainty in the application of Article 82 EC (now Article 102 TFEU).[262]

Although the Commission included a rather comprehensive 'catalogue' of exclusionary conducts – including refusal to license[263] – it did not mention abusive behaviour in relation to the disclosure of SEPs or, more generally, to SEPs-related competition concerns.

By the time of the adoption of the Guidance Paper, the Commission was investigating the *Rambus* case – a case on patent ambush, a deceptive behaviour linked to under-disclosure of SEPs – and hence was perhaps not ready to mention such conduct in the Guidance Paper. An alternative explanation could be that Rambus was not a case on exclusion, while the

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[258] Josef Drexl *et al*, *Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements* (2010) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper Series No 10-12, 19.

[259] See Enrico Bonadio, 'Standardization agreements, intellectual property rights and anti-competitive concerns' (2013) 3 Queen Mary Journal of Intellectual Property 22, 28; David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 99; Damien Geradin, 'European Union Competition Law, Intellectual Property Law and Standardization' in Jorge L. Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 81.

[260] Bonadio, however, read the Guidelines in the sense of putting mostly the emphasis on the „prevention of blockage" approach. Enrico Bonadio, 'Standardization agreements, intellectual property rights and anti-competitive concerns' (2013) 3 Queen Mary Journal of Intellectual Property 22, 28.

[261] European Commission, 'Guidance on the Commission's enforcement priorities in applying Article 82 EC Treaty to abusive exclusionary conduct by dominant undertakings' [2009] OJ C45/7 .

[262] Ibid para 2.

[263] Ibid para 78.

Guidance Paper only pursues to address exclusionary conduct of dominant firms.

Until today, the Commission has ignored the voices that proposed to create Standardisation Guidelines to address all the relevant competition concerns raised in the standardisation context, or at least, to provide guidance for the application of Article 102 TFEU (ex-Article 82 EC) in the same fashion it did with regard to Article 101 TFEU (ex-Article 81 EC) in the Guidelines on Horizontal Cooperation.[264]

### 3.1.4 Latest developments

In November 2017, the Commission issued a long-awaited Communication[265] addressing its main priorities as regards SEPs. Although most of these priorities had already been mentioned in an earlier Communication[266], the Commission now decided to take a clearer stand. Probably the decision was triggered by, on the one hand, the increasing litigation at national level[267], which even further increased after the CJEU's judgment in Huawei v ZTE.[268] On the other hand, the advent of the Internet of the Things (IoT) and the 5G mobile telecommunications standard[269] requires further clarification.[270]

In its Communication entitled 'Setting out the EU approach to Standard Essential Patents', the Commission identified creating more transparency to SEPs exposure as one of its main priorities, together with a need to clarify principles for FRAND licensing, SEPs enforcement and Open Source in standardisation.[271]

The claim for more transparency directly links with the disclosure duty. The Commission conceives transparency as a substantive value for standardisation rather than a mere procedural issue and further develops the link between effective access and information that the Commission established in the 2011 Guidelines on Horizontal Cooperation.[272]

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[264] Josef Drexl *et al*, *Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements* (2010) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper Series No 10-12, 15 ff.

[265] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final.

[266] European Commission, 'ICT Standardisation Priorities for the Digital Single Market' COM(2016) 176 final.

[267] For example, in Germany, almost thirty cases related to ICT patents – not necessarily SEPs – have been decided in first instance and appeal after the CJEU released its judgment on Huawei v ZTE case. An overview of the cases in Germany and other jurisdictions can be found in the 4ipCounsil database. 4 ipCouncil, 'Case Law post CJEU ruling Huawei v ZTE' (database) <https://caselaw.4ipcouncil.com/> accessed 1 November 2022.

[268] Case C-170/13 *Huawei v ZTE* EU:C:2015:477. See also analysis in Chapter 4.

[269] Together with cloud computing, data and cyber security. See European Commission, 'ICT Standardisation Priorities for the Digital Single Market' COM(2016) 176 final, 5.

[270] In particular for newcomers in the ICT sector and EU SMEs. See European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 2 and 3.

[271] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

[272] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, paras 286 and 298.

Accordingly, the Commission suggests patent holders to increase the precision of their disclosures and even to update them.[273]

The Commission now makes explicit that the transparency requirement is not confined to the creation of the standard[274] but also extends to SEP licensing.[275] In other words, the informative function of disclosure should reach prospective licensees[276] and not only the participants in the standard development.[277]

In conclusion, the Commission presents the functions of disclosure rules, primarily consisting in providing safeguards to the standardisation process against free-riders who aim to capture the standard by means of patent ambushes and, second, bridging the asymmetries of information for licensing purposes. More explicitly, the Commission aims to prevent the eventual blockage of standards by proprietary technologies, to ensure effective access to the technology and to inform both participants and prospective licensees of the available technologies and potential patent exposure.

## 3.2 The SDOs approach to disclosure: scope, effects and limitations

IPR policies, rules of procedures or standards bylaws are some of the names given to SDOs´ bylaws. Such bylaws are self-imposed rules of a contractual nature and fulfil a double function. On one hand, they articulate the relationships between members of the SDO and with the SDO itself and, on the other, pre-establish a set of conditions for SEP holders when offering their potential SEPs, develop the standard technology and license them to third parties, including non SDOs members.

The disclosure rules in SDOs' IPR policies tend to be rather vague. Aside from the broad approach of the Commission to the scope of disclosure rules, the justification for this vagueness is the difficulty to arrive to a consensus among the members of the SDO, which however apply different internal approaches towards disclosure, or more generally, to standardisation, depending on their business models. As a result, the IPR policies reflect the compromise between two opposing forces: the interests of the SEP holders – without whom the technology

[273] The feasibility and opportunity of such measures will be addressed in Chapter 6. See European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 4.

[274] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 282.

[275] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

[276] Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 249.

[277] Standard setting brings together a great number of companies during the creation of the standard and its subsequent commercialisation. Their different size, their position in the value chain or their participation in the creation of the standard condition the level of information that each one of the companies has about the technology covered by the standard. These differences create asymmetries of information whose effects are very relevant when licensing out and in the patented technologies that are essential for the standard.

would not be created – and the interests of the implementers – whose acceptance of the technology is needed to ensure the creation of a critical mass of supporters for the standard in the market.

SDOs are placed at the crossroad of conflicting interests and therefore need to design their IPR policies in a way that it is attractive for both sides. Spulber describes the adoption of IPR policies of SDOs at the result of the balance of votes within the SDOs, representative not least the interests of SEP holders, and the pressure of competitive markets, represented by the implementers.[278] He concludes that the combination of both forces 'generates efficient standard setting'.[279]

This does not rule out that certain IPR Policies are – circumstantially or structurally – more favourable to the interests of either SEP holders or implementers. Some of the reasons that might explain this fact are, *inter alia*, the monopsonist power of implementers, policy intervention or the absence of inter-standards competition, ie the existence of other SDOs or consortia where SEP holders could move if they do not share the approach taken by the SDO[280]

Another reason for the vagueness of IPR Policies, in particular concerning the inclusion of licensing terms within IPR policies (or allowing licensing negotiations to take place within technical committees), is to prevent any competition law liability. An inadequate management of such negotiations can result in liability.[281] Not surprisingly, SDOs prefer to avoid this circumstance by keeping any royalty-related consideration far away from their core activities.

In sum, this so-called business-neutral approach to IPR policies forces the disclosure rules to be flexible enough in order to allow that – within the limits stablished by such rules – the participants in standardisation can adapt their SEPs disclosures to their internal practices and their business models.[282]

Hence, in the following, three different SDO bylaws are chosen to explain those aspects that define and shape disclosure and, more specifically, its impact on the degree of achievement of the disclosure functions.

ETSI[283] is an EU-based SDO that operates in the ICT sector, mainly in the telecommunications sub-sector. Either alone (for instance, on the GSM standard) or in cooperation with other SDOs (for instance on the LTE standard in the framework of 3GPP) ETSI has developed some of the most successful standards in the mobile telecommunications field,

[278] Daniel F Spulber, 'Standard Setting Organisations and Standard Essential Patents: Voting and Markets' (2018) 129 The Economic Journal 1477, 1481.
[279] ibid 1501.
[280] Justus Baron *et al*, *Making the Rules: The Governance of Standard Development Organizations and their Policies on Intellectual Property Rights* (2019) JRC Science for Policy Report 68.
[281] Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 110.
[282] Which also differ among SEP holders.
[283] ETSI, <http://www.etsi.org/> accessed 1 November 2022.

making it one of the most relevant SDOs in the world. The evolution and amendments included within ETSI IPR Policies are known for being the result of a wide consensus and a multifaceted analysis. Not surprisingly these rules are followed by other SDOs all around the world.

The US-based IEEE[284], formerly standing for Institute of Electrical and Electronics Engineers, develops standards on different technological areas, mainly telecommunications, information technology, and power generation. The radical shift in its IPR policy back in 2015[285], together with the fact of being one of the most relevant SDOs of the world, sparked the interest of lobbyist and scholars alike and motivated a boost of articles[286], academic publications[287] and declarations.[288] This made IEEE an interesting real-life example of how a change of IPR policy can affect the behaviours of stakeholders and impact the companies and patent portfolios involved in the later standards.[289]

Based in the US, VITA Standards Organization[290] (VSO or VITA) is a body accredited by the American National Standards Institute and its field is critical embedded computing architectures. Although smaller, it is also an interesting SDO for academic purposes since its IPR policy differs notably from other SDOs, even though some of its terms seem to have partially inspired the 2015 revision of IEEE's IPR Policy.

Each of these three SDOs bylaws define the scope, requirements and effects of disclosure in a different fashion. Therefore, this section will analyse their core relevant points: who is obliged to disclose, what level of diligence is expected from the disclosing party, when should the

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[284] IEEE, <https://www.ieee.org/index.html> accessed 1 November 2022.

[285] Approved by the US DOJ Antitrust Division on 2 February 2015, IEEE Business Review Letter (2015) <www.justice.gov/atr/response-institute-electrical-and-electronics-engineers-incorporated> accessed 1 November 2022.

[286] See, among others, Mark Chandler, 'Why We Support IEEE's Patent Policy' (*EETimes*, 2015) <https://www.eetimes.com/author.asp?section_id=36&doc_id=1326225> accessed 1 November 2022; Keith Mallinson, *Development of innovative new standards jeopardised by IEEE patent policy* (2017) <https://www.4ipcouncil.com/application/files/6015/0479/2147/Mallinson_IEEE_LOA_report.pdf> accessed 1 November 2022; IPLytics, 'IEEE remains very active after patent policy change' (*IPLytics*, 2017) <http://www.iplytics.com/general/ieee-active-patent-policy-change/> accessed 1 November 2022.

[287] The potential problematic areas for innovation have been summed up by Teece and Sherry, and are mainly refer to the availability of injunctive relief, the exclusion of gains from standardisation, the adoption of the 'smallest-saleable-unit' approach concerning licensing practices and standardization dynamics, reciprocity and patent-claim-by-patent-claim licensing. David J Teece and Edward F 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 5 <http://businessinnovation.berkeley.edu/wp-content/uploads/2014/07/14-The-IEEEs-New-Policy_Teece_Sherry_8-3-16_2_Clean.pdf> accessed 1 November 2022; see also Marco Lo Bue, 'Patent Holdup and Holdout Under the New IEEE's IP Policy: Are These Breaches of Competition Law?' (MIPLC Master Thesis Series 2016) 33-40 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2999806&download=yes> accessed 1 November 2022.

[288] Although it did not produce any formal effects, in his speech of at USC Gould School of Law on 10 November 2017 former US DoJ Assistant Attorney General Makan Delrahim announced a substantial change on DoJ's approach to SDO-based licensing practices and more or less explicitly targeted IEEEs IPR Policy. Makan Delrahim, 'Take it to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law' (2017) <www.justice.gov/opa/speech/file/1010746/download> accessed 1 November 2022.

[289] See Thimo P Stoll, *Essays on the Economics of Patents, Standards, and Innovation* (1st edn, Verlag Dr Hut 2015) 56.

[290] VITA <https://www.vita.com/> accessed 1 November 2022.

disclosure take place, which type of disclosure is requested and what are the licensing terms.

### 3.2.1 Who is obliged?

The ownership of a potential SEP is the main criterion that triggers the obligation to disclose. However, certain SDOs – eg VITA – require SDO membership to be involved in the standard development. Additionally, companies related to the discloser/member, as well as subsequent acquirers, are usually bound by the disclosure itself and/or by the obligations derived from it.

The ETSI[291] disclosure obligations are binding on ETSI's members[292] and affiliates of ETSI members[293] – when the context allows so. In addition, non-members[294] can also be bound by licensing commitments derived from the disclosure, if they acquire FRAND-encumbered essential patents.[295]

IEEE's disclosure[296] terms follow a slightly different path. Once IEEE notices[297] that a standard might read on a patent claim, IEEE itself will request the patent holder to submit a Letter of Assurance (LoA) in which the submitter asserts its lack of awareness of relevant patents or its ability to license potentially essential patents. Once the LoA has been approved by the IEEE-SA Standards Board, the submitter[298] will be bound to the terms of the LoA, including its licensing terms and also other obligations pursuant to Article 6.2 IEEE-SA Standard Board Bylaws. Additionally, submitters have the duty to either notify acquirers the existence of an Accepted Letter of Assurance (ALoA) through a Statement of Encumbrance[299] or directly bind them to the obligations derived from the ALoA and IEEE bylaws – including the obligation of informing and/or binding subsequent assignees and transferees to such terms.

As regards VSO, the participation requirements are more complex. VSO membership is constrained to individuals whose employing organisation

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[291] Art 4.2 ETSI 'IPR Policy' (2019) <https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf> accessed 1 November 2022. The IPR Policy is included within Annex 6 of ETSI's Rules of Procedure.

[292] Art 15.9 ETSI IPR Policy: 'MEMBER shall mean a member or Associate member of ETSI. References to a MEMBER shall wherever the context permits be interpreted as references to that MEMBER and its AFFILIATES.'

[293] Art 15.1 ETSI IPR Policy.

[294] Art 6.1 bis ETSI IPR Policy.

[295] The European Commission stresses that the FRAND commitment should be transferred to subsequent acquirers of the patent. European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 285.

[296] Article 6.2 IEEE-SA, 'Standards Board Bylaws' (2019) <standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf> accessed 1 November 2022.

[297] ETSI also provides for similar proceedings either in the case of availability of licences (Art 6 ETSI IPR Policy)) or in the case of non-availability (Art 8 ETSI IPR Policy).

[298] Understood within the meaning of Art 6.1, ie including all its affiliates, except "specifically and permissibly excluded" IEEE-SA, 'Standards Board Bylaws' ((2019) <standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf> accessed 1 November 2022.

[299] Defined in Article 6.1 IEEE-SA Standards Board Bylaws.

is a VITA corporate member.[300] Only employees or consultants from VITA member companies can participate in a working group (WG)[301] as a sponsor, participant or observer.[302] Therefore, the disclosure obligation extends only to submitters and WG members. While it does not explicitly provide for a transfer of licensing commitments on the substantive wording of its IPR policy, VSO includes such commitment within its mandatory declaration form.[303]

In sum, SDO membership is one of the criteria for being obliged to disclose, yet not the only one. Participation in WG might also trigger the obligation to disclose[304]. In addition, a proactive detection of potentially essential patents might lead non-members to disclose their patents – and declare their commitment to license in pre-defined licensing terms. Finally, it is important to note that the one obliged to disclose is sometimes the company[305] and in other cases the individual participating in the technical committee[306], which is indeed relevant to assess the degree of knowledge and diligence required to either the company or the individual.

### 3.2.2 Knowledge and diligence

The amount of information provided by SEP holders depends, above all, on the degree of efforts devoted to find such information within their portfolio. Although it might sound unrealistic that a patent holder does not know its patent portfolio, the high number of potentially essential patents, together with the intrinsic complexity of the standardisation process hinders enormously the task of deciding which patents are or might be potentially essential.[307]

In this regard, the ETSI IPR Policy provides that each member shall use 'reasonable endeavours' to inform ETSI about essential IPRs without the obligation of conducting an IPR search.[308] Such obligation is more intense during the time of the standards development.[309] In addition, the wording of the ETSI IPR Policy explicitly refers to the standards and technical

[300] Pursuant Art 2.1 VITA Policies and Procedures (VSO, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022. Membership in VSO is open to any individual or consultant employed by an organization that is a VITA corporate member (regular, senior, or sponsor)..

[301] Art 7.1.4 VITA Policies and Procedures. Depending on the SDO, working groups are also referred to as technical committees.

[302] Ranked from higher to lower degree of involvement.

[303]Art 6 VITA Policies and Procedures.

[304] In fact, usually during WG meetings, the participants are compelled to disclose potentially essential patents.

[305] As is the case for ETSI and IEEE.

[306] Please note that here 'participating' is used in a broad sense, including membership, sponsorship or plain participation.

[307] Aside from wilful or negligent under or over-disclosures, which will be analysed in Chapter 5, section 2 above sets out the exogenous causes which explain the challenging dimension of this task, while Section 4 below focuses on the companies' internal limitations.

[308] Art 4.2 ETSI IPR Policy.

[309] ETSI stablishes a general duty to inform ETSI of essential IPRs but 'in particular during the development of a standard or technical specification'. Article 4.1 ETSI IPR Policy.

specifications 'where it participates'[310], therefore, strictly speaking, the obligation to disclose does not extend to patents which are essential to other standards/technical specifications.

IEEE, on the other hand, establishes a more specific threshold of diligence for submitters: they must conduct a 'reasonable and good faith inquiry'[311]. In case that the submitter has not participated in the development, it must make an analogous effort to contact individuals who 'are most likely to have knowledge about the technology covered by the (proposed) IEEE standard'. In any case, the IEEE policy also explicitly excludes the obligation of conducting a patent search.[312]

Similarly, VSO requires a 'good faith and reasonable inquiry'[313] into the patents (or applications) controlled, owned or licensed by the WG member. Instead to extending the obligation to affiliates[314], VSO require WG members to extend the inquiry to affiliates' patents portfolio.[315] Excluding, as well, the duty of perform a patent search.

Hence, the baseline is that companies are not obliged to analyse their patent portfolio looking for potentially essential patents[316] and that the level of diligence is defined with reference to legal standards such as 'reasonability' or 'good faith'.[317]

### 3.2.3 Type of disclosure

The type of disclosure directly relates to the degree of diligence required from patent holders, since the latter determines how much efforts the patent holder should make to retrieve potential SEPs from its portfolio, whereas the former establish how and how much information is to be provided to the SDO and, consequently, to the rest of involved parties.

Disclosure may vary in scope and format. Namely, it is possible to differentiate between wider or narrower types of disclosure. The widest model – in terms of access to the technologies – is a blanket declaration, which consists in a statement that the patent holder commits to license all its patents that become standard essential on pre-established licensing

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[310] Ibid.

[311] Article 6.2 IEEE-SA, 'Standards Board Bylaws' ((2019) <standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf> accessed 1 November 2022.

[312] That comprises using reasonable efforts to identify and contact current and former employees that have somehow[312] been involved in the development of the proposed IEEE standard. Ibid.

[313] Article 10.2.1 VITA, 'Policies and Procedures' (*VSO*, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022.

[314] Secc 10, fn 3 ibid. `For purposes of Section 10, an "Affiliate" is any entity that directly or indirectly controls, is controlled by, or is under common control with, another entity, so long as such control exists. For purposes of this definition, with respect to a business entity, control means direct or indirect beneficial ownership of or the right to exercise (i) greater than fifty percent (50%) of the voting stock or equity in an entity; or (ii) greater than fifty percent (50%) of the ownership interest representing the right to make the decisions for the subject entity in the event that there is no voting stock or equity´.

[315] Article 10.2.1 ibid.

[316] Whether they do it in practice or not is a different question, because it might be interesting for some of them to show the strength of their portfolio.

[317] The challenges derived from the interpretation of such concepts under the light of different legal traditions will not be addressed here.

terms. By making a blanket declaration, the SEP holder does not actually 'disclose' any of its essential patents but declares its commitment to license any of them in the terms defined by the IPR Policy.

Negative disclosure can be understood as a 'limited' blanket declaration. In this case, a patent holder also commits to license all its patents on pre-defined licensing terms, subject to their essentiality, except those that the patent holder explicitly exclude.

Finally, positive disclosure, usually referred to as specific disclosure, consists in a list of the patents that the patent holder intends to license on pre-set licensing terms, if they finally read on the standard.

The three examined SDOs differ in the type(s) of disclosure allowed or required. ETSI, on one hand, provides for specific disclosure[318], but also allows blanket disclosures.[319]

IEEE explicitly allows 'blanket letters of assurance'[320] and implicitly negative and specific disclosures. Article 6.1 of IEEE bylaws permits letters of assurance that explicitly indicate that the licensing commitment does not extend to certain patents or, moreover, that the SEP holder rejects upfront any licensing commitment – in the terms defined by the IPR Policy – for all its potentially essential patents. This phenomenon – commonly known as Negative LoA –has experienced a rise after the IEEE policy modification[321].

Article 10.2.2 of VITA Policies and Procedures establishes which data is required for disclosing a patent, including the patent – or application number –, the country, and, when 'reasonable practicable, the relevant portions of the WG's Draft VSO Specification (that might read on the patent)'. Similarly, WG participants must notify the existence of unpublished patents – indicating the relevant part of the standard specification concerned. Hence, VSO has a strict approach to specific disclosure – implicitly discarding blanket declarations and negative disclosures – not only referred to the identification of the specific patent, but also to the link of such patent to a given specification.

The usefulness and suitability of each type of disclosure differs. At a low cost, blanket declarations provide prospective licensees with clearance with regard to licensing terms of all essential patents from a given SEP

[318] Arts 4 and 15 ETSI IPR Policy.

[319] Although most scholars interpret the ETSI IPR Policy as requiring specific disclosure, the current wording of the form included in the Annex 6 to Rules of Procedure should be interpreted in the sense of allowing blanket disclosures referred to as 'general declarations'. However, in practice, specific disclosure is the rule in ETSI. See Timothy Simcoe and Cesare Righi, 'Standards, Patents and Innovation' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publishing 2017) 258; C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' Working paper (2015) 5.

[320] Defined in Art 6.1 IEEE-SA Standards Board Bylaws.

[321] Mallinson estimates that a 73% of LoAs submitted for the 802.11 WiFi standard between the entry into force of the new IEEE policy and June 2017 were negative LoAs. Keith Mallinson, *Development of innovative new standards jeopardised by IEEE patent policy* (2017) 1.

holder.[322] Therefore, blanket declarations prevent under-disclosure cases to the extent that all SEP holders use such disclosures.[323] In this sense, Bekkers et al[324] agree that blanket disclosures will be efficient if the IPR policy goal is to 'reassure prospective licensees that a licence will be available'.

Obviously, negative disclosure impacts positively the level of information provided to the rest of the market: first, it provides information to standard developers about which technologies should be avoided or circumvented when developing the standard. And second, it provides more information to prospective licensees about which patents are not or will not be essential, signalling the patents that will be licensed on potentially less favourable conditions.

All these benefits are provided at a higher cost than blanket declaration to the extent that SEP holders need to identify and communicate all the patents that they want to exclude from the scope of their declarations. However, one may intuitively think that in most cases, explicitly excluded patents would be a fistful of key strategic patents of which the patent holder would be largely aware without the need of a thorough analysis of its portfolio.[325]

Specific disclosures refer to patent-by-patent disclosure of all the patents whose holder is willing to license on FRAND terms if they are essential for the standard. As regards this type of disclosures, it is also important how specific the disclosure shall be. Notably, it has been proposed to require SEP holders to identify the specific parts of the standard specification 'to which their patent might be essential'.[326] Stitzing et al found that declaration of patents against a particular specification is the 'strongest predictor'[327] of the essentiality of the disclosed patent. Therefore, at least in theory, such degree of specificity is desirable.

However, the above-referred high flexibility as regards timing in ETSI results in late disclosure coupled with a higher degree of specificity, which provides information to prospective licensees but not for the technical

[322] Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 253.

[323] On the other hand, it is as ineffective as any other type of disclosure in those cases where the SEP holder abstains from making any disclosure.

[324] Rudi Bekkers *et al*, 'Disclosure Rules and Declared Essential Patents' (2017) NBER Working Paper No 23627, 6.

[325] Similarly, Régibeau *et al* refer to those patents as 'jewels of the crowd'. Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 47.

[326] As VITA does pursuant to Art 10.2.2 VITA Policies and Procedures. See also Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 249.

[327] Meaning that patents disclosed as essential for a given specification are on average more likely to be truly essential than those patents that are declared to be essential for the standard as a whole. Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017) 25.

committees inasmuch most patents are declared after the standard has been approved.[328]

Règibeau et al[329] summarize the positions from different stakeholders concerning the degree of specificity of disclosures. On the one hand, implementers are in favour of specific disclosures, as far as they contribute to prevent hold-up, clarify FRAND scope and contribute to avoid non-FRAND technologies. The authors argue that licensors incur costs for identifying relevant IPRs for licensing purposes. Hence, the proper identification of essential patents does not represent an additional cost and even in the case they do, such costs would be relatively reduced compared to those incurred for acquiring patent protection.

On the other hand, SEP holders argue that there is no evidence of hold-up[330] that can justify the recourse to specific disclosures, and, moreover, that such specific disclosure will be of little or no help for the standard development, since technical committee discussions are limited to pure technical aspects. This reasoning is coherent with the prior findings concerning late disclosure in ETSI and its irrelevance for the development of the standard.

In any case, both implementers and innovators agree on the reduced usefulness of specific disclosures in technologies that require a high number of patents, since it increases costs and provides standard developers with an excessive volume of information.[331]

### 3.2.4 Timing: early v late disclosure

As argued above assessing the essentiality of a patent is trying to hit two moving targets – the scope of the specification and the scope of the claim – when both overlap. This paves the way for one of main conflicting points related to SEP disclosure: the trade-off between timeliness and accurateness: early disclosures tend to be not very accurate and conversely late disclosures – more accurate – might not be useful for SDOs that need to know in advance whether a technology will be available on FRAND terms.

The ETSI IPR Policy requires disclosure to be done in a 'timely fashion'[332], with no indication as to what this might mean. As previously mentioned, the obligation is, somehow, more intense during the

[328] Or at least this was the trend for the 3G and 4G mobile telecommunications standard. See Section 3.2.4 below.

[329] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 46.

[330] See section 3.2.2.2 in Chapter 5. Against Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1160ff.

[331] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 49.

[332] Art 4.1 `ETSI IPR Policy´.

development of the standard.[333] On the other hand, the ETSI Guidelines specifically makes reference to 'intentional delays'[334] in declarations, which are considered a breach of the IPR policy and therefore provide the SDO itself, but also other participants, with means other than competition law to fight against ambushing companies.

IEEE requires that patent holders provide their LoAs 'as soon as reasonably feasible'[335] specifying nonetheless that they 'should be provided' prior to the approval of the standard. Such approach, prima facie, aims at providing information to the participants to the standard development.

VITA (VSO) is stricter with disclosing terms: according to Article 10.2.3 VSO Policies and Procedures WG members must disclose all the patents that contain claims that may become standard essential prior to the adoption of the VSO Draft specification within sixty days after the formation of the working group, which contributes to better information during the standard development. Prior to the adoption of the specification, WG members must disclose all undisclosed patents within fifteen days from the date of publication of a draft VSO specification. Finally, at the beginning of WG meetings, the WG chairperson will require the WG participants to disclose undisclosed patents, and if it is the case, the WG member will have to submit a formal declaration with information regarding the patent(s) concerned within thirty days counted from the date of the meeting. In case of failure to meet such obligation, the VITA Policies and Procedures provide for a specific sanction. Pursuant to its Article 10.4[336], if a WG member fails to disclose a patent that is standard essential, the WG member must license it – to the extent defined by its essentiality – on royalty-free terms.

Although none of the SDO´s IPR Policies requires SEP holders to update their disclosures and that SEP holders very rarely proceed to update them[337], it remains unclear whether early disclosure should be preferred to late disclosure or vice versa. As analysed above, only VITA provides for early disclosure under a predefined timeframe, whereas the IEEE and ETSI frameworks leave flexibility for SEP holders to opt for early disclosure.

Overall, very early disclosure might not be truly relevant for the development of the standard, and, needless to say, it is not needed for

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[333] '(I)n particular during the development of a STANDARD or TECHNICAL SPECIFICATION'. Art 4.1 ETSI IPR Policy.

[334] 'Guide on Intellectual Property Rights (IPRs)' (of 19 September 2013) 57 <https://www.etsi.org/images/files/IPR/etsi-guide-on-ipr.pdf> accessed 1 November 2022.

[335] Art 6.2 IEEE-SA Standards Board Bylaws.

[336] Art 10.4 VITA Policies and Procedures: 'If a WG Member fails to adequately and timely disclose, on behalf of the VITA Member Company he or she represents, a patent claim or license terms for it as set forth in this Section 10, including at any of the times specified in Section 10.2.3, the VITA Member Company must license it to the extent it is essential to a Draft VSO Specification on a royalty free basis and in accordance with the license restrictions set forth in Section 10.3 for purposes of an implementation compliant with the Draft VSO Specification'.

[337] Interestingly, the Commission supports updates of disclosures but only referred to their status, ownership and transfer as reflected in IP Offices databases. European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

prospective licensees. Yet might serve to ensure the access to the prospective essential patents.[338] Thus, while earlier disclosures contribute to prevent under-disclosure, they are more prone to over-disclosure. Late disclosure, on the other hand, might be more relevant for prospective licensees but at the same time can increase the level of under-disclosure, paving the way for patent ambushes.

Yet the ETSI case points to more complex dynamics. While ETSI encourages its members to disclose their patents at the development phase, scholars have found out that essential patents are usually declared to ETSI after the standard has been developed. For instance, Biddle[339] found that all 81 patents declared to ETSI for 3GPP's 8th release and 93 out of 96 for the 11th release were declared after the 'freeze date' of the release. Similarly, Pohlmann's and Blind's[340] analysis of timing on declaration and patent granting show that declaration in ETSI take place mainly at the standard release or even later.

The reasons for this are not absolutely clear. While Biddle[341] considers that such trend may be fostered by ETSI's specific disclosure requirement[342], Pohlmann and Blind understand that it is explained by constant changes that lead a discontinuous technological change in the telecommunications sector – where old technologies are still relevant for the implementation of the new ones[343]. These facts might also be explained, at least partially, by opportunistic behaviours of the participants, such as just-in-time patenting.[344] Some participants in the standardization process profit from their knowledge of the standard development to apply for 'low technical merit'[345] patents, which they 'push' into the standards. Such conclusion is coherent with earlier findings of Layne Farrar who explains that opportunistic filings happen, but together with '(at least in part) genuine innovations aimed at solving crucial, albeit relatively incremental, details of the soon-to-be-commercialized standard'.[346]

These figures apparently challenge the assumption that ETSI's disclosure policy contributes to promote the disclosure of information for the standard development – ie before the standard is released. Notwithstanding this, ETSI is not particularly known for issuing low

[338] Similarly Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 711.

[339] C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015) 5.

[340] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents*, Commissioned by the European Commission DG GROWTH (IPlytics 2016) 44 <www.iplytics.com/wp-content/uploads/2017/04/Pohlmann_IPlytics_2017_EU-report_landscaping-SEPs.pdf > accessed 1 November 2022.

[341] C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015) 5.

[342] In contrast to more general blanket or negative disclosures, see below.

[343] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 46.

[344] Byeongwoo Kang and Rudi Bekkers, 'Just-in-time patents and the development of standards' (2015) 44 Research Policy 1948, 1948.

[345] ibid 1958.

[346] Anne Layne-Farrar, 'Innovative or Indefensible?' (2011) 9 International Journal of IT Standards and Standardization Research 3.

quality standards or for 'invading' non-disclosed – non-FRAND – technologies when creating its standard specifications.[347]

It cannot be ignored that the latest figures on 5G- related disclosures point exactly in the other direction[348] – ie patent holders tend to disclose as early as possible. The causes for this change of trend in ETSI could be either a reaction against the outcome in the Core Wireless case in the US[349], where the District Court rendered unenforceable some non-disclosed patents from the plaintiff[350] or the use of disclosures for reputational purposes, ie to show who is leading 5G technology.

Such change of trend questions what is the actual value of specific early disclosures for participants in the market, either as developers or as implementers. Therefore, the question is whether the information related to patents is mostly ignored by technical committees[351], which at the end rely on a non-written rule consisting in that any patent which protects a technical contribution will be disclosed sooner or later and that, in any event, the patent will be licensed on FRAND terms.

On the one hand, companies whose business model does not rely on the extraction of royalties from their SEPs, those which strongly pursue getting their technologies included in the standard or those who consider that it is important to communicate their technological leadership, will prefer to disclose early for different reasons. Notably, the first ones aim to include their technologies in the standard without too much additional efforts from their side; the second ones want to inform the market as soon as possible of the availability of their technologies and the third type wants to show the strength of their portfolio.

On the other hand, companies that are actively involved in SEP licensing might be interested in delaying a little their disclosure in order to reflect the actual relevance of their portfolio to the standard. Similarly, some companies might prefer to wait and see how the standard is evolving to evaluate whether their technologies can be relevant for them or, moreover, whether they want their technology to be included within the standard.

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[347] Never in the history of ETSI a standard has been withdrawn because of reading on a patent whose owner was not willing to license it on FRAND terms.

[348] IPLytics, 'Who is leading the 5G patent race? July 2019 Update' (2019) <https://www.iam-media.com/who-leading-5g-patent-race-july-2019-update-part-one> accessed 1 November 2022.

[349] Later *Conversant Wireless Licensing SARL v Apple Inc*, Case No 15-cv-05008-NC (ND Cal 2019).

[350] See Subsection 3.1.1 in Chapter 4. Paradoxically there is still the impression that the US is a more favourable jurisdiction for under-disclosing companies, probably motivated by the different outcomes in the Rambus case in the US and the EU (as analysed in Chapter 4 below). Nevertheless, the unenforceability of a SEP is probably one of the most burdensome penalties that can be imposed on a SEP holder.

[351] Which is in line with those that claim that the discussions in Technical Committees are conducted by engineers with a limited or no awareness of the companies' patent portfolio, and that they refer to purely technical issues. See Kirti Gupta, 'How SSOs Work: Unpacking the Mobile Industry's 3GPP Standards' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 39; Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 48. Against Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 63ff.

This situation calls for a more careful reflection on the aims and the functions of disclosure rules, and in particular on whether they aim to ensure the availability of the technologies or they aim to provide a more or less accurate picture of the constellation of patents covering the standard.[352] This reflection might lead to changes in the IPR policies.[353]

From an individual behaviour perspective, however, and until the moment that SDO's IPR policies are modified, companies are able to interpret the SDO disclosure rules in conformity with their own interests and internal practices and to deal with the trade-off between timeliness and accuracy in the way they consider appropriate.[354] Opting for one or another approach to disclosure might also be conditioned by other companies' practices[355] or by external factors.[356] All these are legitimate reasons to opt for earlier or later disclosure– both strategies are, in principle, compliant with most SDOs disclosure rules.

### 3.2.5 The limitations of current SDO´s IPR Policies

Overall, to a lesser or greater degree, all the examined SDOs increase the level of information of standards developers and/or prospective licensees compared to the absence of disclosure rules – bridging partially the asymmetries of information and increasing transparency within the standardisation environment.

From all the three analysed SDOs, VITA (VSO) is the one that fulfils better both functions thanks to its demanding and exhaustive disclosure and declaration procedures. However, it does not mean that its IPR policy should be verbatim included within the rest of SDOs, since cost efficiency and technological dynamics must also be taken into account.[357]

VITA (VSO) is a relatively small SDO working on a very specific field where the access to information by members and by the SDO itself is easier. Therefore, it is more feasible for IPR owners to share a higher degree of information and for the SDO to 'monitor' the creation of the standard. Additionally, the relatively reduced number of working groups, patent holders and patents make such governance model manageable.

For other SDOs with a higher number and greater variety of participants, and where the number of disclosed patents may amount to three digits or even four digits[358], a very strict disclosure procedure would virtually

[352] See the discussion in Section 4 Chapter 4.
[353] These changes will be discussed in Chapter 6.
[354] It should be highlighted that none SDO IPR Policy establishes any obligation to update the disclosures made to SDOs.
[355] See below 'defensive over-disclosure' in Chapter 4.
[356] Such as judicial decisions.
[357] Similarly Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 712, fn 95.
[358] In 2019, 6he number of 5G disclosed patents was already above 10,000. IPLytics, 'Who is leading the 5G patent race? July 2019 Update' ((2019) <https://www.iam-media.com/who-leading-5g-patent-race-july-2019-update-part-one> accessed 1 November 2022.

paralyse the already long standard development process while unduly increasing costs for all participants.

In particular, the preceding analysis suggests that participants in the technical committees are not specifically relying on disclosures to develop the technology. Thus, this may argue for blanket declarations as the preferable means for early disclosures. Blanket declarations provide standard developers with freedom to operate, ensuring that any of the technologies owned by the declaring company that become standard essential will be licensed on FRAND terms.[359]

This analysis of how disclosure policies contribute to meet disclosure functions provides a good starting point to understand how disclosure policies work as well as some indications on how they might be improved to fulfil their functions in a more efficient way, as it will be analysed in Chapter 6.

From a unilateral behaviour perspective, the current rules of SDO´s IPR Policies do provide little guidance to companies as regards the actual scope of the duty to disclose to a given SDO, and moreover, do not specially deter over and under-disclosure behaviours.

# 4. Asymmetries of information in standardisation and SEP licensing

Asymmetries of information are tightly linked to disclosure rules and deviations. Disclosure rules' general purpose is trying to mitigate existing asymmetries of information and prevent the creation of additional ones. In other words, to promote the transfer of pieces of information known by the SEP holder to the SDOs and other stakeholders within the standardisation environment.

From this perspective, under-disclosure can be characterised as an asymmetry of information in favour of the SEP holder regarding the existence of a patent that is very likely to be essential for the soon-to-be approved standard. Over-disclosure equally constitutes an asymmetry of information in favour of the SEP holder with regard to the actual lack of essentiality of several disclosed patents.

In standardisation, the mere existence of asymmetries of information can stem from the very nature of the activities developed during the standardisation process or even from a superior business performance.[360] In addition, some of these asymmetries are likely to be temporary: as

[359] This is the reason why early blanket licensing is suggested – in combination with late specific disclosure – as one of the elements for an improved disclosure system. See subsection 3.1.1 in Chapter 6.
[360] The acquisition of knowledge is an important reason to participate in standardisation as discussed above in Chapter 2. See Knut Blind and Axel Mangelsdorf, 'Motives to standardize: Empirical evidence from Germany' (2016) 48-49 Technovation 13, 20; Talia Bar and Aija Leiponen, 'Committee Composition and Networking in Standard Setting: The Case of Wireless Telecommunications' (2014) 23 Journal of Economics & Management Strategy 1, 20.

explained in Section 2.1 above, all participants in standardisation are to a large extent subject to high uncertainties about the essentiality of a technology till the moment the standard is released and the patent has been granted.

Yet the existence or absence of asymmetries of information depends essentially on the level of information that both parties have: the more the respective levels of information differ, the larger the asymmetries of information.

Although in the course of the research for this study numerous interviews were conducted with participants in standardisation processes[361], it turned out as very difficult to identify the level of knowledge of each participant – either as a company or as an individual – at any step of the standardisation process, from the creation of the technology to its licensing and litigation.

Yet the level of information of the parties involved along the entire process and particularly at licensing level is very relevant. Therefore, the goal of this part is to contribute to the analysis of some of the dynamics that explain the information flows and flaws in standardisation, starting from five premises.

First, it is about technologies and not specific patents that technical committees (TC) discuss. Even in SDOs which allow or promote the discussion of licensing terms beyond the mere FRAND/royalty-free declaration the discussion does not deal with specific patents.[362]

Second, SEP holders who participate in technical committees are more likely to have a higher level of knowledge concerning the eventual essentiality of some of their patents for the specific TC working item than those that do not participate. However, their level of uncertainty as regards the actual essentiality is comparable to the rest of participants' uncertainty before the patent has been granted and the standard has been released.

Third, implementers have a better picture of the 'market essentiality' of a patent for a given product – ie whether a product reads 100% on the technical specification or whether there are part(s) of the specification which are not implemented in such product and therefore it is likely not to infringe the patents covering this excluded part(s). The more detailed the disclosure the easier it is for the implementer to assess the infringement of a specific patent. Nevertheless, their actual knowledge on whether a product reads on a specification requires the release of the standard specification.

Fourth, vertically integrated companies are more likely to have a more complete picture as regards both essentiality of a patent for a standard and market essentiality of such patent for a specific implementation

[361] SEP holders, implementers and vertically integrated companies operating in different ICT related business.

[362] Even more in the cases where the SEP holder is not part of the technical committee or the standard developing process at all. Peter Picht, 'Patents on Standards: Highwaymen in Ambush or Driving Force for Innovation and Competition?' (2012) 53 Seoul Law Journal 759, 762.

inasmuch they are participating in the relevant TC and produce specific products.[363]

And fifth, the older the standard and the longer the contractual relationship, the smaller the asymmetries of information. Overall, negotiations with willing licensees can provide a quite accurate picture to the SEP holders as regards usual implementations and, conversely, a long licensing negotiations' record provides implementers with information about portfolios´ technical relevance. In addition, both parties gain insights concerning licensing practices and terms that can be used as 'comparables'.

Although these premises might be contested, they are implicitly included within the Huawei v ZTE pre-injunction test[364] which aims at providing the other party with the information that may have been neglected, inter alia the existence of the SEP(s) and the eventual infringement[365] and the dimension of the past uses of the patent.[366] The bottom-line of the Huawei judgment is that the SEP holder knows better the infringed patent and its scope, and therefore it needs to inform the implementer to bridge such holder-implementer asymmetry of information. Conversely, the implementer needs to provide the SEP holder with the factual information that the latter might ignore – ie the past use (infringement) of the patent(s) at stake.

Under these premises – and leaving aside the external factors that might affect the essentiality of a patent or the existence of infringement[367] – it is relevant to put into perspective some of the dynamics that might impact the level of information of both SEP holders and implementers.

## 4.1 The SEP holders´ (not that) perfect picture

It is commonly assumed that SEP holders' information as regards the validity and essentiality of their portfolio should be high or at least higher than the implementers' one.[368] While this assumption may, in principle, be accurate, there might be small SEP holders with little knowledge of the overall standard composition and/or the relative importance of their portfolio for the standard. Conversely, big implementers may have deeper knowledge of the standard. More importantly, there are reasons to argue that the knowledge of SEP holders of their own portfolio and its

[363] For example, a vertically integrated handset manufacturer presumably will not have much information with regard to specific implementations of ICT infrastructure and vice versa.
[364] Case C-170/13 *Huawei v ZTE* EU:C:2015:477.
[365] In case of the SEP holder; ibid para 61.
[366] In case of the implementer; ibid para 67. Similarly see Section II.5 in the Munich Regional Court SEP guidelines. Landgericht München I, 'Hinweise zur Handhabung des kartellrechtlichen Zwangslizenzeinwandes nach Huawei v. ZTE innerhalb des Münchner Verfahrens in Patentstreitsachen' 2020 <https://www.justiz.bayern.de/media/images/behoerden-und-gerichte/landgerichte/muenchen1/hinweise_frand_und_m%C3%BCnchner_verfahren__stand_februar_2020_.pdf> accessed 15 November 2020.
[367] Which have been explained at Section 2 above and which are very likely to impact all participants in the sector to a very similar extent.
[368] 'Information about the essentiality of patents as well as the level and differentiation of royalty fees among buyers is often only available to the licensor, while implementers have fragmented information'. Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 8.

relevance might not be as perfect as assumed and, moreover, evolves over time.

Usually the information flows as regards to the validity, essentiality and relevance of SEPs for certain implementation(s)[369] is articulated through a series of phases: R&D activities, SDO activities, prosecution, disclosure, licensing and litigation. Each of these phases uses information as an input and is capable to generate more information which (1) should be integrated within the internal information stream, and (2) reach the relevant persons.

Nevertheless, even the most sophisticated knowledge management proceedings are not seamlessy. In addition, using high standards of diligence for portfolio analysis still does not suffice to assess essentiality with a 100% accuracy.

Contreras argues that it will be too naïve to suppose that engineers do not work hand in hand with financial and legal advisors.[370] Without disagreeing with such assertion, it appears however too simplistic to assume that such contact with lawyers and economists confers all the engineers a perfect picture of the relevance of a patent for licensing and litigation purposes. Anybody who had worked in a large institution or company understands how challenging it is to know in detail all the activities that even the closest collaborators are involved in.[371]

In addition, the task is even more challenging in interdisciplinary environments like standardisation, where the meaning and the relevance of certain aspects might differ if approached from different angles. Therefore, one of the plausible explanations why this internal information flows might fail is because, aside from the different phases, the process usually involves three different dimensions – technical, business and legal – whose principles, understandings and approaches are different. In addition, the phases are not taking place in a sequential way but rather simultaneously.

### 4.1.1 Technical dimension

The technical dimension influences the entire process: inventions are made prior, during and after the standardisation process. Usually SEP-

[369] Although, the relevance of a SEP for specific implementation is irrelevant for assessing its essentiality in the light of the standard specification – (technical) essentiality stricto sensu –, it is a core issue in bilateral licensing negotiations.

[370] Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 66.

[371] 'Imagine a scenario where an engineer participating in a SSO genuinely does not know of a SEP but an in-house patent litigator believes that a company patent reads on a standard (because the issue arose in connection with particular litigation) and the patent lawyer has no knowledge of the engineer's participation in the standardisation process. Does 'reasonable endeavours' (in the sense of the ETSI IPR Policy, used here as an example) require that the company ferret out this information and disclose it? The organisational resources needed to do so are non-trivial.' C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015) 7.

related inventing activities take place within R&D departments of companies by groups of inventors or by single inventors.

In general, inventors do not necessarily have deep knowledge of the standardization process and the technologies that are going to be implemented in the standard. Those engineers (inventors) who participate in technical committees may have more knowledge of the evolution of the specifications that are under discussion and about their patent exposure, however their knowledge about the overall picture of the standard tends to be quite limited.

The timing of R&D activities is a critical factor for the internal mapping of SEPs. Thus, the essentiality of patents filed before the standardisation process begins may easily remain unnoticed. Once a technical committee begins to work, engineers internally focus on selecting a fistful of technologies that they want to discuss within it[372] overlooking some 'old'[373] pre-existing technologies that could potentially be essential. On the contrary, technologies developed within and in parallel to the standardisation process[374] are generally more targeted to the standard and therefore the level of awareness as to their eventual standard essentiality is higher.

Once the technical work is accomplished, it is the turn of portfolio supervisors to put all this information together for a twofold purpose: first, to disclose the SEPs to the SDO – if specific disclosure is needed – and second to build the portfolio of patents that will be licensed to implementers.

Of course, this process of aggregating all the internal technical information might be affected by deficiencies and information losses. Internal decisions on whether to patent certain inventions might be distorted to misinformation from the side of the inventors. For instance, an invention that was intended to be patented is finally not patented or *vice versa*. And, although portfolio supervisors have access to large flows of internal information, it is very likely that some technologies can be overlooked[375] or, alternatively, overrated.[376]

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[372] Either because they are technically critical for some of the functionalities that will be discussed within the technical committees or because they are of a high strategic value for the company. For instance, the selection of a given technological alternative can be more favourable in business or technical terms compared to the selection of a competitors' alternative.

[373] For example, inventions that have been discarded in prior standards because there were some technical constraints which do not exist anymore or inventions in different fields – not historically linked to standardisation – that can be used for the new generation of standards.

[374] See Chapter 1. Standardisation efforts constitute a truly innovative process where participants usually go beyond the state of art. Unsurprisingly, some of these innovative efforts – either individual or collective – end up being protected by patents. See David Lopez-Berzosa and Annabelle Gawer, 'Innovation policy within private collectives: Evidence on 3GPP's regulation mechanisms to facilitate collective innovation' (2014) 34 Technovation 734, 736.

[375] Portfolio managers are likely to have a rather accurate picture of the standard(s) they are managing, but they might oversee other technologies that, being 'classified' as pertaining to another standard, are under the supervision of other portfolio manager. As discussed in a meeting with a licensing expert.

[376] There are many reasons why this may happen, starting from mere human mistakes. Other examples are excessively optimistic opinions from participants in technical committees as to the real chances of a patented technology to be included into a specification or the fact that, obviously, portfolio managers are

A real-life example of information losses is presented in the Core Wireless case. Nokia presented a proposal for a specific functionality for inclusion in the GPRS standard, which read on one of its patents.[377] However, Nokia's proposal was rejected in favour of a proposal by Ericsson. Thus, Nokia's portfolio supervisors erroneously assumed that the patent was non-essential without noticing – until four years later when Nokia subsequently disclosed the patent as essential – that Ericsson's proposal could potentially read on Nokia's patent.[378]

It is in larger organisations in particular that technological knowledge is often widely dispersed. Part of the engineers participate in R&D efforts, others attend standardisation meetings, others participate in the drafting of the patents, licensing negotiations or litigations. While some of them might participate in several of these functions, it is not very realistic to assume that most of them have a comprehensive understanding of all the implications of their work even from a pure technical perspective.

A key source of internal and external[379] information is the creation and analysis of the claim charts based on internal essentiality checks. A claim chart is a document that lists – in a double-column format – the patent claims in one column and the specifications for which this patent is deemed to be essential in the other.

The process of creating claim charts is always time consuming. The more detailed they are, the more burdensome it is to create them. Simple claim charts only include a numeric reference to the item within the standard specification which 'infringes' the claim.[380] Alternatively, the wording of the specification can be included, with or without disaggregating the specific parts of the specification and the claim that reads on them. Others use colour codes to identify the 'matches'. More developed claim charts include, in addition to this information, written explanations on why the SEP holder considers that the standard specification infringes the patent and, thereby, the reasons why the patent is deemed to be essential.

The creation of claim charts usually involves the inventor, the participant(s) in the technical committee that drafted the specification – if the company has been involved – and, normally, the patent attorney who is dealing with the patent prosecution. Others, such as portfolio supervisors or engineers, might also join.

Once the relevant wording of the claim and the specification have been identified, the participants meet to discuss whether there is an infringement. While this may be a relatively easy exercise if the wording

not knocking on the door of each single inventor to see whether they engage in inventions that may result in standard essential patents.

[377] A different issue is whether Nokia should have had disclosed the patent upfront at the time of presenting the proposal.

[378] *Core Wireless Licensing S.A.R.L v Apple Inc*, 899 F.3d 1358, (Fed Cir 2018) 3 and 8.

[379] Inasmuch as they are used in licensing negotiations.

[380] Such information can also be found, depending on individual licensing practices inasmuch as it is not mandatory, in ETSI's database.

is almost identical, in other cases it requires an in-depth analysis of the technology as described in the specification and the scope of the claim.

In doing so, the company obtains valuable information about the essentiality of a few selected patents that later on will also be provided to prospective licensees in the framework of licensing negotiations.

Although claim charts can be considered a solution to the problem of information asymmetries, they present certain limitations, particularly in the case of large patent portfolios. A first limitation is linked to the very dynamics of essentiality.[381] It is not worthwhile to prepare a claim chart of a patent in an early phase of prosecution, since its scope might still be amended. In addition, different traditions on claim construction or infringement can lead to different results regarding the actual 'infringement' of the specification.

Second, a proper essentiality assessment and the elaboration of a claim chart is costly. It takes between 50 to 100 working hours, if conducted internally, and the cost of an external one amounts to between €5,000 and €15,000 [382], which makes the creation of claim charts for all patents included in a portfolio financially non-viable.[383]

In sum, the first communication to the market that can be used as a proxy of the portfolio relevance – the disclosure to the SDO – presents shortcomings arising from the pure complexity of essentiality dynamics and from certain information weaknesses that are not necessarily caused with the intention to deceive prospective licensees.

### 4.1.2 Business dimension

Based on the information provided by the portfolio management staff together with their knowledge of the market the licensing team needs to decide on what and how to license. This also requires a decision on the royalty rate and whether the license will be granted directly by the patent holder or through an intermediary, such as a licensing pool or platform.[384]

Since it is not feasible to create claim charts for every single patent, particularly in case of larger portfolios, the licensing offer has to relate to the entire SEP portfolio whose value is assessed by reference to certain proxies.[385] Ultimately, the patent holder will use claim charts covering a series of patents that are selected on the basis of their technical

[381] See above Section 2.

[382] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 49 ff. Régibeau et al estimate costs of €1m000 for an internal analysis and €10.000 for an external one. Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 24.

[383] Although it might be feasible to reach a preliminary conclusion on the essentiality of a patent at a lower cost, the result will provide less accurate information to prospective licensees. Whether less quality and more quantity of claim charts is desirable is highly doubtful, since, as it will be examined below, claim charts are the main tool to assess the portfolio value.

[384] Licensing platforms are pool-like initiatives whose practices slightly differ from proper patent pools. Its dynamics and effects differ also from traditional patent pooling.

[385] Analysed in Section 4.2 of Chapter 5.

contribution to the standard[386] and their market relevance for the implementer.[387]

The result of the negotiations from a pure business perspective can also affect the portfolio structure since some of the 'winning horses' from a technical standpoint – the truly essential and valid patents – may be of no or only marginal value for most implementers (hence, lack market essentiality). For example, this would be the case for a SEP that is only needed for very specific functions (automated driving) but not for general purpose implementation of the standard (devices' connectivity).

#### 4.1.2.1 Information flows in patent pools

Licensing via pools is attractive where transaction costs for the SEP holders are high (eg in case of a large number of prospective licensees) or the stake of the SEP holder in the overall standard is limited. The latter would be the case where, for instance, the standard is not critical for the core business of the SEP holder, the SEP holder only holds a small number of patents for which the transaction costs would 'eat up' the royalties or the costs of creating a licensing program are higher than the costs of licensing the technologies via the pool.[388] Whichever the reasons are, only the 9% of disclosed SEPs are licensed by means of pools.[389]

For implementers, patent pools are useful for receiving more reliable information concerning royalties, improving the predictability of costs, as well as essentiality.[390] Nevertheless, the licensees need to be able to trust the pool administration as regards the selection of the appropriate technologies and the charging of a fair price. The process for selecting the relevant patents and the setting of the price is very different in the scenario of bilateral licensing, since technological relevance and price need to be discussed and negotiated on an individual basis.

On the other hand, pool licensing is not that useful for rapidly evolving standards where the composition of SEP varies, for very big standards and for standards that are at the core of the SEP holder business, usually

[386] This should be the criterion for selecting which patents should be analysed in claim charts. However, there are also other criteria. The patent holder can choose a random selection of patents or the strongest patents of the portfolio.

[387] For example, the challenge of the essentiality or the validity of a patent should be discussed with the inventors and the patent attorneys in charge of prosecution and then communicated to the portfolio manager while the high relevance in market terms of a given SEP might also alter the pricing strategy of the licensing manager.

[388] This might be especially true in cases of newcomers and SMEs.

[389] As found by Pohlmann and Blind, the authors speculate on whether the causes of such low interest in pool licensing is related to the risk of losing power for cross-licensing negotiation and to the fact that pools need to integrate different business interests. Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 36.

[390] The EU Guidelines on Technology Transfer require an essentiality assessment of the technologies licensed via a patent pool. European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3, para 263.

because prices in patent pools are fixed at a discount and a percentage of the income will remain with the administrator of the patent pool.[391]

Patent pooling creates an additional stream of information feedback, going from the SEP holders to the pool and back again to the SEP holder. The information received notably relates to the essentiality of the patents and a subjective evaluation of the relative stake of the technology portfolio – ie the percentage of the total royalty that the SEP holder will receive. It should be recalled that the technological merits are not necessarily directly related to their market importance; quite sophisticated patent-protected technologies can have a relative low value, while simple solutions can be highly valuated.

Such feedback, either from a technical or a business perspective, is reintroduced into the pre-existing internal knowledge flow and can result in further actions at different levels, such as the review of the scope of the patent application, the creation or modification of claim charts or the restructuring of the portfolio both at technical and licensing levels to incorporate highly valuable patents that might have been ignored or under-valuated – also to remove irrelevant or overrated patents.

#### 4.1.2.2 Bilateral licensing negotiations and information management

Bilateral licensing negotiations are also a source of information for SEP holders. The prototypical licensing negotiations start with technical discussions as regards the essentiality of a group of selected patents on the basis of claim charts.[392] During this phase, the SEP holder's engineers and patent attorneys discuss the technological relevance of the portfolio with its counterparts, trying to arrive to an estimation of the technological – and market – relevance of the technology.

In these meetings, the essentiality and validity of certain patents are usually challenged and discussed. Overall, claim chart discussions serve the SEP holder to refine the information with regard its own patents and, eventually, to obtain some clues related to the final implementation of its technologies in products.

Once the parties agree to a certain extent on the merits of the technology – ie the 'product' –, the moment arrives to discuss the 'price'. The licensing teams then negotiate the royalties, the method of payment[393] and the terms of the contract. Moreover, some additional 'products' might be

[391] Despite the possibility of independent licensing of pooled patents, the pool operates as a *de facto* royalty cap as argued by Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 36.

[392] In the case where both the licensor and the licensee are willing to give and obtain a licence. The Huawei v ZTE case mirror a – simplified – overview of the steps to be taken during the licensing of FRAND-encumbered patents. See also Peter G Picht, 'The ECJ Rules on Standard-Essential Patents: Thoughts and Issues Post-Huawei' (2016) 37 European Competition Law Review 365; Kristian Henningsson, 'Injunctions for Standard Essential Patents Under FRAND Commitment: A Balanced, Royalty-Oriented Approach' (2016) 47 International Review of Intellectual Property and Competition Law 438.

[393] In form of a lump sum, a percentage per unit sold, a fixed amount etc.

included such as licences for some non-essential patents[394] or a R&D cooperation agreement.

Licensing negotiations provide both parties with additional information. Upfront, a concluded licence is a useful benchmark – or 'comparable' – for future negotiations. The SEP holder gains a deeper knowledge of its own portfolio, notably about its strength and its market relevance. The licensee, in exchange, gets a more comprehensive knowledge of the technology and exposure, which can be used in subsequent negotiations. All this knowledge is reintroduced into the internal information flows.

### 4.1.3 Legal dimension

Finally, the legal team is also involved in the processing and management of the internal knowledge stream. The legal team participates along the disclosure and – specially – licensing processes. At the end, they are in charge of reflecting the result of the licensing negotiations in an effective and enforceable contract.

The scope of SEP licensing agreements has evolved. Contrary to the views of commentators in the past[395], nowadays SEP licensing agreements do not necessarily include endless lists of the licensed rights.[396] In this regard, current SEP licensing contracts are a hybrid between a non-assertion (freedom-to-operate) agreement and a traditional licensing contract whose more accurate definition might be a licence over a dynamic package of technologies.[397]

This approach allows both parties to have a flexible framework to exploit their technologies and produce standard-compliant products, respectively, without the need to amend the contract each time a patent becomes essential or non-essential.[398] In sum, the licensing agreement does not only include the technologies that are essential at the day of the signature but also the ones that will become essential during its lifetime.

Therefore, the price of the licence also reflects the expectations of both the licensee and the licensor concerning the evolution of the value of the portfolio for some specific implementation. Consequently, if a licence agreement covers a series of patents that will expire during its lifetime the

[394] Usually, patents that are not mandatory for the implementation of the standard but useful. The inclusion of non-FRAND-encumbered patents by licensors in the licensing negotiations has however been considered a means to circumvent FRAND commitments. Erik Hovenkamp, 'Tying, Exclusivity, and Standard-Essential Patents' (2017) 19 The Columbia Science & Technology Law Review 79, 80.

[395] Eliana Garcés Tolón, 'Licensing Of Standard Essential Patents: Antitrust Intervention is not Big Enough A Fix' (2013) 9 Competition Policy International 90 94.

[396] As explained by a licensing expert, the scope of the contract is not defined with a reference to a list of specific patents but to the scope defined by the use – or the type of product – that the implementer wants to produce. Similarly Picht and Loderer argue that 'SEP owners will usually not license their portfolios on a patent-specific basis, by enumerating all covered patents, but rather by way of a comprehensive licence to all patents that are or might become essential.' Peter G Picht and Gaspare T Loderer, 'Arbitration in SEP/FRAND Disputes: Overview and Core Issues' (2019) 36 Journal of International Arbitration 575, 584.

[397] Leistner also echoes the dynamic character of SEP licensing contracts. Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 15.

[398] The fact that traditionally SEP licensing contracts did not include adjustment clauses points in that direction. Nevertheless, it seems that such types of clauses start to attract the attention of practitioners. See Peter G Picht, 'Post-Signing Adjustment of SEP/FRAND Licenses' (2018) 53(2) les Nouvelles – Journal of the Licensing Executives Society 99.

price will be reduced, whereas a subsequent standard release, enlarging the size of the portfolio, may justify an increase of the price.

The legal team in charge of negotiating and concluding licensing agreements is very likely to obtain first-hand information on the value of the portfolio for a given implementation, including price calculation – either as a fixed amount or a percentage – as well as a taste of licensing practices in the sector.[399]

The team dealing with litigation also processes substantial pieces of information. They draft the cease-and-desists letters, which usually include references and explanations about the patents that are deemed to be infringed.[400] Additionally, they have to choose which patents will be asserted before courts, and therefore they need to conduct deeper analysis of the validity and essentiality of a few selected patents and, moreover, analyse whether the alleged infringer's products actually infringe such SEPs.

In addition, the legal team oversees the entire process, from disclosure to litigation in order to ensure that the whole process is done in compliance with the SDOs IPR policies and to prevent competition-related concerns.

It is undeniable that competition law shapes the SEP environment to a large extent, and that practices that might have commercial sense can be regarded as either abusive or collusive. As a matter of example, some of the behaviours that need to be closely monitored by the legal team are the disclosure itself, the scope of confidentiality[401], certain clauses in contracts such as non-challenging clauses[402] or the approach to be taken before and after sending a cease-and-desist letter.[403]

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[399] Although licensing agreements are typically confidential, it is very likely that parties will try to replicate some of the clauses and terms included in agreements with other parties if they support to their own interests or if they are mutually beneficial.

[400] Case C-170/13 *Huawei v ZTE* EU:C:2015:477, para 61.

[401] See Vikas Kathuria and Jessica C Lai, 'Validity of Non-Disclosure Agreements in SEP Licensing' (2018) 40 European Intellectual Property Review 358.

[402] Although the CJEU in Huawei establishes that challenging the validity or the essentiality of a SEP in the framework of licensing negotiations cannot be understood as a sign of unwillingness to conclude such agreement (Case C-170/13 *Huawei v ZTE* EU:C:2015:477, para 69), it remains unclear whether this holding shall also prohibits from including such clauses in licensing agreements and, moreover, whether the successful challenge might automatically lead to adjustments in the terms of the contract. However, it seems that German Courts are reluctant to accept no-challenge clauses within FRAND licensing offers for SEPs. See Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 15 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3278769> accessed 1 November 2022. See also Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 10-12.

[403] After the Huawei v ZTE case, taking the wrong steps during the pre-litigation phase can adversely affect the chances to successfully seek injunctive relief against implementers. For an explanation of the Huawei v ZTE see Chapter 2 above. Case C-170/13 *Huawei v ZTE* EU:C:2015:477, paras 60 to 69.

### 4.1.4 The challenging management of internal information

The abovementioned technical, economic and legal dimensions of disclosure of SEPs highlight first how complex and costly it is for SEP holders with a relatively high number of SEPs (or potential SEPs) to make an accurate and timely disclosure of them. And second, even the most sophisticated knowledge management protocols might fail to process and transmit all the information internally.[404]

The challenge for smaller SEP holders is rather different. In these cases, a relatively small number of employees[405] tend to be involved along the whole process, usually even participating in two or more of the phases. Such workflow, which in theory should result in an overall better transfer of information from the invention to licensing, has however its own shortcoming, since such SEP holders rely substantially more on individuals' knowledge rather than on proper in-house knowledge-flow management.[406] In the event that any of these individuals abandon the company, there is an actual risk that a substantial part of information gets lost. Such risk will even be higher if they partially externalise their portfolio management.

As a result, it can be argued that, in addition to the external factors[407], the level of information of a SEP holder is more imperfect than it would have been expected due to internal causes. Even a proper internal information management can still suffer from certain flaws resulting in an imperfect picture of the actual essentiality or, more broadly, actual strength of the patent portfolio.

## 4.2 Access to information from the implementers' perspective

Although the information flows for implementers are not relevant for the existence of over or under-disclosure, they contribute to explain the dynamics of asymmetries of information and allow to assess which are the – potential or actual – effects of over and under-disclosure in the downstream market.

The information available for implementers also evolves over time and substantially depends on the disclosure and licensing practices in the field and in particular on how these practices are regulated within the different SDOs' IPR Policies.

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[404] As summed up by Dolmans '(t)his may be a matter of pure oversight, the simple inability to be aware of all relevant information within a large, multinational organization, or a lack of full understanding of the intimate details of a particular standard, which may be very complex. There may be legitimate doubt about the scope of a patent claim or its essentiality for the standard.' Maurits Dolmans, 'Standards for Standards' (2003) 26 Fordham International Law Journal 185.

[405] Or even external consultants.

[406] As argued by a patent engineer in an interview.

[407] The external factors are explained above in Section 2 and basically refer to the impossibility of patent holders to have more or less perfect information with regard to the essentiality of a given patent until a very late stage.

Implementers require information with regard to the validity, essentiality and SEP relevance in order to assess their own patent exposure and to evaluate how much they should pay for this access.[408] Even before the standard has been released implementers willing to comply with it could and should expect a certain degree of patent exposure. Once the standard has been released and published implementers are able to analyse their products' exposure to the standard.[409] Yet in principle, they are not very likely to have any information concerning their actual exposure to patents.

In SDOs that only provide for blanket declarations, implementers are forced to assess such patent exposure in the framework of bilateral negotiations or to obtain such information from the platform(s) or pool(s) which license such technologies, if any of them exist. Prior to this moment, they can only rely on publicly available information to have an approximate picture, such as the number of contributions to the standard, the historical record of SEP holders or non-official rankings of companies participating in the standard. At the same time, a blanket declaration provides implementers with very valuable information: none of the standard contributors that has made a blanket declaration will ask for royalties on more burdensome terms than those established in the IPR Policy.

Although implementers might have an idea of the added value that the standard brings to their products, their limitations are arguably similar to those of the SEP holders. Sometimes it is not easy to quantify in economic terms the contribution of a single technology to the value of a product and isolate it from the other components of the product[410] nor to identify whom to contact for a licence.[411]

Specific disclosures can contribute to a better understanding of patent exposure and might also give some clues with regard to the relative contribution of each SEP holder. Nonetheless, early specific disclosures are very likely to provide only distorted information and can be of a little help for these purposes.[412] An implementer looking at a database of early disclosed patents[413] is likely to find information about many patent applications that prospectively read on a standard version (released or not), patents that do not currently read on any specific part of the standard but that are expected to do so, or, conversely, patents that read on a provisional version of a standard specification that, at the end, do

[408] In principle, in standards that do not require licensing terms other that royalty-free – or patent-free –, the patent exposure is prevented *ex ante* by the SDO. However, this does not shield implementers from patent ambushes from SDO members nor other patent holders.

[409] Which might vary depending on whether they are implementing some optional features and on whether they are implementing other features that have been considered to be mandatory although these features are, indeed, optional. It might be positive that implementers, which are in the best position to notice inconsistencies, report them to the SDO for their discussion and eventual correction in further versions of the standard.

[410] Ghafele R and J Schmitz, 'Economic Perspectives on FRAND' (2020) 11 Journal of European Competition Law & Practice 90, 92.

[411] In particular in absence of a proper database. It should be recalled that having a database of disclosed SEPs is not a widespread practice.

[412] And, moreover, increase the problem of over-disclosure.

[413] Leaving aside issues related to patent validity.

not read on the final standard specifications due to changes to their wording.

In sum, early disclosures provide to implementers with both relevant and irrelevant information inasmuch it depends on external factors, namely those affecting the scope of the patent and the standard specification.

To which extent this information improves the implementers' knowledge for licensing purposes – or other purposes – depends substantially on the type of implementers. Large implementers which have the background knowledge, the expertise, the time and the money to separate the wheat from the chaff might find the information contained in early specific disclosures comparatively more useful than a mere blanket disclosure. Smaller implementers, on the other hand are very likely to find the database too 'noisy' to find any useful information for (mostly) licensing purposes and therefore need to rely in other sources of information.

## 4.3 Dynamic asymmetries of information

Both implementers and SEP holders are subject to fluctuating information.[414] On the one hand, implementers are likely to have a deeper knowledge on whether their specific implementations are 100% standard-compliant or if there are parts of the standard that are not implemented. Moreover, they might also have more information as regards the actual or potential demand for the standard-compliant product. Although Boone et al use the term 'information rent' to refer to the later[415], the concept can be used to refer to any asymmetry of information related to the value of the technology or the product.

However, implementers are in a worse position to assess their patent exposure and the relative stake of each SEP holder within the standard – which is key for licensing negotiations. Neither blanket disclosures nor early specific disclosures contribute to solve this – although, as stated above, the later might be of some guidance for companies that have enough resources to process such information.

On the other hand, SEP holders[416] are more likely to have an overview of the relative importance of the contributions made to the standard and the prospective or actual essentiality of their patents for a given standard specification. Yet, they might have comparatively less knowledge concerning who is actually using their patents and the extent to which they are used for a specific implementation.

[414] And therefore to uncertainties. See Peter G Picht, 'Post-Signing Adjustment of SEP/FRAND Licenses' (2018) 53 les Nouvelles - Journal of the Licensing Executives Society 99, 105.
[415] Jan Boone, Florian Schuett and Emanuele Tarantino, 'Price Commitments in Standard Setting under Asymmetric Information' (2019) TILEC Discussion Paper No 2019-004, 2. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3356605> accessed 1 November 2022.
[416] Notably those participating in a substantial number of technical committees.

While it is commonly known that there is a large number of SEPs covering standards[417], it is sometimes ignored that the number and typologies of products implementing the standard might be even bigger.[418] Even small variations to the same product might alter the product´s SEP exposure.

As a corollary, SEP holders and implementers have – respectively – a better picture of two different pieces of information, which are better understood if put together: whereas implementers have a better knowledge of the essentiality of a specification for their products – ie market essentiality, SEP holders know better which of their patents read on a standard specification – ie standard essentiality.

These dynamics are nicely summarised by Stucke:

> Standard setting often involves information asymmetries that can foster deception. As information is more widely dispersed and as innovation and the quest for productive efficiency leads to further specialization of knowledge, no one completely grasps the details of how products are made and sold.[419]

Still, there is a moment in time were both parties can have a relatively high level of certainty with regard to their patent portfolio and their standard exposure: the release of the standard specifications.[420] In negotiations undertaken before that moment, the parties should acknowledge that there can still be modifications to the standard specifications' scope. Such modifications can affect both the technical essentiality of the patents and the standard exposure of specific implementations.[421]

Yet, even after this moment, substantial changes can take place. The cancelation or modification of a patent or modifications in some specific implementations can impact the patent–specification–product equation.

As a result, both SEP holders and implementers are subject to asymmetries of information that can condition the terms of a licensing agreement. The licensing agreement (particularly at early stages of the standard and/or product development) is, at the end of the day, a contract in which both parties are subject to uncertainties as regards its current

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[417] As early as 2001, Shapiro pointed at the large number of standard-related patents as a potential risk. Carl Shapiro, 'Navigating the patent thicket: Cross licenses, patent pools, and standard setting' in Adam B Jaffe, Josh Lerner and Scott Stern (eds), *Innovation policy and the economy*, vol 1 (MIT Press 2001). See also Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 19; Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 11ff.

[418] In particular, the IoT will result in an exponential increase of the types of products implementing connectivity standards.

[419] Maurice E Stucke, 'How Do (and Should) Competition Authorities Treat a Dominant Firm's Deception' (2010) 63 Southern Methodist University Law Review 1069, 1104.

[420] The level of uncertainty is likely to be higher in earlier versions of the standard than in later ones for both parties. Over the standard lifetime the knowledge of the technology itself and the products implementing it will increase.

[421] Either increasing or decreasing the number of standard essential patents of a SEP holder and raising or reducing the standard exposure for certain products.

and future scope – ie the object – and the appropriateness of the royalty – ie the price.

Both aspects can be modified by a number of circumstances along the lifetime of the contract:[422] patents cancelation, new essential patents, withdrawal of parts of the standard in later releases or new products which implement parts of the standard that were not implemented before. This does not necessarily argue in favour of including an endless list of adjustment clauses.[423]

Therefore, the dynamics of the standard proceedings and the standard compliant markets provoke asymmetries of information[424] that result in 'information rents', which are more favourable for implementers or SEP holders depending on their nature.

Another different question is whether it is legitimate that the parties' profit from them and, moreover, whether parties should not contribute to create or increase such asymmetries of information. Their consequences for competition cannot be ignored[425], since one of the conditions for a perfect competitive market is that participants have perfect information.[426]

Over and under-disclosure can be used by SEP holders to increase and/or benefit from such asymmetries of information, however, it does not mean that it is always the case neither that implementers cannot benefit from the asymmetries of information in certain circumstances.

# 5. Conclusion

This Chapter presents the scenario in which over and under-disclosure take place. Namely, it puts the focus on the different understandings, dynamics and scope of essentiality and disclosure rules and on how they impact SDOs and the practices of the market participants.

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[422] Which can amount up to 4-5 years.

[423] Adjustments clauses associated to minor modifications of circumstances are very likely to boost transaction costs for both parties and therefore they should be limited to the cases of substantial modification of circumstances. Otherwise, the parties should acknowledge that circumstances might affect the price and/or the object of the agreement to a certain extent and reflect it on the price as in any other risk-related agreement.

[424] Whether different measures such as essentiality checks, late disclosure or mandatory updates can reduce such asymmetries and their overall suitability are analysed in Chapter 6, Section 3.

[425] Conversely, Podszun does not consider that transparency is a factor of competition but a tool to facilitate licensing and reduce litigation (although he refers only to the declaration – disclosure – of SEPs). Rupprecht Podszun, 'Standard Essential Patents and Antitrust Law in the Age of Standardisation and the Internet of Things: Shifting Paradigms' (2019) 50 International Review of Intellectual Property and Competition Law 720, 736.

[426] '(T)he evolution of standards and markets has led to less transparency. It has worked against some market participants' ambition to gradually reduce problems of asymmetric information and the potential for market abusive practices, and can be regarded as an implicit competitive advantage (or subsidy) to incumbent businesses that understand the rules of the game.' Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 6.

Inasmuch as the standard essentiality of a patent depends on whether the standard specification reads on the patent claim, it is not possible to determine – with a reasonable degree of accuracy – whether a patent is essential or not until the scope of both has been 'stabilised'. This will only happen once the standard has been released and the patent has been granted.

Essentiality, if broadly understood, represents a two-faceted reality. From a market perspective, essentiality is not exhausted by the standard essentiality of the patent. If the specification covered by the patent is circumvented or plainly ignored by some implementations, the patent – despite being standard essential – will have no gatekeeping effect and it arguably will not have any effect on the SEP holder's market power.

A distinction should be made between technical essentiality and pure commercial essentiality. Technical essentiality should be understood in a broad sense, including economic considerations such as the cost of implementation or cost/efficiency aspects. This excludes royalty-related aspects, which should be better dealt with from a licensing perspective.

Pure commercial essentiality, on the other hand, is referred to those aspects that become 'essential' as a result of mere commercial preferences of consumers. Although it is feasible that a patent is commercially essential – and therefore can provoke a 'gatekeeping' effect – it is more appropriate to limit – as a general rule – commercial considerations in the framework of SDOs to technical essentiality in a broad sense.

There are multiple reasons to argue so: both standards and patents are of a technical nature, while commercial preferences stem from the market at a later stage. It would be contradictory to the nature of SDO standardisation to either anticipate consumers' preferences in a standard specification or to force the standard to later mirror such preferences and integrate them into a specification. Consumer preferences can evolve at a totally different pace than standard releases. Moreover, including purely commercially essential patents would likely increase the already massive figures of disclosed SEPs, aggravating the over-disclosure problem.

This does not rule out that in certain circumstances some SDOs decide to include commercially essential patents in the standard for the purpose to license them by means of patent pools. In particular, this makes sense when licensing terms are negotiated in parallel to the standard creation – and therefore commercial considerations are taken into account when developing the technology – or when the number of patents is relatively limited.

In addition, excluding pure commercially essential patents from SDOs' technical discussions does not argue against potential anti-competitive effects stemming from true gatekeeping patents at commercial level. This rather argues in favour of dealing with such effects in a different forum than SDOs, namely, within the realm of competition law. This law can address anti-competitive use of *de facto* standards on top of consensus-

based standards, as shown by the judgments of the Court of Justice of the European Union (CJEU) in IMS Health[427] and the General Court (GC) in Microsoft[428] case.[429]

Finally, although essential patents are by definition complementary patents, essentiality in the context of SDO-based standardisation should be assessed in the light of the actual blocking effect of the patent, rather than in the complementary or substitute nature of the patents.

There are two main reasons for this: first, SEPs are independently licensed and therefore there is a lower risk of paying for duplicated technologies, although asymmetries of information between licensor and licensee can increase such risk. And second, the specification drafting process in SDOs cannot be configured as if all parts of the specifications are drafted in a way that they read on a single patent, excluding any other patent in the world, regardless of whether it is known or unknown to the drafters of the specifications.

In addition, all substitute technologies that are alternatively needed to implement a standard specification still have certain blocking effect if considered as a whole – ie the implementers do not need all of them but at least they need one. Hence, it is advisable – as a general rule – to permit the disclosure of coessential substitute patents to prevent the blockage of the standard if none of the patent holders wants to grant a licence.

To a certain extent, SDOs policies are designed in a flexible way to help both SEP holders and implementers face the two core aspects of standardisation: the development of the standard and the subsequent licensing of essential technologies. It is not a surprise that the scope of the duties included within IPR policies vary from one SDO to another in order to be adaptative to the reality of different industries, business models and industry practices.

There are arguments in favour of considering that the very complexity of the technologies together with the inherent difficulties of managing huge amounts of information renders the information held by SEP holders as regards the standard essentiality of their own portfolio less perfect than it is usually assumed. Even the most exhaustive SDO rules cannot capture three core aspects – in particular with regard to over and under-disclosure – which are intrinsically embedded in XXI century standardisation: (1) standards and standard-compliant products are continuously evolving; (2) the asymmetries of information exist on both sides of the market; and (3) not all standard-compliant products implement the entire standard.

As to the first aspect, the replacement ratio of standards and standard-compliant products can nowadays be shorter than two years, while licensing agreements tend to last much longer. What parties discuss in the framework of licensing negotiations is not only the value of the

[427] Case C-418/01 *IMS Health* [2004] ECR I-5039.
[428] Case T-201/04 *Microsoft v Commission* ECR II-3601
[429] Which are analysed below in section 2.1 Chapter 4.

technology today but their mid-term expectations as regards the value of the portfolio.

These expectations depend, on the one hand, on the capability of the SEP holder to keep an analogous level of portfolio relevance within the standard, and on the ability of the implementer to keep offering standard compliant-products without suffering a dramatic increase or decrease of patent exposure, on the other hand.

Secondly, while SEP holders are likely to have better information as regards the essentiality of their patents for the standard, implementers are better placed to assess the level of standard exposure of their products.[430] Both pieces of information play a role in the framework of licensing negotiations.

Third, and closely connected to the former, the reality in the ICT sector is that the standards are not created to serve a single purpose or, to be more precise, to cover a single product (as it was still true, for example, in the case of the GSM standard). Nowadays, standards are multi-purpose technologies and therefore not all the standard-essential technologies need to be implemented for all types of uses and, consequently, products.

These facts show how complex the environment in in which over and under-disclosure take place. As a result, some key aspects related to the application of competition law – such as dominance – also become more complex. In addition, they point at the limitations of current SDOs IPR policies to face these issues and to the practical difficulties for imposing appropriate remedies for each case.

[430] Arguably that is the reason why certain German courts consider that the SEP holder fulfils the requirement of identifying the existence of an infringement by referring to the standard and providing claim charts without requiring further explanations concerning how the implementers' product might infringe it. Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 12.

# Chapter 4: Disclosure of SEPs at the intersection of European intellectual property and competition law

## 1. Introduction

IPRs – understood as exclusive rights, or to be more precise, exclusion rights – are an exception to the general principle of free competition. In the EU the free imitation of goods and services is the rule and only in a fistful of cases a company can prevent its competitors from imitating their goods and services: holding a valid and enforceable IPR is a paradigmatic example of these 'exceptional' cases.

Despite the *prima facie* anti-competitive effects that IPRs might cause, IPRs result in pro-competitive effects in the long run. This is the rationale for creating and, even more, encouraging IPRs from a policy perspective.

This fact, however, does not immunise IPRs from competition law intervention. The theory of complementarity is very much supportive of intervention in IPR related cases. In particular in cases where the procompetitive effects of the IP dynamics are hampered and the rest of available legal tools do not provide for necessary remedies.

The Commission has explicitly endorsed the theory of complementarity in para 7 of the TT Guidelines:

> 'The fact that intellectual property laws grant exclusive rights of exploitation does not imply that intellectual property rights are immune from competition law intervention. Article 101 of the Treaty is in particular applicable to agreements whereby the holder licenses another undertaking to exploit its intellectual property rights. Nor does it imply that there is an inherent conflict between intellectual property rights and the Union competition rules. Indeed, both bodies of law share the same basic objective of promoting consumer welfare and an efficient allocation of resources. Innovation constitutes an essential and dynamic component of an open and competitive market economy. Intellectual property rights promote dynamic competition by encouraging undertakings to invest in developing new or improved products and processes. So does competition by putting pressure on undertakings to innovate. Therefore, both intellectual property rights and competition are necessary to

promote innovation and ensure a competitive exploitation thereof.'

In essence, the rationale of the theory of complementarity is that both IP and competition law aim to increase welfare and efficiency, although in a different manner. Competition law is more concerned about protecting the competitive structure of the market, including the protection of dynamic competition – understood as an innovation-enhancing process – whereas IPRs are substantially instrumental to this aim.

The CJEU has dealt with the IPRs-competition law intervention in several occasions. The set of cases dealing with refusals to license IPRs (Section 2) are of particular interest for understanding the dynamics that may argue in favour of intervening in SEP-related cases and also to sketch some of the anti-competitive effects arising from such dynamics. In fact, the only case dealing with SEPs that has been decided by the CJEU so far – Huawei v ZTE – draws to a certain extent from the refusals-to-license case-law.

Scholars have been trying to characterise the IPR-competition intersection and, moreover, to systematise such intersection in order to achieve a better understanding about when and how competition should law intervene in the IPRs arena. Some of these theories have been superseded by CJEU's decisions, others have revealed to be mostly case-specific. The theory of complementarity (Section 3) presents many advantages since it contributes to a better understanding of the interaction between IPRs and competition law and can define when competition intervention might be justified.

The principles and dynamics identified by the case-law and the scholarly works – namely in relation to the theory of complementarity – allow for a better understanding of the rationale and reach of SEPs disclosure rules (Section 4) as a key element for safeguarding the pre-market competitive process which takes place within SDOs.

## 2. The intersection of IP Law and competition law in the EU courts practice

It is rarely disputed that intellectual property rights (IPRs) are not immune to competition law.[431] The "absolutism" theory, conceives IPRs as islands of (legal) monopoly immune from floods coming from the

[431] Particularly in the EU, the Guidelines on Technology Transfer state that '[t]he fact that intellectual property laws grant exclusive rights of exploitation does not imply that intellectual property rights are immune from competition law intervention'. See European Commission, 'Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements' [2004] OJ C101/2, para 7; European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3, para 7.

competition sea[432], similarly, the inherency doctrine[433] considers that the mere existence of IPRs is pro-competitive, and only its undue exercise beyond the limits of its scope – *ultra limes* – might provoke anti-competitive effects that merit competition law intervention.

Both theories present two major drawbacks: the first one is that they fail to adequately respond to scenarios where the harm does not come from the scope of the IPR itself but from the dynamics of the market where the IPR is used. The second one is that both theories assume that policymakers and judges are able to design and enforce IPRs in a way that the positive effect of IPRs on innovation and the reward to the IPR holder is balanced against its effects on competition in any event.

Judges in the US have been able to (tacitly) integrate underlying antitrust considerations in IP cases[434], leading to the creation of a reasonably coherent legal corpus. The EU experience has not been that positive so far. This could be explained by the relatively low awareness of competition-related aspects of IPRs among lawmakers, the lower level of discretion of civil law judges – if compared to the US common law tradition – and, of course, the interrelation among (mostly)[435] national IPRs and the European dimension of competition law.[436]

The IP-competition law intersection in the EU has been mainly developed by the case-law of the General Court (GC)[437] and the Court of Justice of the European Union (CJEU)[438], which have dealt with cases on refusals to license, territorial exclusivity, injunctions or pricing of IPRs and parallel trade, among others.

The case-law dealing with the IP-competition law intersection has evolved because of the growing integration of the EU internal market, the wide typologies of concerns and the new market and technological dynamics related to IPRs.[439]

Such evolution has also implied challenges for competition law, whose enforcers should avoid, in particular, the temptation of applying some of

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[432] Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D. Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 92.

[433] Hedvig Schmidt and Steven Anderman, *EU competition law and intellectual property rights, the regulation of innovation* (Oxford University Press 2011) 93ff.

[434] As it can be seen in cases which involved strategic use of a patent such as *eBay Inc v MercExchange, LLC*, 547 US 388 (2006) (on patent injunctions); *Kimble v Marvel Entertainment LLC*, 135 U.S. 2401 [2015] (2015) (on patent misuse); *Conversant Wireless Licensing SARL v Apple Inc*, Case No 15-cv-05008-NC (ND Cal 2019).

[435] Although there are EU trademarks and designs, they still coexist with national trademarks and designs while patents and copyrights remain national IPRs – with some specificities.

[436] As early as in 1966, the Consten and Grundig case showed that the enforcement or the exercise of an IPR, which does not pose particular problems at national level, can, at the same time, frustrate the objectives of European law. Joined Cases 56 and 58-64 *Consten and Grundig* [1966] ECR 429.

[437] Case T-201/04 *Microsoft v Commission* 2007] ECR II-3601, in particular.

[438]See Joined Cases 56 and 58-64 *Consten and Grundig* [1966] ECR 429; Case 24-67 *Parke, Davis and Co* [1968] ECR 55; Case 238/87 *Volvo* [1988] ECR 6211; Joined Cases C-241/91 P and C-242/91 P *RTE and ITP v Commission* ('Magill') [1995] ECR I-743; Case C-418/01 *IMS Health* ECR I-5039; Joined Cases C-501/06 P, C-513/06 P, C-515/06 P and C-519/06 P *GlaxoSmithKline v Commission* EU:C:2009:610; C-457/10 P *AstraZeneca v Commission* EU:C:2012:770; Case C-170/13 Huawei EU:C:2015:477.

[439] Cases such as Microsoft v Commission or Huawei v ZTE were barely conceivable thirty years ago.

the doctrines used for physical property to IPRs, such as the essential facilities doctrine.

This statement is a point of agreement for those who advocate for strong IPRs, almost immune to competition law, and those who prefer to subdue the exercise of IPR to competition law. Although they might differ on the ultimate grounds for this preference[440], both sides agree on that application of physical property approaches to IPRs might, at its best, have a positive effect at static level (ie price) yet harming competition in dynamic terms, ignoring the innovation incentive function that IPRs have.

## 2.1 Refusal to license IPRs

Among the different EU cases that dealt with the intersection of IPRs and competition law, the cases on refusals to license, in particular *IMS Health* and *Microsoft*, where the courts developed the exceptional circumstances test, are of particular interest for SEP cases since they present factual similarities with them. In addition, these cases are very useful to sketch the economic and competitive dynamics that justify the intervention of competition law in IPR cases based on the theory of complementarity.[441]

### 2.1.1 The genesis: overview of the cases

#### 2.1.1.1 Volvo v Veng

The first time the CJEU directly and explicitly dealt with a refusal to license was in the late 1980s, when the United Kingdom's High Court of Justice, Chancery Division raised the question on whether the refusal to license the registered design for a car panel owned by Volvo might amount to an abuse of dominant position pursuant to ex-Article 86 EEC Treaty (now Article 102 TFEU).[442] The Court answered that a refusal to license 'cannot in itself be regarded as an abuse of a dominant position'[443] unless it involves certain abusive conducts which affect the trade between members, 'such as the arbitrary refusal to supply spare parts to independent repairers, the fixing of prices for spare parts at an unfair level or a decision no longer to produce spare parts for a particular model

[440] O'Donoghue and Padilla, for example, argue that refusal-to-license cases cannot be dealt with on the same basis as refusal-to-deal cases because the legal monopoly is part of the IPR nature, it is temporary and it does not necessarily imply market power in an economic sense. In addition the obtention of IPRs is riskier and more expensive *ex ante*. For Drexl, refusal to license should be treated differently because, apart from anti-competitive concerns raised by a refusal to deal, refusal-to-license cases impact on dynamic competition, namely on follow on innovation. See Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 518 ff; Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 49.

[441] Analysed in Section 3 below.

[442] Case 238/87 *Volvo* [1988] ECR 6211

[443] ibid para 11.

even though many cars of that model are still in circulation, provided that such conduct is liable to affect trade between Member States'.[444]

### 2.1.1.2 ITP and RTE v Commission('Magill')

In the Magill case[445] the Court of Justice argued that the exercise of an exclusive right – copyright in this case – 'may, in exceptional circumstances, involve abusive conduct'[446] and identified, for the first time, a set of exceptional circumstances which might motivate the intervention of competition law in IPR-related cases.

Magill was a company that wanted to launch a weekly guide for TV programs in Ireland and the UK (Northern Ireland). For this purpose, Magill asked for a licence from RTE and ITP concerning the broadcasters' copyright in the TV program listings under then British and Irish law, which the right holders however refused.[447]

Notwithstanding that granting copyright protection to TV program listings was a matter for the national laws – at least at that time – competition law can impose a duty to license provided that the input at hand is indispensable.[448] The exceptional circumstances which might justify such intervention are, first, that the refusal prevents the appearance of a new product for which there is a potential demand[449]; second, the absence of a justification for the refusal[450]; and third, the exclusion of all competition on a secondary market.[451]

### 2.1.1.3 IMS Health v NDC

Almost ten years after Magill, the CJEU deepened its holding on the exceptional circumstances test in the IMS Health case.[452] IMS Health provided pharmaceutical companies with data services related to the distribution of pharma products. To collect and present the data, the company used a copyrighted 'bricks structure' which had become the standard in the sector, to a point where operators in the market were not willing to re-adapt themselves to other structures.

PII, a company created by a former IMS employee, which was subsequently acquired by NDC, tried unsuccessfully to offer prospective clients its data services based on a different brick structure. Due to their reticence, PII started to offer its services using a very similar structure to

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[444] ibid para *9*.
[445] Joined Cases C-241/91 P and C-242/91 P *RTE and ITP v Commission* [1995] ECR I-743..
[446] ibid para 50.
[447] Whether such content was actually protected by copyright remained doubtful.
[448] Joined Cases C-241/91 P and C-242/91 P *RTE and ITP v Commission* [1995] ECR I-743 para 53.
[449] ibid para 54.
[450] ibid para 55.
[451] '(T)he appellants, by their conduct, reserved to themselves the secondary market of weekly television guides by excluding all competition on that market (...) since they denied access to the basic information which is the raw material indispensable for the compilation of such a guide.' ibid para 56.
[452] Case C-418/01 *IMS Health* [2004] ECR I-5039.

IMS's bricks structure, triggering a copyright infringement lawsuit from IMS Health in Germany.

NDC decided to file a complaint before the Commission, which granted interim relief[453] consisting in ordering IMS to grant a licence for the brick structure on the ground of 'exceptional circumstances'. The Commission understood that the structure had become a *de facto* industry standard[454] for which there was no actual or potential substitute. In addition, the refusal was not objectively justified, and it was likely to eliminate all competition on the relevant market.[455] Interestingly, the Commission did not consider applying the 'new product rule' as a requirement to find an abuse[456], on substance following the General Court's Ladbroke judgment.[457]

Although the Commission decision was first suspended[458] and then withdrawn[459], the German court decided to suspend the main proceedings and to refer three questions to the CJEU concerning the interaction of Article 82 EC (now Article 102 TFEU) and copyright protection.[460]

The Court answered that both the participation of users in the development of the structure and switching costs to an alternative structure are relevant for assessing the indispensability of the protected structure.[461]

As for the abusiveness of the behaviour, the Court deepened its holding on the three conditions of the exceptional circumstances test and explicitly stated that 'it is sufficient' that they take place cumulatively[462], namely, first, the likelihood of excluding all competition on a secondary market[463], which should be assessed on the basis of the actual indispensability of the protected product[464]; second, the prevention of the emergence of a new product, which cannot be limited to a mere

[453] *NDC Health/IMS Health: Interim measures* (Case COMP D3/38044) Commission Decision of 3 January 2001 [2002] OJ L59/2.
[454] ibid para 180.
[455] ibid para 181.
[456] ibid para 180.
[457] In the Ladbroke case, the General Court considered that the refusal to license should either refer to an essential product or service to develop an economic activity OR prevent the introduction of a new product. See Case T-504/93 *Tiercé Ladbroke v Commission* [1997] ECR II-923, para 131.
[458] Case T-184/01 *IMS Health v Commission* [2005] ECR II-817 later affirmed in Case C-481/01 P (R) *NDC Health v Commission: Order of the President of the Court* [2002] ECR I-3401.
[459] *NDC Health/IMS Health: Interim measures* (Case COMP D3/38044) Commission Decision of 3 January 2001 [2003] OJ L268/3.
[460] In particular (1) whether a refusal to license a copyright-protected database is an abuse of dominant position, notably in a scenario where potential clients reject any service which does not use such database (2) if its relevant for the purposes of abusiveness if a dominant undertaking has involved clients in the development of such database (3) whether the amount of 'switching costs' required to purchase a competing product is relevant to evaluate the existence of an abuse of dominant position. Case C-418/01 *IMS Health* ECR I-5039, para 17.
[461] ibid para 30.
[462] '(I)t is sufficient that three cumulative conditions be satisfied, namely, that that refusal is preventing the emergence of a new product for which there is a potential consumer demand, that it is unjustified and such as to exclude any competition on a secondary market.' ibid para 38.
[463] According to the Court, following AG Tizzano, a potential or even hypothetical market suffices for the purposes of meeting this condition. ibid para 44.
[464] ibid para 45.

duplication of already existing goods or services[465]; and finally, the absence of objective justification for such refusal.

#### 2.1.1.4 Microsoft

In the Microsoft case[466], the Commission followed a relatively different approach to the exceptional circumstances test. This was ultimately endorsed by the General Court. The case started with a complaint by Sun Microsystems[467] – and a parallel investigation from the Commission[468] - related to a potential abuse of dominant position by Microsoft, which consisted in refusing to provide certain information needed by its competitors in the work group server operating systems market to ensure interoperability with Microsoft Windows PC operating system.[469]

At the time of the refusal to supply Microsoft hold more than a 50% market share in the work group server operating system (WGSOS) market [470] and over a 90% market share in the PC operating systems market[471], making the interoperability with Microsoft PC Windows almost mandatory.[472] In addition, until 1998 Microsoft had offered access to the information needed for interoperability.[473]

The Commission imposed a fine on Microsoft due to the following: (1) the refusal to supply took place as a part of a pattern of conduct consisting in not providing such information to any WGSOS vendor[474], contrary to prior Microsoft practices[475]; (2) the likelihood of eliminating competition in the WGSOS market due to the indispensable nature of the input[476]; and (3) the refusal limited technical development to the prejudice of consumers.[477] In addition, Microsoft failed to provide an objective justification for such refusal.[478]

Microsoft appealed to the General Court. The General Court substantially backed the findings of the Commission[479]: The Windows

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[465] ibid para 49.
[466] Case T-201/04 *Microsoft v Commission* [2007]ECR II-3601 the case is also referred to as Microsoft I.
[467] ibid paras 6 and 7.
[468] ibid para 10.
[469] The Commission also dealt with another allegedly abusive conduct, the bundling consisting in the inclusion of Windows Media Player in Windows OS, which will not be analysed here.
[470] 'All these data sets confirm that Microsoft holds by far the leading market share - in every measure, it has a share of at least 50%, and for most measures, its figures are in the 60-75% range.' Commission, *Microsoft* (Case COMP/C-3/37792) Commission Decision of 24 March 2004, C(2004)900 final, para 514.
[471] ibid para 431.
[472] 'In a longer-term perspective, if Microsoft's strategy is successful, new products other than Microsoft's work group server operating systems will be confined to niche existences or not be viable at all.' ibid para 700.
[473] Later Microsoft was still offering part of this information but limited the access to the source code. Ibid paras 211-215.
[474] ibid paras 560ff.
[475] ibid paras 587-588.
[476] And, moreover, the decline of market shares of its direct competitors. ibid paras 590ff.
[477] ibid paras 693ff.
[478] ibid paras 783 and 784..
[479] However, as Geradin indicates, the Commission devotes relatively few lines to the issue of the indispensability and its impact on competitors' ability to offer new products. Damien Geradin, 'Limiting

domain architecture was considered a *de facto* standard for work group computing and, moreover, Microsoft's dominance (quasi-monopoly) allowed it to almost unilaterally define the communication rules required for interoperability.[480]

On this basis, in Microsoft, the General Court took a slightly different approach than the CJEU in Magill and IMS Health, endorsing the non-exhaustiveness of the exceptional circumstances test's requirements and conceiving the absence of an objective justification as the 'closing clause'.[481]

### 2.1.2 The exceptional circumstances test: one test to rule them all? (and in the darkness bind the scholars)

The exceptional circumstances test is deemed to be more demanding if compared with comparable cases dealing with non-IP protected 'essential facilities'. In Bronner[482], the CJEU held that a refusal to provide access to a newspapers distribution system can only be considered abusive if (1) it is likely to eliminate all competition; (2) such refusal is incapable of being objectively justified; and (3) the service for which the access is sought is indispensable[483] for the requesting party´s business.[484]

On top of these requirements, the exceptional circumstances test requires that the refusal to license (or to give access) results in the prevention of a new product (or a limitation of technical development in Microsoft). That is the reason why the exceptional circumstances test has been considered to be a 'restricted' essential facilities test[485] or, in general, a more stringent test.[486]

#### 2.1.2.1 Indispensability

The indispensability of the input is one the keystones of the essential facilities doctrine regardless it is referred to physical assets or IPR protected ones. However, the assessment of the indispensability of an

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the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1537.

[480] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 392.

[481] 'Once it is established that such circumstances are present, the refusal by the holder of a dominant position to grant a licence may infringe Article 82 EC unless the refusal is objectively justified.' ibid 336.

[482] Case C-7/97 *Bronner* [1998] ECR I-7791.

[483] Indispensability defined as the absence of actual or potential substitutes.

[484] Case C-7/97 *Bronner* ECR I-7791, para 41.

[485] In words of Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 661.

[486] See, for example, Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519; Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 157.

IPR-protected subject matter follows different rules than in case of physical essential facilities.

Thus, the question is not anymore whether the investment to duplicate the facility is reasonable or whether a reasonable efficient competitor would be able to enter the market.[487] In the case of IPRs it is the scope of the IPR together with the lock-in effect what determines that there are only two options to enter the market: infringing the IPR or obtaining a licence.

The lock-in effect is caused by high switching costs, which operate as a barrier for changing to a new product or service to satisfy the same or a comparable need. Such high switching costs are usually determined by either a high prior investment or by network externalities.[488]

In Volvo and IMS Health the main source of the lock-in was the prior investment. The acquisition of a car is a relatively high investment for an average consumer. In case of an accident, the car owner needs original – or at least compatible – spare parts to repair it since its alternative – buying a new car – is very expensive.

In IMS Health, switching to a totally different brick structure would have required to train the working force on a new system, taking a series of organisational measures to adapt the procedures within the company and even losing already incurred expenses for the creation and the implementation of the incumbent´s brick structure.

In both cases, the consumers did not want another product that would have satisfied the same need – spare parts for a different model or a different brick structure – while the competitors of the IPR holder would not have had any economic constraint to replicate the product/service. It was the scope of the IPR that blocked such possibility.

Indispensability in Magill is less connected to switching costs than to an excessive scope of the copyright which precluded competitors not only from copying the guides, but from creating competing products based on the information available in such guides. The excessive scope of the IPR blocked competition by imitation and by substitution.

The analysis of indispensability is more complex in the Microsoft case. Yet the case is more relevant for SEPs cases, since one of the most relevant sources of the lock-in effect were the strong network effects present in the market for PC and WG operating systems.

In Microsoft[489] the GC relied on the results of a market enquiry conducted by the Commission in 2003: 85.2% of the interviewees

[487] Christian Ahlborn, David Evans and Jorge Padilla, 'The Logic and Limits of the "Exceptional Circumstances Test" in Magill and IMS Health' (2004) 28 Fordham International Law Journal 1123.
[488] Lock in and network effects are analysed above in Chapter 1, Section 3.
[489] Hovenkamp affirms that in Microsoft '(l)iability, as in Aspen, lay in a course of conduct, not in any finding that the Microsoft OS was an essential facility.' As it will be analysed subsequently, the GC did not rely in neither of these two aspects on construing the theory of harm. Herbert Hovenkamp, 'FRAND and Antitrust' (2020) 105(6) Cornell Law Review 1723.

considered that the better integration of the Active Directory[490] with the Windows workstation and its applications was relevant for their buying decision.[491] Such interoperability induced consumers to prefer Windows WGSOS, although competitors' products offered other features of great added value to consumers.[492] Thus, interoperability was an essential feature to compete in the WGSOS market.

Thereby, the GC approached the indispensability requirement from a commercial perspective.[493] The indispensability of the interoperability information did not stem from a purely technical limitation but from a commercial preference of the consumer. Given that Microsoft held more than a 90% market share in the PC operating system[494], a WGSOS which did not offer full interoperability with Windows was doomed to failure.[495]

The added value of interoperability is the possibility of jointly operating different systems. In absence of interoperability, consumers need to either duplicate their efforts to include the same inputs on each one of the systems or, at its best, to devote resources to achieve a certain degree of portability among systems, leading to efficiency losses and transaction costs. Therefore, a lower level of interoperability with Windows' OSs would result in additional expenses for the buyers of non-Microsoft WGSOS and ultimately eliminate most of the added value that interoperability offered to consumers.

In addition, consumers willing to switch from Microsoft's WGSOS to a, at best, partially interoperable system were not only facing the usual constraints that the migration to a new platform involves, but also, they would have eventually needed to change their PC OS, which was, at that moment, almost unthinkable. Therefore, the switching costs associated to such change of system were particularly high.

Moreover, and according to the Commission, there were no 'substitutes' to Microsoft disclosure to access to such 'indispensable' information.[496]

In conclusion, it was the high value that consumers placed on the interoperability of the servers´ OS with their PCs' OS, together with the need of the information for achieving such interoperability, which

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[490] The Active Directory was a functionality for work group server operating systems whose synchronisation with non-Windows systems was very limited, compared to the functionalities it offered to Windows-based systems. Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 420.

[491] ibid para 392.

[492] ibid para 422.

[493] This approach substantially coincides with one adopted by the CJEU in IMS Health. Case C-418/01 *IMS Health* [2004] ECR I-5039, paras 28 ff. For a discussion on the differences between commercial and technical essentiality see Chapter 2.

[494] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, paras 387 to 389.

[495] Microsoft´s competitors were perfectly able to design, individually or collectively, an interoperable environment that ensured the compatibility within it and with other PCOS – except Microsoft ones.

[496] The Commission analysed it when rejecting Microsoft pleas concerning the existence of substitutes to disclosure, namely, open industry standards, client-side software on the client PC; and reverse-engineering. European Commission, *Microsoft* (Case COMP/C-3/37792) Commission Decision of 24 March 2004, C(2004)900 final, paras 668-692 and 697. The General Court merely quotes the Commission which asserted that Windows' domain architecture was a *de facto* standard. Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 para 392.

Microsoft however refused to share, what rendered such information indispensable.

### 2.1.2.2 Competition foreclosure

As for the exclusion-of-competition requirement the CJEU in IMS Health read Magill as not requiring actual elimination of all competition[497] but the potential to eliminate it.[498] Although the wording in Magill does not explicitly state so, the "elimination of all competition" requirement is established with a reference to the Commercial Solvents case[499], in which the dominant company did not actually eliminate its competitors in the secondary market but risked to eliminate[500] them.[501]

In Microsoft the GC understood that there was an actual risk of elimination of competition[502], supporting the Commission's arguments in this regard: the importance that customers place on the 'record as proven technology', the existence of technicians skilled in the technology[503], as well as, such technicians buying preferences.[504]

Other than in IMS Health and Magill, where the IPR prevented competition to take place *ex ante*, in Microsoft there was competition in

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[497] In favour of requiring a complete foreclosure see Christian Ahlborn, David Evans and Jorge Padilla, 'The Logic and Limits of the "Exceptional Circumstances Test" in Magill and IMS Health' (2004) 28 Fordham International Law Journal 1123, 1124; Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 110.

[498] Case C-418/01 *IMS Health* ECR I-5039 paras 37 and 40. In contrast, Eilmansberger proposes an even looser threshold – that the competitors are placed 'at an appreciable competitive disadvantage'. Thomas Eilmansberger, 'The Essential Facilities Doctrine Under Art. 82: What is the State of Affairs after IMS Health and Microsoft?' (2005) 16 King's Law Journal 329, 340.

[499] Joined Cases C-241/91 P and C-242/91 P *RTE and ITP v Commission* [1995] ECR I-743 para 56.

[500] See Joined Cases 6 and 7-73 *Commercial Solvens* [1974] ECR 1974, 223, para 25; Claudia Tapia, *Industrial property rights, technical standards and licensing practices (FRAND) in the telecommunications industry* (Carl Heymanns 2010) 134.

[501] Before and after the Microsoft case the CJEU has not required that the exclusionary conduct has an actual effect but 'that there is an anti-competitive effect which may potentially exclude competitors' or that the conduct is 'capable (…) of making market entry very difficult or impossible for competitors'. See Case C-52/09 *TeliaSonera* [2011] ECR I-527 para 64; Case C-95/04 P *British Airways v Commission* [2007] ECR I-2331 para 68. On the contrary, Ibañez Colomo understands that the elimination of competition requirement threshold is higher in cases governed by the 'enhanced effects' test – in this case indispensability and new product requirements – where it is required to prove that 'the anticompetitive effects are certain or virtually certain to occur' if compared with those ruled under the 'standard effects' test where it is enough that 'such effects are more likely than not to occur'. Pablo Ibáñez Colomo, 'Legal Tests in EU Competition Law: Taxonomy and Operation' (2019) 10 Journal of European Competition Law & Practice 424, 429.

[502] The GC argued that, once the competition is eliminated, it will be difficult to reverse the situation. Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 562.

[503] This is a clear example of the feedback loop arising from network effects between the demand and the supply sides. According to the Commission, 'the easier it is to find technicians skilled in administering a given work group server operating system, the more customers are inclined to purchase that work group server operating system. In turn, however, the more popular a work group server operating system is among customers, the easier it is for technicians (and the more willing technicians are) to acquire skills related to that product.' European Commission, *Microsoft* (Case COMP/C-3/37792) Commission Decision of 24 March 2004, C(2004)900 final, para 520.

[504] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 para 619.

the market but Microsoft's behaviour had the potential to exclude all competition in the WGOS market.

Although Petit considers that the GC failed to justify the fulfilment of the 'exclusion of all competition' requirement[505] such reasoning collides with the very aim of Article 102 TFEU. The reasoning of the GC was crystal-clear in this regard:

> If the Commission were required to wait until competitors were eliminated from the market, or until their elimination was sufficiently imminent, before being able to take action under Article 82 EC, that would clearly run counter to the objective of that provision, which is to maintain undistorted competition in the common market and, in particular, to safeguard the competition that still exists on the relevant market.[506]

Nazzini has also expressed his views along these lines.[507]

> Any other solution would be absurd because it would provide perverse incentives to dominant undertakings to exclude their competitors. If the conduct is unsuccessful, there is no enforcement risk. If the conduct is successful, enforcement action may be incapable of restoring the status quo ante and, while heavy fines may be imposed, these will have to be balanced against the market power rents resulting from successful exclusion.

In conclusion, while advocates for a strict approach to the exclusion of competition requirement – ie requiring actual elimination of competition – might come up with some cases where waiting till such point to intervene might be advisable, this will never be the case in sectors characterised by strong network effects where lock-in effects prevent enforcers from remedying the anticompetitive effects of the behaviour *ex post*.

#### 2.1.2.3 From the new product rule to the limitation of technical development

##### a) Rationale, scope and criticisms

The new product rule implies that the refusal to license needs to prevent the appearance of a new product to justify the imposition of a duty to license. However, its very scope, and moreover, what must be understood as a 'new' product has remained controversial since the judgment in IMS Health.

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[505] See Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 110.

[506] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601

[507] Renato Nazzini, *The foundations of European Union competition law: The objective and principles of Article 102* (Oxford University Press 2011) 294.

The ground for the new product requirement as developed by the CJEU in Magill and IMS Health is to reach a due balance between the interest of the protection of IPRs and the economic freedom of its holder against the interest in free competition[508], which could be read in the sense that the duty to license contradicts the mechanism used for rewarding the IPR holder.[509]

Nonetheless, this reading may be criticised for relying on a normative balancing of interests, whose roots can be found on the inherency doctrine. In short, according to the inherency doctrine[510] the exercise of an IPR is immune from competition law inasmuch the exercise of the IPR takes place within the limits of the IPR scope.

In practice, the inherency doctrine implies to essentially cast a veil over the economics that justify the recognition and exercise of IPRs and take for granted that the legislature – and the judges – take adequately account of all the eventual scenarios where IPRs conflict with competition law when designing and enforcing IPRs, which is a quite optimistic view.

Quite on the contrary, analysing whether the pro-competitive arguments that justified the creation and granting of an IPR are still in force in a specific case does not amount to any 'second guessing'[511] the logic of the IPR concerned, but to ensure that the application of competition law to IPR cases is based on sound economics.

From an economics perspective the justification and role of the new product rule is intensively debated. Ahlborn, Evans and Padilla are very supportive of the test, since they consider that the 'new product' condition contributes to achieving the highest pro-competitive effects of compulsory licensing and, moreover, they support its extension also to cases of refusal to deal physical property.[512]

To arrive at this conclusion the authors used an error-cost approach and consequently evaluate the test more from a perspective of the remedy

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[508] Case C-418/01 *IMS Health* [2004] ECR I-5039, para 48.

[509] Pablo Ibáñez Colomo, *Restrictions on innovation in EU competition law* (2015) LSE Law, Society and Economy Working Papers 22/2015, 18 <http://eprints.lse.ac.uk/64888/> accessed 1 November 2022, against Josef Drexl, IMS Health and Trinko - Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2007) 35 International Review of Intellectual Property and Competition Law 788, 789ff and Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 159.

[510] The inherency doctrine has been way more successful in the US courts than in Europe where, although some of its reminiscences can be found in CJEU decisions, it is very difficult to argue that it has constituted its *ratio decidendi*. For a discussion on the impact of the inherency doctrine in EU see Hedvig Schmidt and Steven Anderman, *EU competition law and intellectual property rights, the regulation of innovation* (Oxford University Press 2011) 93ff and Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D. Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 94ff.

[511] Against Pablo Ibáñez Colomo, 'Restrictions on innovation in EU competition law' (2016) 41 European Law Review 201, 217.

[512] It should be noted that their paper was funded by Microsoft, which at the time was involved in a dispute with the Commission that lead to the judgment that will be analysed in the next subsection. Christian Ahlborn, David Evans and Jorge Padilla, 'The Logic and Limits of the "Exceptional Circumstances Test" in Magill and IMS Health' (2004) 28 Fordham International Law Journal 1123.

(ie the compulsory licence) than of the conduct (ie the refusal to license).[513] Similarly, Eilmansberger looks at the effects of the remedy and argues that a duty to license under the new product criterion could distort competition even more than to remedy a distortion of competition.[514]

Such approach has its limitations: while it is legitimate to design the remedies in the most efficient fashion, competition law needs to enter into play when the anti-competitive effects of the behaviours are more acute, and not when the pro-competitive effects of the remedy are higher, otherwise risking any eventual deterring effect that the application of competition law might have. In addition, the error-cost approach aggravates the uncertainties associated to the assessment of the effects on the market, requiring the analysis of a hypothetical intervention – which is indeed an even more complex probabilistic exercise.[515]

The question is hence whether the new product rule is economically consistent[516] or even if there is a justifiable public policy rationale for this requirement.[517] The lack of economic consistency of the new product requirement is more evident in cases like IMS Health where the problem is precisely that the competitors willing to offer different products are not able because consumers are locked into a specific technology.[518]

In such circumstances, competitors need the authorization to replicate the platform in which the consumers are locked in – leading to more exposure to competition for the IPR holder and between the licensees. This remedy – ie the duty to license – is very likely to result in lower prices – improvement on allocative efficiency[519] – and eventually in an improvement in follow-on innovation. As a result, the IPR holder and the licensees would have more incentives to differentiate their products as a result of the restated competition, but in any event will result in a new product, essentially because consumers cannot switch to it.

It is surprising that the CJEU failed to consider these economic consequences in IMS Health, where the new product rule is particularly

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[513] ibid 1136.

[514] Thomas Eilmansberger, 'The Essential Facilities Doctrine Under Art. 82: What is the State of Affairs after IMS Health and Microsoft?' (2005) 16 King's Law Journal 329, 335.

[515] Josef Drexl, 'Real Knowledge is to Know the Extent of One's Own Ignorance: On the Consumer Harm Approach in Innovation-Related Competition Cases' (2009) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper 14.

[516] Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 37.

[517] Derek Ridyard, 'Compulsory Access under EC Competition Law – A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 670. On a more general standpoint, Geradin considers the new product rule to be 'problematic', Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1537.

[518] For a deeper analysis of the (lack of) economic grounds of the new product rule in IMS Health see Josef Drexl, 'IMS Health and Trinko - Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2007) 35 International Review of Intellectual Property and Competition Law 788, 799-802.

[519] ibid 806.

problematic.[520] This shortcoming can be explained as a consequence of following the purely normative approach of AG Tizzano.[521]

Another criticism to the new product rule is that it is designed to protect competitors instead of competition.[522] For Eilmansberger, (1) the creation of an essential facility could be an expression of a superior business performance, and considers that (2) in the 'rare event' that an IPR becomes a 'gatekeeper', a duty to license would chill rather than promote competition.

With regard to dominance as a result of a superior business performance, European competition law is much more concerned by how dominant firms behave than by how they achieve their dominant position. Contrarily, Ibañez Colomo understands that '(t)he contemporary enforcement of EU competition law revolves around the creation and strengthening of market power'.[523] This assertion is mostly true in the case of mergers, and at best, incomplete as regards Article 101 TFEU. Yet it is particularly problematic when applied to Article 102 TFEU. This will be shown in Chapter 5 below when analysing the limitations of Article 102 TFEU to address fraudulent acquisitions of market power by means of deceptive under-disclosure.[524]

Therefore, regardless of the source of market power, what is relevant is whether the dominant company engages in an abusive behaviour that results in harms to competition. The superior business performance might eventually be more relevant when analysing the existence of an objective justification, as argued by Eilmansberger.[525]

Concerning his second point, it is not that 'rare' that IPRs have a gatekeeping effect nowadays as evidenced by some thousands of SEPs for a single mobile telecommunications standard. In addition, a duty to license does not generally chill or promote competition. The duty to license has both positive and negative effects in competition and therefore, it only should be imposed when the former outweigh that latter, according to the circumstances of the case.

### b) Definition of new product

In any event, the effectiveness of the new product rule must be evaluated against the definition of what a 'new' product is. In this regard, Geradin is right in asking why the CJEU departed from the

[520] In contrast, the new product rule does not pose particular problems in Magill-like cases.
[521] Opinion of AG Tizzano in Case C-418/01 *IMS Health* [2004] ECR I-5039, para 62.
[522] Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1532.
[523] Pablo Ibáñez Colomo, 'Restrictions on innovation in EU competition law' (2016) 41 European Law Review 201,, 204.
[524] For an historical analysis of why this is the EU approach to dominance see Peter Behrens, 'The ordoliberal concept of "abuse" of a dominant position and its impact on Article 102 TFEU' in Fabiana di Porto and Rupprecht Podszun (eds), *Abusive Practices in Competition Law* (Edward Elgar Publishing 2018).
[525] Thomas Eilmansberger, 'The Essential Facilities Doctrine Under Art. 82: What is the State of Affairs after IMS Health and Microsoft?' (2005) 16 King's Law Journal 329, 341.

concept of substitute product[526], which is more common in competition law, and probably more workable for assessing the nature of the product.

As mentioned above, there are two extremes between which the notion of a new product can be defined. Interpreted strictly, the new product should cover a different need if compared to the pre-existing product, as it happened in Magill. If interpreted loosely[527], just minor modifications to the existing product can result in a new product.[528]

In IMS Health, AG Tizzano, on the one hand, stated that competitors cannot merely duplicate 'the goods and services already offered' but need to create 'goods or services of a different nature which, although in competition with those of the owner of the right, answer specific consumer requirements not satisfied by existing goods or services'.[529]

On the other hand, the CJEU required that the applicant for access 'intends to produce new goods or services not offered by the owner of the right and for which there is a potential consumer demand'.[530] The Court thereby omitted any reference to the different nature of the product, which would have been problematic[531], and referred to a 'potential consumer demand' instead of 'specific consumer requirements'.

While the AG's approach is useful when dealing with cases where there is no actual market, the CJEU's approach is more suitable when the products or services that are intended to be marketed include additional features, which can be positively considered by consumers or satisfy better some specific needs of consumers – just as in the Microsoft case.

It has been proposed that a 'new product' should be the one that satisfies 'a potential demand by meeting the needs of consumers in ways that existing products fail to do'.[532] This approach is more suitable to sketch the actual effects in competitive dynamics and opens the floor to two possible – not necessarily incompatible – interpretations. The first one is interpreting the 'ways' in the sense of satisfying the same need of the consumer by using different means. The second understanding refers to the satisfaction of the same need plus other complementary needs that consumers appreciate.[533] For example, consumers, in general, will prefer a car that includes safety measures to the very same car without them,

[526] Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1531.
[527] Which can jeopardise its effectiveness. See Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 670.
[528] Ibid.
[529] Opinion of AG Tizzano in Case C-418/01 *IMS Health* [2004] ECR I-5039, para 62.
[530] Case C-418/01 *IMS Health* [2004] ECR I-5039, para 49.
[531] Since it would open another debate concerning what is a 'different nature'.
[532] Christian Ahlborn, David Evans and Jorge Padilla, 'The Logic and Limits of the "Exceptional Circumstances Test" in Magill and IMS Health' (2004) 28 Fordham International Law Journal 1123, 1112.
[533] Expanding the market. See Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 560.

although both will perform equally in satisfying the transportation need. This latter approach was very much endorsed by the GC in Microsoft.[534]

In any case, defining what a 'new' product is should be done by reference to the innovation dynamics of the sector concerned. Notably, in sectors where technology evolves based on cumulative developments, the threshold for the 'novelty' of the product should be lower than in cases where innovation is more radical.

### c) Do we need a 'new product rule' as a cumulative requirement?

Advocates of the new product rule argue that refusals to license IPRs require a higher standard than refusal to deal concerning physical assets.[535] The cumulativeness of the new product rule is, arguably, the element that sets this threshold. However, this argument has been contested: Eilmansberger argues that 'both types of facilities may require significant investment' and that the special protection granted to IPRs stems from their vulnerability and not necessarily from their higher value.[536] In addition, Drexl, points out that a refusal to license an IPR might affect incentives to innovate, which is not likely to occur in cases of refusal to deal physical facilities.[537]

Regardless of the definition of a 'new product', the new product rule – as a cumulative requirement – fails in any case to address situations where, for example, indispensable input is required to offer a standardised product or when it is referred to spare parts needed for restoring the original appearance of a complex product.[538]

The prevention of the introduction of a new product could still be taken as an abusive behaviour *per se* and, therefore, justify competition law intervention as a separate theory of harm. Eilmansberger[539] supports this view, although he deems that this type of abuse can only take place where the creation of the new product requires the pooling of inputs from different firms. This could be the case of consensus-based standards. However, such approach is limited to the cases of a refusal to license to all participants in the (potential) downstream market, but fails to apply if the licence is only refused to a few participants, while others have access based on a licence concluded at very high royalty rates. Such limitation

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[534] See Section 2.1.2.1 above.

[535] ibid 518ff.

[536] Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 159.

[537] Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 49.

[538] As argued by Beatriz Conde Gallego, 'Unilateral refusal to license indispensable intellectual property rights – US and EU approaches', *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 229.

[539] Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 160ff. Similarly, Lundqvist considers that supressing progress in the development of technology and new products seems to be an independent harm to competition. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 97.

would ignore the effect the refusal to license can provoke in downstream competition in the latter case. In addition, it makes little sense to limit it to consensus-based standards when the effects of *de facto* standards in competition are the same.

In the Microsoft case, Microsoft pleaded that competitors only wanted its communication protocols to produce products that mimic Microsoft products' functionality.[540] In other words, the competitors´ products would not be 'new'. Yet the GC took a step back from the 'new product rule' and based its approach on the wording of Article 102(2)(b) TFEU, which lists practices consisting in limiting production, markets or technical developments to the prejudice of consumers as potential abuses.

Accordingly, the GC argued that the prevention of the appearance of a new product could not be considered the only case where a refusal to license can harm consumers.[541] Thereby, the Court supported the reasoning of the Commission, which stated that the refusal to provide the relevant information 'limited technical development to the prejudice of consumers'[542] since Microsoft's competitors' products were superior to Microsoft ones on a series of relevant features such as reliability and security.[543] Ultimately, the Court considered that the new product requirement was fulfilled[544], not without blaming Microsoft for acquiring a significant market share, which is however irrelevant for an Article 102 TFEU case.[545]

Petit argues that both the Commission and the GC failed to meet the 'new product' condition,[546] yet a more coherent reading of the reasoning of the GC would be that it rightly considered the new product sufficiently fulfilled since competitors' products offered better and different features than Microsoft WGSOS beyond mere interoperability.

The Microsoft judgment still opens the door to analyse refusal-to-license cases when such condition is not meet cumulatively. There are two reasons to argue so: first, the elephant in the room is that a cumulative approach to the new product rule in Volvo would have resulted in a substantially different outcome, inasmuch the spare parts were not 'new' products.

Second, and more tellingly, the analysis conducted by the GC goes beyond a formal assessment of the fulfilment of the new product condition and put the focus on the effect that the refusal to license has on the WGSOS market. By forcing Microsoft to share the interoperability information with competitors the GC, strengthened price

[540] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 623.
[541] ibid para 647.
[542] ibid para 648.
[543] ibid para 652.
[544] ibid para 665.
[545] 'In this case, Microsoft impaired the effective competitive structure on the work group server operating systems market by acquiring a significant market share on that market.' ibid para 664.
[546] Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 110.

competition and incentivised Microsoft and their competitors to innovate in other features which were equally valuable for consumers.

In conclusion, the new product rule can, by itself, explain a duty to license, provided that the input is indispensable. But conversely, the failure to meet the new product requirement does not necessarily render Article 102 TFEU inapplicable to refusal-to-license cases, and therefore it should not be applied as a cumulative requirement. This stance is fully compatible with the wording of IMS Health, which configured the set of 'cumulative' circumstances as 'sufficient'[547] to impose a duty to license. Nothing in the text of the decision justifies to consider such set of circumstances as necessary too – ie an 'if and only if' condition – as will be further explained in Section 2.1.2.5 below.

### 2.1.2.4 Objective justification

The absence of an objective justification is a negative requirement[548] that was adopted from Article 101(3) TFEU for the application of Article 102 TFEU in all abuse cases. It requires to assess whether, after having established anti-competitive behaviour ('abuse' in the sense of Article 102 TFEU) efficiencies generated by the conduct outweigh the negative effects on competition.

However, as explicitly stated by the GC in Microsoft, mere existence of an IPR is not sufficient to justify the abuse, since otherwise Article 102 TFEU could never prohibit a refusal to license.

> (I)f the mere fact of holding intellectual property rights could in itself constitute objective justification for the refusal to grant a licence, the exception established by the case-law could never apply.[549]

Moreover, the intangible nature of the IPRs subject-matter exclude the application of certain objective justifications that are accepted in cases of physical assets, such as capacity constraints.[550] Similarly, due to their non-exhaustible nature, it cannot be argued that giving access to the subject-matter of the IPR could negatively affect the productive process of the dominant company, causing shortages of stock or losses of economies of scale, as might happen in cases of physical essential facilities.

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[547] '(I)t is sufficient that three cumulative conditions be satisfied, namely, that that refusal is preventing the emergence of a new product for which there is a potential consumer demand, that it is unjustified and such as to exclude any competition on a secondary market.' Case C-418/01 *IMS Health* [2004] ECR I-5039, para 38. This sufficiency approach was also echoed by the General Court in Microsoft II. Case T-167/08 *Microsoft v Commission* EU:T:2012:323, paras 139.

[548] As the CJEU did in British Airways. C-95/04 P *British Airways v Commission* [2007] ECR I-2331, para 86.

[549] This constitutes a straightforward repeal of the absolutism theory. Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 690.

[550] Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 670.

Additionally, the objective justification of the harm to incentives to innovation should be balanced against the effective innovative efforts undertaken by the dominant company[551], the return obtained by the dominant company in exchange of the compulsory licence[552] and the usual practices of the dominant company in the market.

In Microsoft, the company raised also the impact of a prohibition on its incentives to innovate as an objective justification for its refusal.[553] Yet the GC concluded[554] that Microsoft failed to demonstrate the existence of an objective justification for its refusal because the disclosure of interoperability information was a widespread practice in the industry and Microsoft's prior practices consisted in openly sharing such information.[555] Drexl sees the Microsoft case as an example of how competition law intervention can promote innovation by balancing the incentives to innovate of both the dominant undertaking (Microsoft in the case at hand) and its competitors[556], so-called 'incentives balance approach'.[557]

Contrary to some opinions that criticize that the Commission penalized the disruption of supply as such[558] or that it the GC based the duty to license on prior Microsoft practices[559], the references to the prior level of supply are used by both the Commission and the GC to evaluate whether there is an objective justification.[560]

### 2.1.2.5 Cumulativeness: necessary or sufficient

As argued in Section 2.1.2.3 above, the prevention of the creation of a new product can provoke competitive harms by itself, even without the concurrence of the rest of requirements. The CJEU clearly stated the cumulativeness of the requirements in IMS Health[561], however from the judicial holdings analysed above there are two possible readings. The first

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[551] Thomas Eilmansberger, 'The Essential Facilities Doctrine Under Art. 82: What is the State of Affairs after IMS Health and Microsoft?' (2005) 16 King's Law Journal 329, 342.

[552] Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 670.

[553] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 687.

[554] Instead of balancing the impact on Microsoft's incentives to innovate against the general effect on innovation in the entire industry.

[555] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 para 710.

[556] Josef Drexl, 'Real Knowledge is to Know the Extent of One's Own Ignorance: On the Consumer Harm Approach in Innovation-Related Competition Cases' (2009) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper 25.

[557] See also Simonetta Vezzoso 'The Incentives Balance Test in the EU Microsoft Case: A More 'Economics-Based' Approach?' (2009) Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1358924 accessed 4 August 2022, and Wolfgang Kerber and Claudia Schmidt 'Microsoft, Refusal to License Intellectual Property Rights, and the Incentives Balance Test of the EU Commission' (2008) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1297939 accessed 4 August 2022.

[558] Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1535.

[559] Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 574ff. Similarly, Herbert Hovenkamp, 'FRAND and Antitrust' (2020) 105(6) Cornell Law Review 1723.

[560] Eilmansberger considers Microsoft's prior disclosures of the interface information for free to be an indication of the absence of a specific effort to create the essential facility. Thomas Eilmansberger, 'The Essential Facilities Doctrine Under Art. 82: What is the State of Affairs after IMS Health and Microsoft?' (2005) 16 King's Law Journal 329, 344.

[561] Case C-418/01 *IMS Health* [2004] ECR I-5039, para 38.

is that it is only possible to impose a duty to license when all elements of the exceptional circumstances test as set out in Magill and IMS Health are present. In other words, the fulfilment of these conditions is necessary and sufficient. The second is that such set of circumstances were enough to impose a duty to deal taking into account the facts of the case(s), ie that such cumulative conditions were sufficient to impose a duty to license.

While some scholars are supportive of the first reading[562], thus favouring a very restrictive approach to a duty to license IPRs, the Commission seemed to advocate the second one in Microsoft.[563] The Commission denied the necessary nature of the requirements and configured the 'lack of objective justification' as the only and genuine cumulative – ie necessary – requirement in refusal-to-license cases. More concretely, to support its case before the General Court the Commission explicitly stated that the Magill[564] test does not provide for 'an exhaustive list of exceptional circumstances' but the definition of 'conditions on which a decision ordering compulsory licensing could be adopted, in the light of the specific circumstances of those cases'.[565] The Commission advocated for examining all the factors surrounding the refusal.[566]

This reading seems more convincing for a number of reasons even in the light of IMS Health. The CJEU in IMS Health contended that it is *sufficient*[567] that such circumstances are present to impose a duty to license but, in any event, said that it is necessary that the three conditions are fulfilled.

Similarly, the GC in Microsoft establishes that the IMS Health requirements, in particular[568], have to be considered exceptional. The inclusion of the wording 'in particular' in Microsoft opens the floor to either the inclusion of a totally different set of circumstances, which

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[562] Christian Ahlborn, David Evans and Jorge Padilla, 'The Logic and Limits of the "Exceptional Circumstances Test" in Magill and IMS Health' (2004) 28 Fordham International Law Journal 1123.

[563] Ullrich also understands Microsoft as an example of the flexibility of the 'exceptional circumstances' test. Hanns Ullrich, 'Technology Protection and Competition Policy for the Information Economy. From Property Rights for Competition to Competition Without Proper Rights?' (2019) Max Planck Institute for Innovation & Competition Research Paper No 19-12, 7.

[564] It should be noted that the Commission decision in Microsoft was adopted before the publication of IMS Health and therefore the Commission decision did not characterise the elements of the exceptional circumstances test as 'conditions', which is a wording which, for the first time, only appeared in IMS Health.

[565] Considering that in the IMS Health case, it was sufficient to satisfy such list of circumstances. See Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 para 303.

[566] The approach of the Commission has been ironically named the 'convenient facilities doctrine'. See Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669.

[567] '(I)t is sufficient that three cumulative conditions be satisfied, namely, that that refusal is preventing the emergence of a new product for which there is a potential consumer demand, that it is unjustified and such as to exclude any competition on a secondary market.' Case C-418/01 *IMS Health* [2004] ECR I-5039, para 38. This sufficiency approach was also echoed by the General Court in Microsoft II. Case T-167/08 *Microsoft v Commission* EU:T:2012:323, paras 139.

[568] Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601 para 332.

equally fulfil the 'exceptional circumstances test'[569], or the replacement of some of these requirements by others.

This reading is also supported by the approach in the Huawei judgment – to be analysed below –, where the CJEU argued that the differences between cases support partial applicability of the principles developed in the prior case law.[570]

As a result, the factual differences between cases might argue in favour of considering other sets of circumstances and/or a more flexible – ie merely sufficient conditions – approach to the IMS Health requirements.[571] The exceptional circumstances test is not exhausted by the set of circumstances as defined in Magill and IMS Health, whose concurrency is sufficient for imposing a duty to license but that are not necessary in all cases to impose it.

## 2.2 Getting SEPs on board: Huawei v. ZTE

### 2.2.1 The case

The first and only chance the CJEU so far had to deal with the intersection of IPRs and competition law with regard to SEPs was on the occasion of a referral for a preliminary ruling from the Dusseldorf Regional Court in the Huawei v ZTE case.[572]

Huawei and ZTE are two companies operating in the ICT sector that engaged in negotiations on the past and future use of an SEP owned by Huawei and needed for the implementation of the Long-Term Evolution Standard.[573] For this patent Huawei had entered in a FRAND licensing commitment pursuant to Article 6.1 of ETSI's IPR Policy.[574]

In the course of the negotiations Huawei offered a royalty rate that it deemed to be reasonable. Yet ZTE reacted with a counter-offer on cross-

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569 'The reference to the "exceptional circumstance"' must be construed as a reference to the competitive harm caused by the refusal to supply, which consists in the elimination of effective competition to the detriment of consumers. The Court itself singled out the limitation of technical development to the prejudice of consumers as an exceptional circumstance relevant to the balancing test.' Renato Nazzini, *The foundations of European Union competition law: The objective and principles of Article 102* (Oxford University Press 2011) 313.

570 Opinion of AG Wathelet in Case C-170/13 *Huawei* EU:C:2014:2391 para 70; Case C-170/13 *Huawei* EU:C:2015:477, paras 46ff.

571 In Microsoft, the competitors where not asking for a licence for the use of Microsoft software, but rather for access to parts of the source code needed to provide interoperability, which was considered essential by consumers. Such circumstance might have justified a lower benchmark for intervention than under the exceptional circumstances test. However, the GC decided to firstly analyse whether the set of circumstances in Magill and IMS Health set of circumstances were present in Microsoft and, only if not, to proceed to assess the rest of circumstances invoked by the Commission. Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601, para 336.

572 Case C-170/13 *Huawei* EU:C:2015:477.

573 The Long Term Evolution (LTE) Standard represents a fourth generation (4G) mobile telecommunications standard used mostly to exchange information (data) between wireless devices. The standard was created by the 3GPP consortium of which ETSI is founding partner.

574 ETSI, 'IPR Policy' (2019) <https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf> accessed 1 November 2022.

licensing[575], which, in turn, Huawei considered insufficient. In light of the impossibility to reach an agreement, Huawei sued ZTE before the Dusseldorf Regional Court, seeking, among others, a preliminary injunction.

Back then, the existing precedents relating to SEPs injunctions were the decision of the German Federal Supreme Court in the Orange Book Standard case[576] and the decisions of the Commission in Motorola[577] and Samsung[578], which reached irreconcilable outcomes.[579] In short, following Samsung and Motorola, applications for injunctions on FRAND-pledged SEPs were – in the Commission's view – presumptively unlawful. Contrary to Orange Book Standard, the Commission assumed the unlicensed implementer's 'willingness' to contract, and consequently argued that the burden of proving unwillingness revolves back to the SEP holder.[580]

As a consequence, the Dusseldorf Regional Court referred a series of questions to the CJEU[581] regarding whether seeking an injunction based on a FRAND-encumbered patent amounts to an abusive conduct in the sense of Article 102 TFEU, and, if so, whether certain behaviours of both the owner and the infringer are relevant to evaluate the abusiveness of the conduct.

Then, the CJEU pointed at the difference between standard essential patents and non-essential ones:

> (T)he patent at issue is essential to a standard established by a standardisation body, rendering its use indispensable to all competitors which envisage manufacturing products that comply with the standard to which it is linked. (…) (T)hat

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575 'Cross-licensing agreements are usually bilateral agreements between rivals that hold patents on similar technology. The purpose of these agreements is to reduce the threat of patent infringement suits and thereby enhance each firm's design freedom. If the two firms have similarly valuable patent portfolios, then they may simply swap IP for IP and no money will change hands. In cases where one firm's patent portfolio is clearly more valuable than the other firm's portfolio, the exchange may well involve a balancing payment, which would take the form of a lump-sum initial payment. In most instances, the agreement would not involve a running royalty.' Roger D Blair and Wenche Wang, 'Monopoly Power and Intellectual Property' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 219.

576 Federal Supreme Court (Bundesgerichtshof) of 6 May 2009, Case No KZR 39/06 *Orange Book Standard* (2010) 41 International Review of Intellectual Property and Competition Law 369 (English translation). For an analysis of the decision see Hanns Ullrich, 'Patents and Standards - A Comment on the German Federal Supreme Court Decision Orange Book Standard' (2010) 41 International Review of Intellectual Property and Competition Law 337, 338ff.

577 European Commission, Motorola – Enforcement of GPRS standard essential patents (Case AT.39985) Commission Decision of 29 April 2014, C(2014) 2892 final.

578 European Commission, Samsung Enforcement of UMTS Standard Essential Patents (Case AT.39939) Commission Decision of 29 April 2014, C(2014) 2891 final.

579 However, it should be noted that the Orange Book case was related to a *de facto* standard not subject to any prior FRAND commitment. Josef Drexl, 'Standard setting organizations and processes: Challenges and opportunities for competition and innovation – Introduction' (2015) No 3 Concurrence Online Supplement No 74830, 14 <www.concurrences.com/en/review/issues/no-3-2015/conferences/standard-setting-organizations-and-processes-challenges-and-opportunities-for > accessed 1 November 2022.

580 Nicolas Petit, 'EU Competition Law Analysis of FRAND Disputes' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 294.

581 Case C-170/13 *Huawei* EU:C:2015:477, para 39.

> feature distinguishes SEPs from patents that are not essential to a standard and which normally allow third parties to manufacture competing products without recourse to the patent concerned and without compromising the essential functions of the product in question.[582]

In addition, the Court also highlighted the role of the FRAND commitment as a means to shape the legitimate expectations of third parties seeking a licence from the SEP holder[583], to conclude that, despite such FRAND commitment, the SEP holder cannot be deprived from its right to assert the patent[584], which, however, can be subject to certain requirements.[585]

In the following, the Court defined the steps that the SEP holder must take to be entitled to request an injunction against a potential licensee, and, additionally, under which circumstances a licensee must be considered 'unwilling'.

In sum, the roadmap that the CJEU defined is as follows:[586] the SEP holder must inform the alleged infringer of the existence of the SEP and its infringement. If then the latter expresses its willingness to obtain a licence, the SEP holder will have to provide it with a written FRAND offer, which the alleged infringer shall diligently accept, or alternatively, present a FRAND-compliant counteroffer. If the counteroffer is not accepted by the right holder, the alleged infringer will have to provide a security, including the amounts corresponding to the past use of the SEP. Nevertheless, this shall not prevent the alleged infringer to challenge the validity or the essentiality of the patent.

### 2.2.2 The analysis

The CJEU acknowledged upfront that the Huawei case departs from the premises established in Magill and IMS Health, as the GC had arguably done in Microsoft before.[587] Both the Advocate General Wathelet and the Court understand that Huawei's voluntary commitment to license the patent on FRAND terms prevent the case to be treated as an ordinary refusal-to-license case and, consequently, the abovementioned case-law is only applicable to a certain extent.[588]

Although the case has many positive aspects that have been highlighted by the scholarly literature and implemented in practice, the judgment has also received some criticism. For example, Podszun[589] criticised the

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[582] ibid paras 49-50.
[583] ibid paras 53-54.
[584] ibid para 58.
[585] ibid para 59.
[586] ibid, paras 60-69.
[587] At least partially, see the preceding subsection.
[588] Case C-170/13 *Huawei v ZTE, Opinion of AG Wathelet* EU:C:2014:2391 para 70 and Case C-170/13 *Huawei v ZTE* EU:C:2015:477 para 48.
[589] However, it is not that common that the CJEU quotes the GC in its decisions, in particular when such decisions do not make substantial contributions to the debate. Rupprecht Podszun, 'Standard Essential Patents and Antitrust Law in the Age of Standardisation and the Internet of Things: Shifting Paradigms' (2019) 50 International Review of Intellectual Property and Competition Law 720, 729.

decision for not analysing the 'material criteria for refusal to license' and even the CJEU itself for not even referencing Microsoft, indicating that 'the Court of Justice's approach in Huawei has blunted the sword of antitrust law'[590] In contrast, Petit argues that the case is 'not about the external "sword" of antitrust, but predominantly about antitrust immunity'.[591] However, there are factual and legal reasons that explain why such departure is accurate: first, the case is related to the enforcement of a FRAND-pledged SEP.[592] Secondly, the case does not deal with a refusal to license *stricto sensu* but with a stand-alone request for a preliminary injunction based on such FRAND-pledged SEP.

In addition, the judgment has been criticised for leaving open certain relevant aspects. Some of these aspects, such as SEP-related market definition and the relationship between owning a SEP and dominance were not addressed by the referring court[593], which did not prevent the AG from suggesting the recognition of a presumption of dominant position.[594]

Although for both practitioners and scholars it was desirable that the CJEU profited from the first SEP case to further clarify controverted aspects, the CJEU is absolutely legitimated to not expand the scope of its decisions beyond the legal issues at stake, in particular when deciding in a preliminary ruling, at the risk of otherwise incur in the heavily criticised judicial activism.[595]

#### 2.2.2.1 Different circumstances...

The existence of a FRAND-pledged SEP, aside from creating exceptional circumstances[596], implies a substantial factual difference with

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[590] Ibid

[591] Nicolas Petit, 'EU Competition Law Analysis of FRAND Disputes' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 299.

[592] Carovano argues that dealing with this type of cases from a competition law perspective has been a minoritarian choice. Gabriele Carovano, 'Standard-Essential Patents: Huawei Case, a Non-Solution to an Avoidable Problem' (2016) 3 Rivista Italiana di Antitrust/Italian Antitrust Review 14.

[593] The referring court was tacitly assuming the existence of a dominant position and none of the parties contested such assumption. Case C-170/13 *Huawei* EU:C:2015:477, paras 39 and 43.

[594] Opinion of AG Wathelet in: Case C-170/13 *Huawei* EU:C:2014:2391, paras 53-58.

[595] See Vincent Cassiers and Alain Strowel, 'Intellectual property law made by the Court of Justice of the European Union' in Christophh Geiger, Craig Allen Nard and Xavier Seuba (eds), *Intellectual Property and the Judiciary* (Edward Elgar Publishing 2018) 196ff.

[596] The CJEU refers to particular circumstances whereas the Advocate General refers to exceptional circumstances. See Case C-170/13 *Huawei* EU:C:2015:477, para 48, and Opinion of AG Wathelet in Case C-170/13 *Huawei* EU:C:2014:2391, para 62.The Commission was more explicit in this regard in Motorola ('The exceptional circumstances in the present case are the GPRS standard-setting context and the commitment given by Motorola to ETSI to license the Cudak GPRS SEP on FRAND terms and conditions') and in Samsung ('The Commission preliminarily concluded that the exceptional circumstances in this case are: (i) the UMTS standard-setting process; and (ii) Samsung's commitment to ETSI to license its UMTS SEPs on FRAND terms and conditions.'). European Commission, *Google - Motorola Mobility* (Case No COMP/M.6381) Decision of 13 February 2012, C(2012) 1068; *Motorola - Enforcement of GPRS standard essential patents* (Case AT.39985) Decision of 29 April 2014, C(2014) 2892 final, para 281; *Samsung Enforcement of UMTS Standard Essential Patents* (Case AT.39939) Decision of 29 April 2014, C(2014) 2891 final, para 56.

the prior case law on refusal to license. The Court states that the SEP status is acquired in return for a FRAND licensing commitment.[597]

If referred to an individual patent, this is not entirely correct, or, in more generous terms, it is an oversimplification. The essentiality of a patent depends on whether the standard technical specification reads on one or more of the claims of the patent. It is true that if the technical committee in charge of drafting the standard specifications notices that a given technology is covered by a patent not subject to a FRAND commitment, the SDO may then seek a FRAND commitment from the patent holder, look for other alternative (viable) technology or rewrite the standard.[598] Nevertheless, there are patents that are essential for implementing the standard whose owner has not undertaken to license on FRAND terms, either because the essentiality of the patent remained unnoticed for the SDO and the patent holder or because the patent holder deceptively hides it.[599]

Yet it is possible to come up with a different reading if one considers that the CJEU is referring to the status of SEP *in abstracto*. Hence, what the Court would be pointing at is that the FRAND commitment (and appropriate patent disclosure) is a *quid pro quo* of the inclusion of patents in the framework of SDO-based standardisation. Absent the FRAND commitment the patent must not be included in the standard.

According to this reading, SEPs are indispensable to access to or compete within certain markets (as in any other refusal-to-license case), but their indispensability stems from a pre-market competitive process whose pro-competitive effects are to be assessed in the light of the safeguards established in the Horizontal Cooperation Guidelines, *inter alia* the FRAND commitment and the disclosure obligation.[600]

There is a key difference between Huawei and the refusal-to-license cases analysed above: from the side of the SEP holder there was not a refusal-to-license, but a disagreement on the definition of FRAND terms, and conversely the defendant was not asking for imposing a duty to license, but for the limitation of the availability of injunctive relief.

This difference justifies the deeper analysis of the behaviour of both parties to assess their willingness to grant and take a licence. If the SEP holder acts as an unwillingness licensor, the behaviour will not be substantially different than in traditional refusal-to-license cases – although failure to fulfil the FRAND commitment might imply additional anticompetitive harms. In contrast, when the licensee is unwilling to take the licence, the SEP holder must not be prevented from obtaining an injunction.

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[597] Case C-170/13 *Huawei* EU:C:2015:477, para 51.

[598] ETSI regulates these possibilities in Article 8 of its IPR Policy. However, in practice, ETSI's Director General has requested a FRAND commitment in only a few cases and an ETSI standard has never been withdrawn due to a blocking patent whose owner did not want to license on FRAND terms.

[599] The scope of essentiality has been largely discussed in section 2 of Chapter 3 above.

[600] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 280ff.

### 2.2.2.2 … and a different theory of harm?

There are authors that argue that the underlying theory of harm in Huawei v ZTE was, at least to a certain extent, a classical leveraging theory[601] or an exclusionary abuse case[602], which might bring the case closer to the 'exceptional circumstances' test as applied to the earlier refusal-to-license cases.

Conversely, there is a non-negligible number of authors who are at least doubting whether the case can be brought under traditional theories of harm[603], or even more, who argue that the decision was rooted in principles alien to competition law.[604] Indeed, assuming that the CJEU considered a new theory of harm seems to be a more appropriate reading of the decision.

On the one hand, it is undeniable that the judgment's reasoning that 'its proprietor can prevent products manufactured by competitors from appearing or remaining on the market and, thereby, reserve to itself the manufacture of the products in question'[605] supports that the CJEU relied on a leveraging theory of harm. However, nothing in the judgment can be understood as excluding other situations where the SEP is not competing with the licensee, in particular where analogous anti-competitive concerns might be at place.

On the other, Borgogno and Colangelo argue that the reference of the CJEU to the legitimate expectations that the SEP will be licensed on FRAND terms support a wide reading of the case: since the legitimate

[601] Namely, using its dominance in one market to increase its market power in another market. See Haris Tsilikas, 'Huawei v. ZTE in context – EU competition policy and collaborative standardization in wireless telecommunications' (2017) 48 International Review of Intellectual Property and Competition Law 151 172; Nicolas Petit, 'EU Competition Law Analysis of FRAND Disputes' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 301; Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 147.

[602] Haris Tsilikas, 'Huawei v. ZTE in context–EU competition policy and collaborative standardization in wireless telecommunications' (2017) 48 International Review of Intellectual Property and Competition Law 151, 173.

[603] Moreover, it has been argued that CJEU in Huawei v ZTE has created a new test – the willing licensee test – to deal with a different type of abuse. Sofia Oliveira Pais, 'The Huawei Case and Its Aftermath: a New Test for a New Type of Abuse' (2017) 10 Yearbook of Antitrust and Regulatory Studies (YARS) 11, 25ff.

[604] Picht considers that 'no theory of competitive harm is properly established and competition law paradigms like exclusion or exploitation are not even extensively discussed.' Peter G. Picht, 'The ECJ Rules on Standard-Essential Patents: Thoughts and Issues Post-Huawei' (2016) 37 European Competition Law Review 365, 373. Similarly, Leistner `While a neat and clean competition-law-based theory is missing, the Huawei/ZTE judgment takes recourse to more general concepts´ Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 20. See also Björn Lundqvist, 'The interface between EU competition law and standard essential patents–from Orange-Book-Standard to the Huawei case' (2015) 11 European Competition Journal 367 383.

[605] Case C-170/13 *Huawei* EU:C:2015:477, para 52.

expectations of obtaining a FRAND licence are not constrained to actual competitors of the SEP holder but to any prospective licensee.[606]

Indeed, the CJEU could have artificially construed a pseudo refusal-to-license case, based on alleged dilatory practices by Huawei, for which the injunction was an essential part or, alternatively, consider the injunction as a means for a (temporary) exclusionary behaviour. Yet the Court did not do so.

This intentional departure from earlier case-law is clearly justified for three reasons: (1) the exceptional circumstances test suffers from certain flaws even when applied to canonical cases of a refusal to license[607]; (2) by stating that it is sufficient – but not necessary – that the requirements of the test are met, IMS Health opened the door to other sets of circumstances that may trigger competition law intervention[608]; (3) such construction would ignore the core issue of the case: the risk of using injunctions to force the licensee to accept more onerous terms. In other words, the case was more connected to the risk of hold-up than to pure exclusionary abuses.

As a consequence, the effects on competition – and particularly on innovation – arising from seeking an injunction based on a FRAND-pledged patent differ substantially from those in traditional refusals to license, in particular with regard to the harm that such conduct can cause to standardisation and to the legitimate expectations of participants in the standard.

Moreover, the application of the same remedy than to a refusal to license – ie a duty to license – will not contribute to solving the anticompetitive effects of the behaviour, since the requested remedy was a denial of injunctive relief. In the same fashion, there is a debate on whether the Huawei test would also apply to cases where the SEP holder does not compete with the prospective licensee. The answer should be in the affirmative. It makes little sense to transpose the requirement of a competing relationship between the SEP holder and the prospective licensee without considering that, in its absence, the anti-competitive effects are equally likely to take place, in particular in case of FRAND-pledged patents.[609] In practice, the courts[610] and the Commission[611] do not

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[606] Oscar Borgogno and Giuseppe Colangelo, 'Disentangling the FRAND Conundrum' (2019) DEEP-IN Research Paper, 19. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3498995&download=yes> accessed 1 November 2022

[607] See the analysis in subsection 2.1 above. See also Josef Drexl, IMS Health and Trinko - Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2007) 35 International Review of Intellectual Property and Competition Law 788.

[608] See above at Section 2.1.2.5 of Chapter 3.

[609] The outcome might be substantially different in cases of *de facto* standards. Against Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 3.

[610] See, for example, the UK and German cases on Unwired Planet v Huawei, where the parties were not competing in the handset market. Unwired Planet v Huawei [2018] EWCA Civ 2344 and Unwired Planet v Huawei Higher Regional Court of Düsseldorf (Oberlandesgericht 2019) Case No. I-2 U 31/16.

[611] 'PAEs should be subject to the same rules as any other SEP holder.' European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 11.

see particular problems in applying the same or a similar test to all of these cases.

Overall, the anticompetitive effects in the downstream market and on standardisation are substantially similar regardless of the pre-existence of a competing relationship between licensor and licensee.[612] Even those authors who contend that Huawei v ZTE cannot be applied to cases where there is no competitive relationship between the licensor and the licensee admit that Article 102 TFEU might apply to cases where a non-practising entity applies for an injunction[613] and even more, that the legitimate expectations approach and the negotiation pattern developed in Huawei v ZTE would appropriately be applied to these other cases as well,[614] while it might however require a more elaborated theory of harm.

This theory of harm should rely – as partially indicated by the CJEU – on the legitimate expectations that the FRAND commitment creates for all potential implementers and in the effect that an injunction against a willing licensee can have on follow-on innovation.[615] The existence of a FRAND commitment and the legitimate expectations resulting from it allow to draw a line between, on the one hand, the SEPs injunction cases and the prior case-law on refusals to license and, on the other hand, between SDO-based standard cases and *de facto* standard cases (such as the German Orange Book case).[616] Moreover, these two elements bring the case closer than it might initially seem to patent ambush cases[617], as it will be analysed in Chapter 5.

In sum, using a medical metaphor, while a SEP-based injunction against a willing licensee presents similar symptoms than traditional refusal-to license cases, it is a different disease, which requires a different treatment.

## 3. The theory of complementarity

[612] Similarly Alison Jones and Renato Nazzini, 'The Effect of Competition Law on Patent Remedies' in C Bradford Biddle *et al* (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge University Press 2019) 218.

[613] Nicolas Petit, 'EU Competition Law Analysis of FRAND Disputes' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 303.

[614] Haris Tsilikas, 'Huawei v. ZTE in context–EU competition policy and collaborative standardization in wireless telecommunications' (2017) 48 International Review of Intellectual Property and Competition Law 151, 172.

[615] Which can be particularly harmful for society 'Generally, breakthrough innovations do not generate wealth for the wider society to the extent that follow-on innovations do. Follow-on, incremental, innovations normally adapt the breakthrough innovations to fit societal needs.' Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 95.

[616] Similarly, ibid 326ff.

[617] As rightly pointed out by Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 149.

The analysis above shows that competition law only enters the picture under exceptional/extraordinary/rare circumstances. In most cases the IPR system provides for sufficient balances, guaranteeing that the ordinary exploitation of IPRs will not trigger any competition concerns. Moreover, such exceptional circumstances are neither limited nor exhausted by the 'exceptional circumstances test', notably when the concrete cases are not on a refusal to license.

However, these findings fail to provide the necessary guidance to judges when deciding on the IP-competition law intersection. Particularly, the question when competition law should intervene in IP-related cases remains open. The theory of complementarity can shed more light on this issue.

## 3.1 Theoretical foundations

The rationale of the theory of complementarity is that both IP and competition law aim to increase welfare and efficiency, although in a different manner. Competition law is more concerned about protecting the competitive structure of the market, including the protection of dynamic competition – understood as an innovation-enhancing process – whereas IPRs aim at promoting dynamic competition by incentivising and rewarding the creation of new or improved products, services or processes.

According to the definition provided by the 2004 and 2014 Guidelines on Technology Transfer Agreements

> both bodies of law share the same basic objective of promoting consumer welfare and an efficient allocation of resources. Innovation constitutes an essential and dynamic component of an open and competitive market economy. Intellectual property rights promote dynamic competition by encouraging undertakings to invest in developing new or improved products and processes. So does competition by putting pressure on undertakings to innovate. Therefore, both intellectual property rights and competition are necessary to promote innovation and ensure a competitive exploitation thereof.[618]

Such explanation, although formally correct, does not capture the entire dimension of the theory of complementarity as it has been developed and analysed by scholars.[619] Nor can it serve as a basis for its practical application to IP-competition law cases. In particular, it overlooks the

[618] European Commission, 'Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements' [2004] OJ C101/2; para 7; European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3, para 7.

[619] See Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007); Josef Drexl, IMS Health and Trinko - Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2007) 35 International Review of Intellectual Property and Competition Law 788; Beatriz Conde Gallego, 'Unilateral refusal to license indispensable intellectual property rights – US and EU approaches', *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008).

distinction between 'competition by imitation' and 'competition by substitution' which is very useful to trace the line between IP cases where competition law could – and should – intervene.

In essence, to satisfy a specific need of consumers, competitors can choose either to imitate other companies' products (competition by imitation) or to cover the same need with a different product (competition by substitution).

IPRs limit competition by imitation, to the extent that imitation falls within the scope of the IPR. By so doing, they promote innovation at two levels. First, they reward innovators with a right to exclude others from free-riding on their R&D efforts. Secondly, they force competitors to design new and better products, in other words, to compete by substitution.[620] Simultaneously, the existence of competition by substitution puts competitive pressure on the IPR holder to reinvest its profits in further innovation.[621]

This distinction largely corresponds to the one between static and dynamic competition. To a certain extent competition by imitation can be equated to static competition, since in both cases the key parameter is price.[622] Firms competing by imitation will bring benefits to consumers by charging lower prices. On the other hand, competition by substitution is closely linked to dynamic competition. Firms competing by substitution contribute to such competition by creating better products – ie innovating.

In exchange for a loss of static efficiency – ie the relative increase in the price of the IP-protected product (service) – the society receives an increase of dynamic efficiency – ie innovation. Such positive effect is caused, on the one hand, by the incentives to innovate for prospective IPR holders, and on the other hand, because IPRs canalize competitors' R&D investments towards other innovation paths that, absent the exclusion of competition by imitation might not have been explored. Innovation on potential substitutes forces the IPR holder to abandon rent-extracting strategies and to reinvest profits in R&D.

The theory of complementarity's underlying assumptions are mirrored in most IP laws and shape the scope and some of the exceptions and

[620] Drexl et al advocated the explicit inclusion of 'competition by substitution' as a goal of IP law as early as in 2006. Josef Drexl *et al*, 'Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law (Munich) on the DG Competition discussion paper of December 2005 on the application of Article 82 of the EC Treaty to exclusionary abuses' (2006) para 32.

[621] Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 44.

[622] Arguably certain aspects such as branding, brand positioning or marketing can transform mere static competition by imitation in something more sophisticated and dynamic whose driving parameter is not only price but emotional innovation. Yet this aspect will not be developed here any further, since the focus is on technological innovation.

limitations of IPRs.[623] For example[624], the compulsory licence mechanism authorises competition by imitation in a scenario where the national demand is not covered by the IPR holder and competition by substitution is not feasible in the short term.[625]

Similarly, explaining a Picasso painting entitles the teacher to reproduce (imitate) the painting, since substitution is not possible. Even in trade mark law such mechanisms can be found: the limitation of competition by imitation of a trade mark is in essence defined by the likelihood of confusion – and therefore competitors are free to offer their products and services under any distinctive sign which is not confusingly similar to prior registered trademarks. However, if the trademark becomes a generic term[626] used in the trade to identify a particular kind of good or service and not its commercial origin and it cannot be substituted by any other word – ie the market 'demands' free use of the term –, the trade mark system will allow competitors to use (imitate) the term.

In addition, complementarity can better tackle eventual abusive behaviours related to IPRs, such as in the case where an operator in the market who enjoys the power to exclude imitation is not entitled to it or when exclusivity is claimed beyond the scope – including the duration – of the IPR as defined by the law.

In the first case, the IPR system provides for tools to prevent opportunistic behaviours – such as the cases of bad faith trade mark registration or application for a patent by a person who is not entitled to it because she is neither the inventor nor the successor in title.

In the second case, however, competition law might have a say, in particular because the behaviours tend to be more sophisticated and therefore the IPR system might not be able to tackle them. Some examples of this type of cases are an undue extension of the duration of an IPR as a result of a deceptive misrepresentation – as it happened in AstraZeneca case[627] – or by means of an abuse of rights – such as in pay-for-delay cases.[628] The ratio for competition law intervention in these cases is that the IPR owner will be over-rewarded without any additional societal benefit that should be compensated, or even worse, with an actual anticompetitive advantage.

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[623] 'The IP right, whether it is a patent, a trademark or a copyright, excludes competition by imitation.' Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 45. See also Mark A Lemley and Mark P McKenna, 'Is Pepsi Really a Substitute for Coke? Market Definition in Antitrust and IP' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 184.

[624] Ghidini also provides for some examples related to patents. See Gustavo Ghidini, *Intellectual property and competition law: the innovation nexus* (Edward Elgar Publishing 2006) 6.

[625] In this case the impossibility of developing a substitute is mostly caused by the need of answering to a national health emergency in a short period of time.

[626] This lack of distinctiveness can be inherent to the sign itself – eg milk for dairy products – or be a consequence of the widespread use in the course of trade – eg the case of "Aspirin" in certain jurisdictions to identify acetylsalicylic acid regardless of its commercial origin.

[627] Case C-457/10 P *AstraZeneca v Commission* ECLI:EU:C:2012:770 .

[628] Case C-307/18 *Generics (UK)* EU:C:2020:52.

Hence, competition law complements IPRs with the objective of promoting innovation and dynamic efficiency by ensuring that competition by substitution works properly and that new and improved products can access the market. In addition, competition law contributes to the efficient dissemination of IPR-protected products to close the IPR virtuous circle.[629]

Petit, however, openly rejects that the complementarity theory governs the intersection between IPRs and competition law by arguing that:[630] (1) the theory says 'nothing more than that antitrust law can apply to IP rights'; (2) that in complementary relationships the complements generally occupy different hierarchical positions – by using the example of a lion and an antelope – and therefore that the Huawei v ZTE case should be read as IPRs occupying a higher position; and (3) the fact that the legislature has not included it as a block exemption is an indicator of its discomfort with the theory.

None of these criticisms can, however, justify the rejection of the theory of complementarity.

First, it is true that the definition provided by the Guidelines on Technology Transfer[631] is not very far reaching. Nevertheless, as explained above – and will be expanded in the next subsection – the theory of complementarity has been developed further and can contribute to clarify the IP-competition intersection, if taken on its full dimension.

Secondly, complements do not necessarily need to be on different hierarchical levels: if the goal is to run a marathon, the left running shoe cannot find a better complement than the right running shoe, or, in order to climb a snow-capped mountain, it is advisable to complement a piolet with a couple of sharp crampons.

And finally, the third argument is very circumstantial, very rarely lawmakers endorse legal (academic) theories in such an explicit way – and particularly when adopting a block exemption.[632] The fact that the Commission included it in the 2004 Technology Transfer Guidelines and kept it in 2014, points in the opposite direction.[633] In the US the

[629] Mor Bakhoum and Beatriz Conde Gallego, 'TRIPS and competition rules: from transfer of technology to innovation policy' in Hanns Ullrich *et al* (eds) *TRIPS plus 20* - From Trade Rules to Market Principles (Springer 2016) 539ff.

[630] Yet Petit also finds certain arguments in favour of the theory of complementarity. Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 107.

[631] European Commission, 'Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements ' OJ C 101 2 para 7 and European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' OJ C 89 3 para 7, respectively.

[632] Although the theory of complementarity is taken into account by legislators in a different manner, as it is analysed in 3.2 below.

[633] Drexl considers that the theory of complementarity is almost generally accepted, including by the Commission as well as by the US DoJ and the FCT in the US Antitrust Guidelines for the Licensing of Intellectual Property. See Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 533 fn 85.

Federal Circuit has also acknowledge the complementarity between IPRs (patents) and antitrust law.[634]

Overall, it cannot be denied that the theory of complementarity and the distinction between competition by imitation and substitution provides at least the theoretical basis for the understanding of the interaction between IPRs and competition law and inspires our current IP system. The next two subsections aim at assessing its workability in real cases.

## 3.2 The theory of complementarity in refusal-to-license cases

According to the theory of complementarity, competition law can and should intervene when these dynamics are altered by the very same dynamics of the market, the nature of the product or the behaviour of a company. All the cases analysed above have in common that competition by substitution is not possible and therefore the innovation-promoting effects are partially hindered, because it is not possible to 'invent around' the IPR.

Drexl[635] differentiates between two scenarios. In the first one, competition by substitution is excluded because of a deficient design of the IPR itself – eg the excessive scope of protection of the IPR – as was the case in Magill, where copyright protection was extended to the listings of TV programs. In the second one, the specific market dynamics – or failures – prevent competition by substitution.

This latter situation may occur, for example, in markets governed by network effects when users are locked in by their prior investments. In such markets, switching from one technology to another requires, from the side of the supply, to achieve a critical mass of supporters that can attract other users, and, from the side of the demand, to require implementers incur switching costs, as was the case in IMS Health and Microsoft.

In the first of the cases, competition law is just a second-best.[636] In principle, it should be the IP lawmakers who have to design the scope of the IPR in a pro-competitive fashion. The suitable remedy is no other than the amendment of the IP law.[637]

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[634] *Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861* (Fed. Cir. 1985) 877

[635] Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 47.

[636] Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 653; Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 47.

[637] Both Geradin and Ibañez Colomo are strongly against using competition law to 'redress' situations related to the undue extension or granting of IPRs. Damien Geradin, 'Limiting the scope of Article 82 EC: What can the EU learn from the US Supreme Court's judgment in Trinko in the wake of Microsoft, IMS, and Deutsche Telekom?' (2004) 41 Common Market Law Review 1519, 1528; Pablo Ibáñez Colomo, *Restrictions on innovation in EU competition law* (2015) LSE Law, Society and Economy Working Papers 22/2015, 23.

In the second case, competition law has an important role to play in counterbalancing the joint blockage of competition by substitution and competition by imitation caused by market circumstances plus the scope of the IPR.[638] This has been the case in IMS Health[639] – pharmaceutical companies were locked in the copyright-protected bricks structure of IMS Health which had emerged as a *de facto* standard – or Microsoft – where WGSOS providers were in need of interoperability information allegedly protected as trade secrets or even by IP law.[640]

It is in this second set of cases where the new product rule presents certain limitations in the light of the theory of complementarity. Overall, the rule seems to find support in the interaction of competition by substitution and competition by imitation:[641] competition law should intervene when competition by substitution is not possible to enable the launch of a new product for which there is potential demand. This case – essentially the IMS Health case – is coherent with the theory of complementarity and aligned with the dynamics of IPRs.

However, when the demand is locked in and will not opt for the new product – even if it is superior – due to switching costs, competition law cannot force consumers to switch: the only alternative is to enable competition by imitation. This was the case in IMS Health. This apparent contradiction of the theory of complementarity with the new product rule, should not lead to the automatic rejection of the theory of complementarity, but to reconsider the suitability of the new product rule.[642]

Drexl points out that one of the main limitations of the IMS Health judgment is that, instead of relying on the theory of complementarity[643], it

[638] Ibañez Colomo holds that the *prima facie* lawfulness of a practice might be challenged in certain cases, such as when considerations not inherent to the practices as such but to the relevant market led to anti-competitive effects in the specific circumstances of the case. Pablo Ibáñez Colomo, 'Legal Tests in EU Competition Law: Taxonomy and Operation' (2019) 10 Journal of European Competition Law & Practice 424, 433ff.

[639] Josef Drexl, 'Is there a "more economic approach" to intellectual property and competition law?' in Josef Drexl (ed), *Research Handbook on Intellectual Property and Competition Law* (Edward Elgar Publishing 2008) 48.

[640] See the analysis at 2.2 above.

[641] Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 653.

[642] In particular, as a cumulative requirement, as argued at 2.2 above.

[643] Which, according to him, is the most suitable one for an economic approach to competition law. Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 653.

relied simultaneously on a leveraging theory and a 'restrictive' essential facilities doctrine[644] – the new product rule.[645]

Reconciling the theory of complementarity and the new product rule may still be possible[646]: both in Magill and IMS Health the new product rule does not refer to the prevention of competing products in the primary market[647] but to the development of a secondary market[648]:

> in the balancing of the interest in protection of the intellectual property right and the economic freedom of its owner against the interest in protection of free competition, the latter can prevail only where refusal to grant a licence prevents the development of the secondary market to the detriment of consumers.[649]

Therefore, the new product condition should also be fulfilled whenever it constrains the creation of new markets. This approach very much fits the foundations of the theory of complementarity: competition law intervention would be justified to protect dynamic competition in the sense of follow-on innovation. The competition-law-imposed duty to license would be justified because opening competition by imitation in the primary market enhances competition by substitution in the secondary market.

Interestingly enough this approach finds support from the General Court wording in Ladbroke:[650]

> Even if it were assumed that the presence of the sociétés de courses on the Belgian market in sound and pictures were not, in this case, a decisive factor for the purposes of applying Article 86 of the Treaty, that provision would not be applicable in this case. The refusal to supply the applicant could not fall within the prohibition laid down by Article 86 unless it concerned a product or service which was either essential for the exercise of the activity in question, in that there was no real or potential

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[644] If one of the limitations when applying the essential facilities doctrine to IPRs is that it does not take into account the effects on innovation, it is coherent to include a rule that allows for controlling such effect. Similarly, Ibañez Colomo justifies this stringent test inasmuch the duty to license contradicts the very mechanism that IPRs use to reward inventors. Pablo Ibáñez Colomo, *Restrictions on innovation in EU competition law* (2015) LSE Law, Society and Economy Working Papers 22/2015, 18. Nevertheless, the harm to the incentives to innovate strongly depends on the return effectively obtained by the IPR holder in exchange for the compulsory licence. Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 670.

[645] See, similarly, the analysis at 2.1.2.3. Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 661.

[646] This idea was suggested by Prof. Josef Drexl in his preliminary assessment prior the thesis defence.

[647] Microsoft, however, is referred more to the expulsion of existing and competing WGOS, hence connected to the primary market

[648] Hence to new products/services in so far markets are created by the supply and demand of a product or service.

[649] Case C-418/01 *IMS Health* ECR I-5039, para 48.

[650] Again configuring the new product rule as a sufficient, self-standing requirement, for intervention. Case T-504/93 *Tiercé Ladbroke v Commission* [1997] ECR II-923, para 131.

> substitute, or was a new product whose introduction might be prevented, despite specific, constant and regular potential demand on the part of consumers.

The reference to an (unmet) 'constant and regular potential demand on the part of consumers' should be related to the creation of a new market where the supply of new products will satisfy such unmet demand. This argument is coherent and satisfactorily resolves the friction between the theory of complementarity and the new product rule. Yet it has a practical shortcoming – proving the prevention of the development of a secondary market would be difficult and, in some instances, impossible.

In the IoT sector, for example, nobody can accurately predict how many new downstream markets will be enabled by 5G within the next two years. Therefore proof of how a refusal to license might constrain the development of new markets would in most cases require uncertain predictions. In such cases, even the prevention of the creation of a new technology would not amount to the prevention of the development of a secondary market, since the existence of the market will still depend on the actual demand of the product by consumers – in absence of demand there will be no market.

In any event, as regards complex technologies, even the most thorough analysis might lose sight of some other potential downstream markets, and nothing can be done to assure that the decision of not imposing a duty to license will not prevent the development of new markets just few years – or even months – down the road.

As a result this approach minimises type I errors (false positives) – ie once it is proven that the refusal to license prevents at least one downstream market to be developed, a duty to license should be granted. But this approach also boosts type II errors (false negatives) – ie absence of proof of the prevention would not necessarily mean that new markets will not be prevented from appearing in complex dynamic sectors.

In sum, this approach and its practicalities would argue in favour of repealing the new product rule as a cumulative condition; yet it might make it workable as a self-standing ground for a duty to license in less dynamic or complex sectors.

The question remains open: should competition law promote competition by imitation by means of a duty to license if IPRs fail to promote dynamic competition either for IP-internal reasons (anti-competitive design of the IPRs) or where market-related ones (network effects, market dynamics) prevent competitors from introducing alternative technologies to the market? It is very hard to give an unconditional affirmative answer to the question. Yet, this seems to be the path followed by the GC in Microsoft where it relied on 'limitation of technical development' and on the limitation of consumer choice in connection to competition in the secondary market.

For Drexl, the problem lies in the fact that 'weakening' IPRs can discourage innovators to compete 'for the markets' that is to say, companies will invest less in R&D if they assume that at a certain point

they will be forced to license to their competitors. Nevertheless, such obligation to license will still pay back for their innovation efforts, as far as the royalties are high enough, the dynamics are not very different from markets where IPRs block competition by imitation but competition by substitution is feasible.[651] Vertically integrated SEP holders will still benefit from early mover advantages whose impact is non-negligible in sectors with strong network effects.

## 3.3 SEPs and the theory of complementarity

As argued above the theory of complementarity fits cases on refusal to license, where there is an actual blockage of competition by imitation. However, how should competition law react to other cases where competition by imitation and by substitution are blocked? The answer to this question is paramount importance to be addressed in most SEP-related cases, insofar most potentially anti-competitive behaviours tend to be more complex than a mere refusal-to-license situation.

Traditional refusal-to-license cases are characterised by a legitimate blockage of competition by imitation – as a result of the IPR's scope of protection – plus a legitimate blockage of competition by substitution – which is the result of a superior business performance that led consumers to prefer the IPR holders product over the competitors' ones. In this scenario, there are only a handful circumstances which might justify competition law intervention and a duty to license, namely those analysed above with regard to the exceptional circumstances test.

A different scenario arises where the blockage of competition by substitution is not the result of market competition. One of these cases occurs when the blockage of competition by substitution has been the result of leveraging market power between connected markets. This was a side issue not deeply explored in Microsoft, but which becomes more evident in the proceedings of the Commission against Google in the Android case and the subsequent case before the General Court.[652]

SDO-based standardisation is another example of these cases. Instead of relying on the market where the technology becomes the standard – ultimately excluding competition by substitution –, standardisation concentrates competition on the pre-market phase in order to achieve all the pro-competitive and pro-innovative effects analysed in Chapter 2. In principle, there are no reasons for competition law intervention provided that all the safeguards put in place to protect the pre-market competitive process are respected.

[651] Ibid 663. Similarly Derek Ridyard, 'Compulsory Access under EC Competition Law–A New Doctrine of 'Convenient Facilities' and the Case for Price Regulation' (2004) 11 European Competition Law Review 669, 671.

[652] European Commission, Google Android (Case AT.40099) Commission Decision of 18 July 2018, C(2018) 4761 final and Case T-604/18 Google and Alphabet v Commission ECLI:EU:T:2022:541.

The CJEU has more or less explicitly endorsed the complementarity theory in the Huawei v ZTE case.[653] The Court put the focus on the use of preliminary injunctions by a patent holder in a market where competition by substitution was blocked due to the network effects associated to the LTE standard. Strictly speaking, even though Huawei's patent(s) blocked competition by imitation and the standard blocked any possibility of competing by substitution[654], Huawei was not refusing to license it, but rather trying to license it on what it understood were FRAND terms.

The complementarity theory shows here to be adaptative. Instead of either obliging Huawei to license its IPR or prohibit the preliminary injunction for SEPs, which might have destroyed the SEPs holders' incentives to innovate, the Court defines a roadmap which entitles the patent holder to act against unwilling licensees. At the same time, it ensures that willing licensees will not be unduly blocked by injunctions, contributing to achieve the economic benefits of standardisation, derived from wide and fast adoption.

The corollary is that the argument for granting access by means of a duty to license in the cases where competition by substitution and by imitation is precluded is not necessarily to promote price competition in the technological market concerned. It is rather to create the conditions to ensure that follow-on innovation is not blocked by the refusal to license, in particular in those cases where the losses of allocative efficiency are not compensated by any gains in dynamic efficiency.[655]

This reality becomes particularly apparent in the case of standards: once a standard has been released and the market has accepted it, a duty to license does not promote competition in the technology market – if the patent is truly essential – but on the downstream markets of standard implementing products.

Overall, the analysis of the Huawei case in the light of the theory of complementarity illustrates how it is possible to take on board all the competitive and innovation dynamics of a complex case in a complex environment. Moreover, it recalls how relevant it is to take into account the effects on innovation: namely, the SEP holders' incentives to innovate, the need for access required for follow-on innovation and the desirability of reaching networks effects at a fast pace, and, consequently, to design an appropriate remedy.

This demonstrates that the theory of complementary is adaptative and suitable to face more sophisticated cases and therefore that the appropriateness of the exceptional circumstances test – and any other

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[653] Nicolas Petit, 'The Antitrust and Intellectual Property Intersection in European Union Law' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 107.

[654] Or from a broader perspective, to find a substitute to the gatekeeping patent which was blocking the access to the downstream market.

[655] Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 663.

IPR/competition test – must ultimately be balanced against the backdrop of theory of complementarity.

Therefore, competition law intervention – from a complementarity perspective – might be justified in the cases that such safeguards are not respected: this might be the case of injunctions against willing licensees – according to Huawei v ZTE – but also patent ambush cases. The ultima ratio for intervention in these cases is not (only) that SEP holders engage in an exploitative conduct, but rather that such exploitative conducts are rooted in the frustration of the basis of the pre-market competitive process which lead to a blockage of competition by substitution. Hence, if such behaviours ultimately affect competition or follow-on innovation in the concerned market or even in downstream markets, there will be a case for competition law.

In conclusion, the theory of complementarity is theoretically well grounded and provides for interpreting principles and practical guidelines to deal with cases regarding the IP-competition intersection beyond the prototypical refusal-to-license cases. For its right application, the theory requires, first, the understanding of the effects on competition by imitation of each IPR and its scope[656], and, second, deep knowledge of the market dynamics in which competition by substitution[657] should have taken place.[658] This includes actual knowledge of the feasibility of substitution in the relevant market and its technological dynamics. For example, patents have in general a stronger blocking potential in discrete industries – pharmaceutical – than in complex industries such as ICT. However, in the case of existing network effects, the potential harm to innovation of a blockage of both competition by imitation and by substitution is potentially bigger in complex sectors.

Under these circumstances the courts can decide whether the situation merits the intervention of competition law and the appropriate remedies for the case.

# 4. The rationale of disclosure rules in the light of the theory of complementarity

As analysed in Chapter 2, SDO-based standardisation results in a better overall innovative performance than *de facto* standardisation, in particular because it prevents inefficiencies and ensures a faster rate of

[656] For example, the blocking effect of a computer operating system is not the same as the blocking effect of a fairy tale written for children, albeit they are both protected by copyright.

[657] Drexl and others are of the opinion that a refusal to license can only be deemed abusive when innovation by substitution is not feasible. Josef Drexl *et al*, 'Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law (Munich) on the DG Competition discussion paper of December 2005 on the application of Article 82 of the EC Treaty to exclusionary abuses' (2006) para 22.

[658]

adoption. These facts make SDO-based standardisation very appealing for sectors characterised by strong network effects.

The consequence of this approach, however, is that the selection of the next standard will be subtracted from the market either totally – in the absence of inter-standard competition – or partially, if there are competing standards. In exchange, SDO-based standardisation displaces competition to an earlier, pre-market phase, where technologies compete to become standard essential and benefit from such status.

If compared to, for example, the IMS Health judgment, the SDOs' approach implies an artificial alteration of how competition by substitution is precluded. Instead of relying on the market's preferences that lead to a high level of acceptance and consequently to the foreclosure of competition by substitution, such foreclosure in SDO-based standardisation is the result of the incumbents' consensus (or at least from a representative part of them).

There is no doubt that the Commission positively assesses such dynamics insofar as they contribute to achieving the abovementioned pro-competitive and pro-innovative effects. Yet this endorsement is not unconditional. Over the last thirty years, the Commission has created a series of safeguards whose main aim is to ensure that such pre-market competitive process, leading to the foreclosure of competition by substitution, is a truly competitive process.[659] In other words, to protect dynamic competition in standard-setting.

These safeguards, which are put in place by the SDOs and are subject to the control or even the approval[660] of competition authorities may include a FRAND commitment, a duty to disclose SEPs or the obligation of acting in good faith, among others, and they are an integral part of the premarket competitive process. In other words, absent such safeguards, nothing ensures that the SDO standardisation is a truly competitive process.

This system has the virtue of including a competitive aspect in the standard development process – incorporating a 'meritocratic'[661] aspect otherwise absent[662] – and ensuring that the technology is available at FRAND terms for participants in the technology and downstream markets, partially alleviating the concerns related to the blockage of competition by substitution and by imitation.

For example, by requiring that the standardisation process should be open[663], the Commission aims to ensure that any firm that has a potential

[659] In words of Lundqvist, competition authorities regulate rivalry (*ex-ante* competition) through good governance rules. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 102.
[660] In the case of the FTC.
[661] Which has important pro-innovation aspect concerning the selection of a superior technology.
[662] Namely when the standard adopted by the SDO does not compete in the market against other standards.
[663] More specifically, through rules providing for unrestricted participation. European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 281. Likewise, and with an explicit reference to

contribution for the next generation standard is entitled to propose and debate it on an equal footing basis with any other contributor, which ultimately ensures that the resulting standard is based on the most innovative technologies.

The disclosure rules are also one of these safeguards aiming to protect dynamic competition in SDOs' pre-market competitive process. However, the references and the scope of such disclosure rules are specially fragmented[664], and in certain cases it is particularly challenging to define what aspects of the SDO competitive process they actually intend to protect.

The Commission has gradually shaped the functions of disclosure rules as a 'tool for preventing restraints of competition in standardisation'.[665] The rationale for disclosure rules – and in general of most of the SDO rules, such as the FRAND commitment or the openness requirement – is to protect the pre-market competitive process in order to ensure that the highest pro-innovative and pro-competitive effects be achieved in exchange of the foreclosure of competition by substitution.

This thesis has proposed above that the disclosure rules' rationale could be to bridge the asymmetries of information that are created – or increased – at the SDOs pre-market competition stage as a result of the dynamics of standardisation.[666] While this rationale is very likely to find acceptance among the whole spectrum of stakeholders, its scope seems to be more troublesome.

There are two opposed positions as regards the actual scope of disclosure rules. On the one hand, SEP holders contend that disclosure policies are aimed at preventing the existence of submarine patents that can frustrate the standardisation process. Accordingly, their major aim would be to prevent under-disclosure or patent ambushes.[667] On the other hand, implementers argue that, on top of preventing under-disclosure, disclosure rules (together with the SEP databases) aim at providing licensees with an accurate picture of patent exposure derived from the implementation, contributing to address over-disclosure.

As analysed in Chapter 3, a historical perspective is more supportive of the former.[668] Disclosure rules were put in place to prevent opportunistic behaviours that could frustrate standardisation efforts by means of patent ambushes. Still, it is without doubt that the evolution of standardisation

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standards, see European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3, para 249.

[664] See Section 3 in Chapter 3 above.

[665] Josef Drexl *et al*, *Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements* 20.

[666] Analysed in Chapter 3.

[667] Patent ambush is an opportunistic behaviour whereby a company conceals a (some) patents which are likely to be essential for a standard all along the standardisation process. Once the standard is approved and released, the SEP holder tries to leverage from these submarine patents – usually claiming higher royalties. Patent ambush is addressed in Chapter 5.

[668] As analysed in section 4 of Chapter 3.

rules and practices are aligned with the latter approach too, ie the use of disclosures as a source of information for licensing purposes.

There are some pragmatic arguments in favour of both positions. If the goal of disclosure rules is to merely prevent ambushes, it does not make sense to push for specific disclosure rules –mere blanket declarations would then indeed suffice – neither to promote the creation and improvement of SEPs databases.

Conversely, if the objective is to provide 'an accurate picture of the patent landscape'[669], there will be no point in allowing blanket declarations and not pushing for the implementation of SEP databases on each single SDO, which is not the current practice.

Using disclosures as a licensing tool requires that the SDO provides for specific disclosure, has a database and requires disclosure updates. The reality shows that not all SDO require specific disclosure,[670] very little SDOs have a fully functional database and virtually none of them requires updates. Paradoxically, the Commission's focus is substantially on those SDOs that are performing better in terms of transparency and availability of information, ie those that provide for specific disclosure and/or have publicly available databases[671], ignoring those which only allow for blanket declarations and do not offer SEPs databases.

Databases, or to be more precise, SDOs that have a database, are collateral victims of this evolution of approach. As explained by an SDO employee 'the database was not initially intended to be used as a licensing platform, neither it was prepared to receive such number of inputs (disclosures), therefore we are suffering severe technical and organisational challenges to offer suitable functionalities for these purposes while ensuring the proper functioning of the database'.[672]

Therefore, the two understandings – disclosure as a tool for the prevention of the blockage of the technology and ensuring access to it and disclosure as a licensing tool – coexist. However, from a competition perspective there are arguments to contend that both functions are not on equal footing.

First, while the failure to fulfil the first of the functions is likely to affect both pre-market competition and the licensing market, the failure to meet the second function mostly affects licensing. Therefore, the anti-competitive effects derived from the former are prospectively higher and more directly linked to the behaviour. In addition, while excessive pricing derived from insufficient information is relatively easy to remedy, it is far more complex to redesign a standard to circumvent a blocking patent after the standard has been approved.[673]

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[669] C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015) 3.

[670] Leaving aside a proper identification of the part of the specification in which the patent claim reads.

[671] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

[672] Quote from an interview with an SDO member.

[673] These issues are dealt with in detail in Chapter 5.

Second, the function of preventing the blockage of technologies has been endorsed by the Guidelines on Horizontal Cooperation and the commitment decision in Rambus,[674] whereas, in 2017, Commission Communication addressed the licensing tool function in a more or less circumstantial way.[675] Therefore, it is possible to root the first function in competition law and policy, whereas the second one can be read as something desirable from an industrial policy perspective.[676]

The corollary is that the primary and most important function of disclosure rules is to prevent the blockage of the technology.[677] Secondarily, disclosures might serve as a source of information for licensing purposes: it is too far reaching to consider them as a licensing tool as such.

Not surprisingly, the Commission has acknowledged that the current framework is fully aligned with the first of the goals – ie protecting the standard development – and still needs to improve with regard to the second – ie the use of disclosure for licensing purposes:

> The Commission notes that the current declaration system in SDOs supports the technical standard setting process and is not geared towards future SEP licensing. However, it is clear that there are net benefits in extending the current practice and purpose of declarations and databases to the creation of new transparency tools which, without losing their main purpose, can greatly facilitate licensing negotiation (sic).[678]

In practice, this pre-eminence of the prevention of the blockage of the technology function must be taken into account when evaluating SEP holders' compliance with disclosure rules in Chapter 5 and the appropriateness of SDOs disclosure rules in Chapter 6. Consequently, SDOs' disclosure rules should, in principle, refer to all aspects that participants within the SDO evaluate as part of their decision which technologies will be included into the standard. For example, if participants evaluate the trade-off between performance and royalties[679], the SDO should provide for an upfront disclosure of the licensing terms.[680]

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[674] Analysed in Chapter 5, Section 3.2.1.

[675] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 4.

[676] The fact that it was DG Growth – not acting jointly with DG Competition – that published the Communication is supportive off this understanding.

[677] The Commission also explicitly endorses this reading: 'The primary purpose of declarations is to reassure an SDO and all third parties that the technology will be accessible to users, typically under a commitment to license under FRAND conditions.' European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

[678] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 4.

[679] Whether such pre-market competition takes place on the basis of pure technological considerations or includes economic ones depends substantially on the approach of each SDO. While some of them will always choose the superior technology, others are more prone to consider the trade-offs between performance and economic aspects (not necessarily limited to royalties).

[680] It should be recalled that in this context the study analyses the disclosure of technologies and not the disclosure of licensing terms, yet similar competitive concerns affect both cases.

# 5. Conclusion

IPRs are pro-competitive, and therefore the exercise of these rights does not raise, in principle, anti-competitive concerns. This does not mean, however, that such exercise is unconditioned and, in particular, that IPRs are immune to competition law.

Compared to the US, where certain IP-based doctrines such as patent misuse or implied waiver are explicitly or implicitly influenced by antitrust considerations, the EU IPR cases tend to be less sensitive as regards the eventual anti-competitive effects resulting from IPRs. This explains why there is a larger body of case-law that addresses IPRs from a competition law perspective in the EU.

Refusal-to-license cases cover two scenarios where the anti-competitive effects might justify competition law intervention. On the one hand, there are cases where an incorrect design of the IPR or an undue extension of its scope of protection can negatively affect competition. While these cases would be better addressed by redesigning the IPR, competition law offers a second-best *ex post* solution as shown by the Magill case.

The other type of cases arises form external circumstances – usually linked to the market dynamics or the behaviour of the IPR holder – interacting with the scope of the IPR, which undermine the realisation of the pro-competitive purposes of IP legislation, restrict competition in the relevant market (such as in Volvo) or follow-on innovation (such as in Microsoft).

The Huawei case represents a step beyond the progeny of refusal-to-license cases. The traditional exclusionary theory of harm that substantiates the prior case law on refusal to license does not capture the circumstances surrounding Huawei neither allows to fully address the anti-competitive harms.

Rather than trying to twist once more the so-called exceptional circumstances test, it is worthwhile to take a step back in order to analyse all these cases – and, moreover, the IPR system – from a more principled approach. The theory of complementarity seems to be appropriate and workable for this purpose.

The theory of complementarity, in essence, assumes that IPR and competition law complement each other as regards the common goal of promoting innovation, although in a different fashion. On the one hand, IPRs limit competition by imitation but encourage innovation and competition by substitution. They encourage innovation by rewarding the R&D efforts of the IPR holder, obliging competitors to compete by substitution by designing innovative products. Such dynamic competition forces also the IPR holder to continue investing in R&D to respond to the risk of potential market entry of more innovative products.

Competition law, on the other hand, protects the competitive structure of the market, ensuring efficient competition by substitution and contributing to the dissemination of IPR protected products.

The Volvo, Magill, IMS Health cases have a common trait. In all of them the IPR blocked competition by imitation and market circumstances prevented competition by substitution, undermining the pro-competitive dynamics of the markets, which ultimately justify the IPRs' scope and even their existence.

Standard-related cases are arguably a sub-case of this situation, in particular when the standardisation is the result of a pre-market consensus and not of competition in the market. The different nature of the process that leads to the standardisation of a given technology explains why in case of market-based competition the issue is whether to grant access or not by means of a duty to license. This is different from the former cases, since in standard-related cases the focus is not only on access, but also on the terms of such access – eg FRAND and the availability of injunctions – as essential elements of the pre-market competitive process.

Although standards produce several positive effects for innovation[681], those resulting from the network effects come at a price: all participants willing to participate in markets that require the standard need to implement it. Moreover, the replacement of the standard in the short and even mid-term turns out to be very difficult as a result of the underlying switching costs, eventually leading to a situation where whole industries are locked into a standard[682], and path dependence of further advances of the technology. In other words, standards preclude competition by substitution.

Additionally, when the standard reads on one or more patents, the scope of the patent also limits competition by imitation, altering the innovation dynamics assumed by the complementarity theory: competitors cannot invent around to develop a substitute technology[683] – at least in the short/mid-term – nor copy or otherwise use the subject-matter protected by the patent. Hence the SEP holder can either prevent third parties from 'accessing' (imitating) the invention and/or extract monopolistic rents from the market without fearing the appearance of a replacing standard.

In such scenario, the losses of allocative efficiency are not compensated by the increase of dynamic competition, and the innovation-promoting effect of IPRs are hampered, at least partially. Neither the competitors, because they cannot develop substitutes, nor the SEP holder, whose

[681] See Chapter 1.

[682] The negative externalities of network effects in standardisation environments, including the lock-in effect, are analysed by W Brian Arthur, 'Competing technologies, increasing returns, and lock-in by historical events' (1989) 99 The Economic Journal 116, 126ff, see also Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 49.

[683] Oscar Borgogno and Giuseppe Colangelo, 'Disentangling the FRAND Conundrum' (2019) DEEP-IN Research Paper 3.

position is less threatened than if competition by substitution had been feasible, have incentives to engage in innovation activities.

These circumstances – a blockage of both competition by imitation and by substitution[684] – create the conditions under which competition law can be applied. However, in case of consensus-based standards, there is a series of safeguards that partially mitigate the negative effects of such blockage on static and dynamic competition.

First, while in the case of *de facto* standards technologies usually compete in the market before one of them becomes the standard, consensus-based standards are less likely to face competition in the market.[685] Thus, technologies can be adopted as part of the standard even before the first standard-compliant product has reached the market, thanks to its widespread support from industry incumbents.

However, it does not mean that the technologies are standardised without competition whatsoever. During the standard developing process each technical solution aimed at fulfilling a given standard specification, 'competes' against other technologies that prospectively can achieve the same or a similar technical effect for the standard specification purposes. Therefore, a certain degree of competition among technologies and more specifically competition in innovation or dynamic competition[686] takes place during the standard development.

Thus, the measures addressed to achieve openness, transparency and non-discrimination[687] in SDOs' procedures aim, to a certain extent, to ensure that the decisions on which technology will be included in the standard be based on the evaluation of as much technologies as possible, and that such decision rely on informed opinions of the participants in the technical committee. This is to say, that the competition in innovation takes place based on the technologies' merits and not on the asymmetries of information of the participants or on the exclusion of relevant participants.

Disclosure rules contribute substantially to technological competition in standard development.[688] They do so by contributing to diminishing asymmetries of information which are the natural result of the standardisation dynamics and preventing the creation of artificial asymmetries of information. However, there are certain discrepancies concerning the scope of disclosure rules.

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[684] '(U)nlike nonessential standard patents, SEPs do not allow for inventing or patenting around, thereby posing a barrier to entry for new entrants.' ibid 3.

[685] Although it is feasible that consensus-based standards compete in the market against other standards, which is more likely to happen in the case of IoT-related uses. See Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 139 ff.

[686] '(S)tandard-setting can be viewed as a particular form of organized competition in innovation prior to the emergence of the relevant technology market.' Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' 535. For a more detailed analysis see Chapter 2.

[687] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 163.

[688] David Alban, 'Rambus v. Infineon: Patent Disclosures in Standard-Setting Organizations' 329.

The historical evolution of the Commission approach to disclosure shows that disclosure rules´ initial function was to prevent the blockage of the technology, rather than being a proper licensing tool. Nevertheless, the latter has gained traction more recently, and the Commission is now stressing the importance of transparency not only for the development of standards, but also as regards the licensing function.

However, there are economic and legal arguments to contend that both functions cannot be deemed to be at the same footing. While preventing the blockage of the technology function has solid roots in the protection of competition, namely, the protection of the competitive process within the SDO, the licensing function, at the moment, responds more to an industrial policy concern.

# Chapter 5: Standard Essential Patents´ over and under-disclosure as a unilateral behaviour: is competition law a fix?

## 1. Introduction

While it is undeniable that disclosure rules contained in SDOs IPR policies are created as a response to certain competition law concerns,[689] such rules are not capable to prevent individual opportunistic behaviours. Deviations from SEPs disclosure rules – over and under-disclosure[690] – are two of the most representative individual opportunistic behaviours.

The phenomenon of disclosure deviations – as a unilateral behaviour – is a consequence of (1) the legal framework - defined mostly by competition law, IP law and the SDO IPR Policies - and its application by courts, competition authorities and policymakers[691]; (2) a series of exogenous factors arising from the standardisation dynamics; and (3) their impact on SEP holders internal and external practices.

As established in Chapter 3, the environment and dynamics which surround the disclosure of SEPs is highly complex and in constant evolution. As a result, SEP holders face great uncertainties about what, when and how to disclose. From a legal perspective, nevertheless, such factual dynamics do not argue in favour of ignoring the fact that SEP holders can try to benefit from these uncertainties by means of opportunistic behaviours, such as under and over-disclosure.

Moreover, and as argued in Chapter 4, the existence of an IPR should not preclude competition law from entering into play in case such unilateral conduct produces negative effects on competition or innovation.

In this context, the differentiation between scenarios where the harm to competition is caused by a wrong design or a malfunction of the IPR and those where external factors (eg market dynamics) are at its source[692] proves to be useful. Over and under-disclosure belong to the second

[689] See section 4 at Chapter 4.

[690] In short over-disclosure consists in disclosing non-essential patents as if they were essential for a standard and, in contrast, under-disclosure is not disclosing patents that are essential for a given standards.

[691] Although strictly speaking policymakers do not apply or enforce the law, the impact of mere statements by the DOJ or the Commission on individual companies´ practices in this field cannot be neglected.

[692] Josef Drexl, 'Abuse of dominance in licensing and refusal to license - A 'more economic approach' to competition by imitation and to competition by substitution' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *The Interaction between Competition Law and IP Law* (Hart Publishing 2007) 663.

scenario. While Article 102 TFEU has been applied to prevent harms to competition derived from 'patent ambush' – a deceptive behaviour linked to under-disclosure –, there is no comparable application in over-disclosure scenarios.[693]

The starting point of this Chapter is that neither under-disclosure nor over-disclosure are *per se* abusive behaviours. Rather, it is necessary to analyse in which circumstances over and under-disclosure cause competitive harm. Even in such cases, the structure of Article 102 TFEU presents limitations and might not be able to tackle the anticompetitive harms derived from under and over- disclosure in all cases.

Therefore, the aim of this Chapter is to analyse under which circumstances the negative effects for competition and innovation of over and under-disclosure – as unilateral behaviours – can (or cannot) be addressed by competition law, in particular Article 102 TFEU.[694]

In both cases, the analysis will follow similar routes: first, it will be analysed what are the incentives for SEP holders to over or under-disclose patents; second, why over and under-disclosure of SEP might be relevant for competition law (identifying the prospective theories of harm); and, third, when and under which circumstances Article 102 TFEU applies to over and under-disclosure, and, moreover, when it might succeed to address anticompetitive under over-disclosure.

Section 2 sets the basis for the assessment of under and over-disclosure from the perspective of Article 102 TFEU, notably the market definition for SEPs and the acquisition of a dominant position.

Under-disclosure as an abuse of dominant position is addressed in Section 3, including the theories of harm for applying Article 102 TFEU to patent ambush behaviours or, more broadly, to under-disclosure cases.

Finally, Section 4 analyses the suitability of Article 102 TFEU to deal with over-disclosure cases with a special reference to the – sometimes legitimate – reasons for companies to over-disclose and the characterisation of over-disclosure as an abusive behaviour.

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[693] Raising the question of whether this gap has been caused by opportunity reasons – ie absence of a suitable case – or by the inability of Article 102 TFEU to address such cases, despite their eventual negative effects. See European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 5.

[694] This analysis, however, should not be understood as precluding other legal tools from intervening to address eventually in a more appropriate way some of the situations or their consequences. For example, some US scholars are quite reluctant to deal with unilateral behaviours in standard environments from a pure antitrust perspective and prefer to apply other patent-related regimes such as the patent misuse doctrine. See Daryl Lim, 'Misconduct in Standard Setting: The Case for Patent Misuse' (2011) 51 IDEA 559 580; Daryl Lim, 'Unilateral Conduct and Standards' in Jorge L. Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 58; against Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1196 ff.

# 2. Article 102 TFEU and SEPs: introductory remarks

Article 102 TFEU prohibits undertakings with a dominant position in the market from abusing of that dominance. Therefore, the two central elements of the prohibition contained in Article 102 TFEU are, on the one hand, the existence of a dominant position, and abusive conduct, on the other.

With regard to the latter, the Article includes a non-exhaustive[695] list[696] of behaviours that can amount to an abuse. As regards the former, the pre-existence of market dominance is an indispensable requirement for the application of Article 102 TFEU that the sense that the same behaviour can either be legal or illegal depending on whether the company is dominant or not.

A key element for assessing dominance is the definition the (relevant) market in which the abusive behaviour takes place. While it is not very problematic to affirm the dominance of a company that holds a SEP needed for the only standard in the market, the issue becomes more complex when different standards compete to satisfy the same or comparable needs.

The aim of this section is to analyse the structural elements of Article 102 TFEU which are common to both over and under-disclosure, namely, the market dominance, the objective economic justification and the (absence of) causation requirement. The characterisation of under and over disclosure as abusive behaviours – and their potential anticompetitive effects – as well as certain particularities of each behaviour will be addressed within the subsequent sections.

## 2.1 Dominant position

### 2.1.1 The criteria for market definition in standardisation

The principles to define the relevant market are established by the Commission in its 'Notice on the definition of relevant markets'[697] according to which demand substitutability, supply substitutability and potential competition are the main sources of competitive constraints.[698]

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[695] See Case 6-72 *Continental Can v Commission* [1973] ECR 1973, para 26; C-95/04 P *British Airways v Commission* ECR I-2331m para 57; or Joined Cases C-395/96 P and C-396/96 P *Compagnie maritime belge transports a.o. v Commission* [2000] ECR I-1365, para 112.

[696] Namely, '(a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions; (b) limiting production, markets or technical development to the prejudice of consumers; (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.'

[697] European Commission, 'On the definition of relevant market for the purposes of Community competition law' (Notice) ]1997] C372/5.

[698] ibid para 13.

Broadly speaking, demand side substitutability refers to the range of products that are considered by the consumers as substitutes, requiring that those products satisfy the same need. Supply side substitutability is linked to the ability of competitors to respond to an increase in the price in the relevant product by marketing relevant products (substitutes) – ie whether increases on price can immediately attract competition[699] – and finally, potential competition refers to whether is feasible for new competitors to enter the market and its effect on competition.

According to these principles, is the licensing market for an individual SEP the relevant market to assess the dominance? This was the conclusion of the Commission in the Motorola case.[700] Relying on its own set of principles for defining the relevant market[701], the Commission indeed held that the licensing of the technologies on which the SEP reads was 'a separate relevant product market'.[702] To arrive to such conclusion the Commission, first, rejected 3G, 4G[703] and other 2G standards[704] as potential substitutes from the demand side, and second, stated that the GPRS standard could not be implemented without infringing Motorola´s patent.[705] Finally, the Commission ruled out the supply-side substitutability due to the essential nature of the SEP.

Although a SEP could constitute a separate market by itself, it does not mean that a SEP will always constitute a separate market, in particular in the cases where other technologies[706] can perform a comparable function, hence there are substitutes.

Whereas, in principle, this differentiation might be of little relevance when there is a single standard in the market[707], the 'market essentiality' of the standard is very likely to be a relevant aspect of the analysis of dominance with a view to increasing inter-standard competition related to IoT connectivity.[708]

### 2.1.2 Lock in effect and dominance

As analysed in Chapter 2[709], the lock-in effect is the source of dominance in SEP cases. The intrinsic nature of the lock in-effect gradually excludes

[699] Without a significant increase of costs for competitors. ibid para 21.
[700] European Commission, *Motorola - Enforcement of GPRS standard essential patents* (Case AT.39985) Commission Decision of 29 April 2014, C(2014) 2892 final.
[701] As established in European Commission, 'On the definition of relevant market for the purposes of Community competition law' (Notice) ]1997] C372/5.
[702] European Commission, *Motorola - Enforcement of GPRS standard essential patents* (Case AT.39985) Commission Decision of 29 April 2014, C(2014) 2892 final, para 213.
[703] ibid paras 194 to 200.
[704] ibid paras 201 to 206.
[705] Ibid para 208.
[706] Included within the same standard, a different one or outside any standard.
[707] Although it can be also relevant for determining the relevant moment for assessing market dominance. Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 142.
[708] Ibid 139.
[709] See subsection 3.1.2.3 above for an overview of the relationship between lock-in and market power.

any substitute technology. In the case of SDO-based standards, it is possible to differentiate two types of look-in effects.

The lock in effect can take place at industry level, when the standard expels any other competing standard or discourages the creation of competing standards. Therefore, any operator in the market requiring the functionality provided by the standard and access to the markets which require such technology, will forcedly need licences for all SEPs that protect the standardised technology.

Additionally, the lock-in effect can also take place at company level, regardless of whether the entire industry is locked in. Thus, even if a company can, *in abstracto*, opt for implementing different competing standards the specific investment it has made in one of them can lead to a situation where it is locked into such standard.

While the existence of a lock in at industry level can easily establish a dominant position by the SEP holder, this is not that clear when the lock-in affects just individual companies. Indeed, the market power stemming from a patent which is essential for the only standard in the market is higher than the one that an essential patent for one of the competing standards in the market, yet under certain circumstances it is possible that the market power in both scenarios is comparable.[710] The question is therefore whether individual lock-in can result in dominance.

There are three possible approaches to answer this question: the first one is to compare company level lock-ins with the circumstances in the Commission's Motorola case. Indeed, each of the standards that might satisfy the need can be considered when analysing demand-side substitutability, while eventual appearance of technologies that can perform the same specific function within the standard – ie satisfy the same need in a different way – will be part of the supply-side substitutability.

The second one is to apply, directly or by analogy, the aftermarket analysis[711] by relying on the existence of two markets or, at least, two separate business decisions.[712]

The third possible approach, very close to the former, is to distinguish two separate markets, relying more on the difference of the needs that each 'product' – the standard and the SEP – cover, and then consider the interdependence between them.

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[710] 'At this point, the patent holder is no longer at risk of being designed out of the standard and the manufacturer's cost of switching from the standardized technology to an alternative may be prohibitive (a situation often referred to as "lock in"). Lock-in dramatically increases the patent holder's leverage in any ensuing licensing negotiation, as the locked-in manufacturer would, in theory, be willing to pay the patent holder any amount up to its switching costs simply to avoid losing the investment already made in adopting the patented technology and the standard, more broadly.' Jorge L Contreras, 'Much Ado About Hold-up' (2019) University of Illinois Law Review 875, 882.

[711] Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 144.

[712] The primary market being the market for connectivity standards and the secondary market(s) composed by each one of the different technologies needed to implement the standard specification.

Under the second and the third approaches, it is possible to identify two different needs that justify the differentiation between markets. On the one hand, the standard might satisfy, for example, a need for connectivity that meets certain safety, reliability or latency criteria. On the other hand, the SEP protected technology satisfies the need defined as performing a specific function within a given standard. Competing 'products' can also be other standards that meet identical connectivity criteria, in the primary market, and the technologies which can perform an equivalent function, in the secondary market.

Both aftermarkets and separate markets approaches have their virtues. They allow to differentiate the two main sources of dominance – ie being a market essential standard and being a standard essential patent. Both approaches also allow for analysing dominance in case of existing competing standards, in the aftermarket case by relying on the interdependence between primary and secondary markets and in the case of separate markets by narrowly construing the need to be satisfied in the secondary market – ie the need to perform a specific function within a specific standard.

However, applying the aftermarket approach in standard-related cases presents certain limitations. Compared to traditional cases of aftermarkets such as for car spare parts, opting for one standard or another is not an actual buying decision which implies a transaction. In principle, even after choosing one standard, a company can easily switch to another one provided that it has not made specific investments related in the standard implementation. This limitation can be extended also to the two markets approach.

Therefore, pushing for the two-markets or the aftermarkets approach might be a little artificial, in particular, considering that the approach of the Commission in Motorola seems to be more coherent and adaptive, although not completely satisfactory. By conceiving competition between standards as an expression of demand-side substitutability[713], it is feasible to measure the degree of dominance in terms of price elasticity. Price elasticity will be higher when the implementer has not yet made a choice between different standards, and it will gradually decrease as the implementer obtains and pays licence fees to other SEP holders. Thus, price-elasticity turns out to be a measure for lock-in.

Hence, dominance arising from SEP ownership when there are competing standards cannot be evaluated *in abstracto* and requires considering the circumstances that affect the demand-side substitutability, namely, price elasticity.

Thereby, the substitutability between 'competing' standards requires, first, to assess if, at a functional level, all the competing standards could perform a comparable function in relation to the functionalities required by the implementer.

[713] Defined by the Commission as the 'determination of the range of products which are viewed as substitutes by the consumer'. European Commission, 'On the definition of relevant market for the purposes of Community competition law' (Notice) [1997] C372/5, para 15.

Subsequently, it will be needed to prove the existence of individual lock-in. This requires to take into account the investments[714] made by the implementer to implement a standard A, rendering the switching to an alternative standard B very burdensome or even unfeasible.

Such assessment should be done by taking into account the specific circumstances of the case, in particular, already concluded licences and manufacture of standard compliant products.[715] Consequently, the SEP holder should be deemed to be dominant in the market defined by its very own SEP whose specific function cannot be satisfied by any other technology – inasmuch as it is essential – and the lack of substitutability of the an entire standard which performs an overall comparable function due to implementer´s lock-in.

## 2.2 Efficiency defences as an objective justification

Article 102 TFEU does not explicitly provide for the possibility of 'healing' an abuse in the same fashion Article 101(3) TFEU does. However, the case-law has been gradually opening the possibility for the alleged infringer to prove that there is a legitimate objective justification for the abusive behaviour (ie to protect its 'own commercial interests').[716]

Moreover, switching from a 'form-based' to an 'effects-based'[717] approach to the enforcement of competition law opened the door to include efficiency considerations – as objective economic justifications, following the example of Article 101(3) TFEU, in a way which not that long time ago was alien to Article 102 TFEU.

This possibility, that is explained by the need of treating consistently behaviours that fall within the scope of both Articles 101 and 102 TFEU[718], is an inherent consequence of the more economic approach. Hence, to put the focus on the economic negative consequences of a given behaviour for assessing abuse requires to also take into account the positive economic effects in the framework of the objective justification. The inclusion of efficiency considerations as objective justifications for behaviours falling under Article 102 TFEU was pushed by the

[714] Investments which include, among others, "contractual commitments, purchases of durable goods and capital equipment, employee training, development or procurement of information technology, identification and outfitting of suppliers, and accumulation of customer loyalty" Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 49.

[715] It should be recalled that in many sectors it is a common practice to produce standard compliant products before signing licensing agreements due to the relevance of first-mover advantages. See Cody M Akins, 'Overdeclaration of Standard-Essential Patents' (2019) 98 Texas Law Review 579, 592.

[716] See Case 27/76 *United Brands v Commission* ECR 1978 -00207 para 189; T-203/01 *Manufacture française des pneumatiques Michelin v Commission (Michelin II)* [2003] 2003 II-4071, para 55.

[717] See Lars-Hendrik Röller and Oliver Stehmann, 'The year 2005 at DG competition: The trend towards a more effects-based approach' (2006) 29 Review of Industrial Organization 281. Yet this switch to an effects-based approach – in particular in the Guidance Paper – has been criticised for being excessively formalistic Pınar Akman, 'The Reform of the Application of Article 102 TFEU: Mission Accomplished?' (2016) 81 Antitrust Law Journal 145, 149ff.

[718] Michael Kort, 'Intellectual property and Article 82 EC', in Wolrad Prinz zu Waldeck und Pyrmont et a (eds), *Patents and Technological Progress in a Globalized World - Liber Amicorum Joseph Straus* (Springer 2009) 173.

Commission[719] in its Guidance Paper on this provision whose paragraph 30 almost *verbatim*[720] imports the requirements of Article 101(3) TFEU[721] and was equally accepted in the case-law of the EU Courts.[722]

Nevertheless, in practice, efficiency justifications rarely succeed to support an exemption in the framework of Article 102 TFEU.[723] A possible explanation is the asymmetry between the duties of the Commission – who only needs to prove the likeliness of anticompetitive effects – and of the defendant – which needs to show the absence of net harm to consumers.[724]

Yet it is feasible to think of some potential circumstances that could support an efficiency-based objective justification in under-disclosure and over-disclosure cases, as it will be discussed in the following subsections.

## 2.3 The (absence of) a causation requirement

In brief, the causation requirement derives from US antitrust law and imposes an additional burden to the competition law enforcer. Besides proving that the company is dominant and incurs in an abusive behaviour, the enforcer needs to prove that dominance, somehow, enables the abuse. While the causation requirement can arguably be an important hurdle in disclosure-related cases from a US perspective[725], it is not a requirement for the application of Article 102 TFEU. The CJEU make such point explicit in Continental Can.[726]

> Such being the meaning and the scope of Article 86 of the EEC Treaty, the question of the link of causality raised by the

[719] 'Article 82 does not expressly foresee the possibility of "exempting" abusive behaviour under Article 82 because of efficiencies. However, we must find a way to include efficiencies in our analysis. We must take into account that the same type of conduct can have efficiency-enhancing as well as foreclosure effects.' Neelie Kroes, 'Tackling Exclusionary Practices to Avoid Exploitation of Market Power: Some Preliminary Thoughts on the Policy Review of Article 82' (2005) 29 Fordham International Law Journal 593, 598.

[720] Nazzini however notices certain discrepancies between the wording of para 30 of the Guidance Paper and the wording in prior case-law, which affect the role of the consumer welfare limb. Renato Nazzini, *The foundations of European Union competition law: The objective and principles of Article 10* (Oxford University Press 2011) 305ff.

[721] European Commission, 'Guidance on the Commission's enforcement priorities in applying Article 82 EC Treaty to abusive exclusionary conduct by dominant undertakings' [2009] OJ C45/7, para 30.

[722] See C-95/04 P *British Airways v Commission* ECR I-2331 para 86; Case C-52/09 *TeliaSonera* ECR I-527 para 76; C-209/10 *Post Danmark* [2012] ECLI:EU:C:2012:172, paras 41-42. See also the analysis of the objective justification requirement in refusal-to-license cases in Chapter 4.

[723] Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 283ff.

[724] And additionally the highly speculative nature of the balancing process between likely anti-competitive effects and efficiencies. See Pınar Akman, 'The Reform of the Application of Article 102 TFEU: Mission Accomplished?' (2016) 81 Antitrust Law Journal 145, 159ff.

[725] 'Perhaps the thorniest issue for the FTC in Rambus was causation'. M Sean Royall, Amanda Tessar and Adam Di Vincenzo, 'Deterring Patent Ambush in Standard Setting: Lessons from Rambus and Qualcomm' (2009) 23 Antitrust 34, 35. Yet the reading of the causation requirement in US Rambus has been criticised. See Maurice E Stucke, 'How Do (and Should) Competition Authorities Treat a Dominant Firm's Deception' (2010) 63 Southern Methodist University Law Review 1069, 1111ff. See also Claudia Tapia, *Industrial property rights, technical standards and licensing practices (FRAND) in the telecommunications industry* (Carl Heymanns 2010) 115ff.

[726] Case 6-72 *Continental Can v Commission* [1973] ECR 215, para 27; Case 85/76 *Hoffmann La Roche* [1979] ECR 461, para 91.

> applicants which in their opinion has to question exist between the dominant position and its abuse, is of no consequence, for the strengthening of the position of an undertaking may be an abuse and prohibited under Article 86 of the Treaty, regardless of the means and procedure by which it is achieved, if it has the effects mentioned above.

The argument of causality was raised by Continental Can representatives, which in essence argued that a merge between a dominant firm and a competitor cannot be deemed anti-competitive due to its effects. For them the mere merge only provokes changes in the structure of the market and does not justify intervention on the basis of Article 86 EEC Treaty, because is not a 'means through which the abuse is effected'.[727]

The Court however, contends that inaction in such cases will allow recently merged (dominant) competitors to incur in behaviours that prior to the merger would have triggered Article 85 EEC intervention.

> In the absence of explicit provisions one cannot assume that the Treaty, which prohibits in Article 85 certain decisions of ordinary associations of undertakings restricting competition without eliminating it, permits in Article 86 that undertakings, after merging into an organic unity, should reach such a dominant position that any serious chance of competition is practically rendered impossible.[728]

Even those scholars who argue that Article 102 TFEU might be subject to the causation requirement acknowledge that neither Rambus nor AstraZeneca support this reading, although they consider that those cases where causation is missing are exceptional.[729]

Nevertheless, some scholars read Continental Can as excluding a narrow type of causation – a direct causal link between dominance and abuse – and argue that Article 102 TFEU may require an (instrumental) causal link not between the dominant position and the abusive behaviour, but rather between the anticompetitive effect – ie manipulation of market structure – and the dominant position. [730]

Although the issue of causation is and will remain a subject of further controversies at academic level, Continental Can and its straightforward rejection of the requirement of causality remains good law, and for the purposes of this thesis this debate will not be developed any further.

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[727] Case 6-72 *Continental Can v Commission* [1973] ECR215, para 19.

[728] ibid, para 25.

[729] Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 264 and 724ff.

[730] See Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 140ff. Similarly Nazzini 'Only undertakings having the ability to restrict effective competition can bring about the type of competitive harm that Article 102 aims at preventing. This demonstrates a causal link must exist between the dominance and the competitive harm (…). Renato Nazzini, *The foundations of European Union competition law: The objective and principles of Article 102* (Oxford University Press 2011) 178.

# 3. Under-disclosure in the light of Article 102 TFEU: patent ambush (and beyond?)

As discussed in Chapter 4 above, disclosure rules are included within SDOs IPR Policies – and are endorsed by the Commission – as a mean to protect the pre-market competitive process which takes place within SDOs. Nonetheless, the system as such is not very useful to deter[731] – let aside to repress –under-disclosure, where a participant in standard-developing fails to disclose its essential patents and later attempts to collect excessive royalties, or plainly refuses to license the technology.

The most representative case of SEP under-disclosure is patent ambush. In such case, the SEP holder fails to disclose a patent during the standard development. Unaware of this patent, the technical committee designs the standard specification in a way that reads on the patent, and once the standard is created and released, the patent holder seeks to collect excessive royalties from implementers.

Understood in a broad sense, patent ambush could also comprise those cases where failure to disclose an essential patent is followed by a refusal to license. Yet this distinction does not contribute to clarity – rather the opposite – when analysing the different theories of harm. For this reason, any mention to patent ambush in this section should be understood as 'narrow' patent ambush, unless otherwise indicated.

However, the scenarios where under-disclosure is present are not limited to patent ambush cases. Since the essentiality of the patent is of a technical nature and the scope and timing of the duty to license depend to a large extent on the SDOs' IPR policies[732], it is possible that a SEP is not disclosed to the SDO because of the mere lack of awareness of the SEP holder.[733] Hence, under-disclosure occurs here in full compliance with the SDO's IP policy.[734]

In both cases, under-disclosure can render ineffective the safeguards discussed in Section 4 of Chapter 4 and its mitigating effects on harm to static and dynamic competition. Under-disclosure leads to a situation where the standard and the non-declared SEP block competition by substitution and imitation, respectively. The question thus arises whether competition law, namely, Article 102 TFEU[735] should come into play to

[731] Just in a few cases the SDO IP policies include penalties and/or remedies against the failure to disclose, that is, for example the case of VSO- VITA IPR policy, which sanctions failure to disclose with the obligation to license at royalty-free terms. Article 10.4 VITA, 'Policies and Procedures' (VSO, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022.

[732] As analysed above in Chapter 3 Section 3.2.

[733] Either of the actual scope of the patent or of the standard specification.

[734] The more lenient and vaguer the IPR policy is, the more likely this scenario is.

[735] The role of the IP policies in preventing, deterring and eventually repressing such behaviours in the light of Article 101 TFEU will be discussed in Chapter 6.

prevent harm to competition and to what extent it can effectively succeed in doing so.

For the sake of clarity, the term 'under-disclosure' hereby refers to the absence of disclosure of a patent that reads on a standard specification. In other words, here under-disclosure is limited to the patent/standard specification side of essentiality (standard essentiality) and not to the specification/implementation side (market essentiality).[736]

The reason for focusing only on 'standard essentiality' is two-fold. First, it is in the pairing of claims and technical specifications where SEP holders participating in technical committees are more knowledgeable than other operators in the market, and therefore where asymmetries of information can play in their favour. Second, assessing the market essentiality of each standard compliant product and its respective level of patent/specification exposure goes far beyond of SDOs competences and mandate.

## 3.1 Incentives for under-disclosing

As analysed in Chapter 3, very often under-disclosure occurs due to SEP holder's lack of awareness as regards the essentiality of the patent. Sometimes the SEP holder's picture about its portfolio and its relevance for the standard is simply not as perfect as it is often assumed. In addition, the vagueness and flexibility of the SDO IPR policies may contribute to produce under-disclosure cases.

Under-disclosure often remains unnoticed. Inasmuch as the SEP holder licenses the undisclosed SEP in pre-stablished licensing terms (eg FRAND) and licensees enjoy freedom to operate, the absence of or late disclosure do not negatively affect the standardisation process and licensing dynamics. This changes, however, if the SEP holder attempts to extract excessive royalties, as the effects of under-disclosure would then be comparable to those of patent ambush.

Another problematic case occurs when the technology that was not duly disclosed was selected by the SDO members precisely because they thought it was patent-free.

Most cases of under-disclosure are due to lack of awareness and only a small fraction of them result in anti-competitive harms. This, however, cannot obscure that in certain situations under-disclosure can be opportunistically used by companies. A company might wilfully engage in under-disclosure to try to benefit from the inclusion of its patents in the standard and at the same time try to circumvent the FRAND commitments.

One obvious incentive for under-disclosing a patent is trying to circumvent the FRAND or RF commitments and, in this way, extract

[736] See Chapter 3, Section 2 for a deeper explanation of the differences between market and standard essentiality.

higher royalties. If a company has not declared its willingness to license the patent in such terms to the SDO, it is not bound to any obligation. Upfront, the nature of the obligation of licensing on pre-established terms is of a contractual nature.

Companies prefer to walk on the safe side and refrain from under-disclosure[737], which explains why strategic under-disclosures remain a rather rare occurrence. Yet the current framework does not decisively prevent SEP holders from evaluating the risks and engaging in under-disclosure – or more specifically in this case, patent ambush.

Patent holders might also hide their patents to increase the chances that their technologies are included within the standard. As analysed above[738], SDO-based standardisation is a pre-market competitive process. The parameters of such competition are the technological merits, the price of the technology (including royalties and costs of implementation) and their trade-off. SDOs can decide whether these three parameters are equally important or if they want to prioritise some of them. For example, if technological superiority of the standard is paramount, the SDO will promote the technical criteria – requiring the SEP holder of the most meritorious technology to license on FRAND terms. In other cases, the SDO might be more concerned about the cost of the technology and therefore promote a patent-free or royalty free approach to licensing.

Concealing the existence of the patent and/or the lack of willingness to license on RF or FRAND terms can favour the selection of a technology by the SDO that otherwise would not have been chosen, either because it does not meet the requirements of eligibility (as defined by the SDO) or because failure to disclose would alter the evaluation of the above-mentioned parameters – such as eg the trade-off between technological merits and costs. Thus, under certain circumstances, SEP holders have incentives to beat other competing technologies by strategically concealing some patents.

## 3.2 Under-disclosure and harms to competition

Competition law intervention is justified only to the extent that the behaviour causes actual or potential harms to competition. For the purpose of assessing harm to competition resulting from under-disclosure, it is worthwhile to differentiate between patent ambush cases and other under-disclosure cases. Patent ambush consists of two potentially anticompetitive behaviours – even if taken individually –: (1) concealing the existence of a patent that reads on the standard and (2) after the standard is approved and consequently the patent becomes essential, try to extract excessive royalties.

[737] Although the legal consequences of under-disclosure might not be that deterrent. To this moment there are no decisions in the EU, nor in the US, that address over-disclosure. Since there is a higher likelihood to err when disclosing, companies are more prone to engage in actual over-disclosure rather than in under-disclosure.
[738] See section 4 Chapter 3.

It remains unclear whether the mere claim of excessive royalties for a SEP licence results in anti-competitive harm and similarly, whether the mere concealment of patents is enough to justify a competition law-based intervention. On top of that, it is legitimate to question if the deception consisting in under-disclosing SEPs can only be prosecuted in patent ambush cases or, on the contrary, if there are other circumstances under which competition law is potentially actionable.

The answer to these questions largely depends on the anticompetitive effects of each kind of behaviour, taken in isolation or together, and therefore this section aims to explore the different theories of harm which might be relevant for answering them.

### 3.2.1 The takeaways from the Rambus case

The Commission Decision in the Rambus case[739] should be the starting point for analysing under-disclosure in the specific form of patent ambush from an EU competition law perspective.

Overall, the Commitment decision in the Rambus case reflects, at least in a superficial way, the four competitive concerns – or, even more, theories of harm – which could justify an Article 102 TFEU intervention against under-disclosure, namely (1) claiming excessive royalties, (2) exclusion of technological alternatives, (3) frustration of the standardisation procompetitive effects and (4) harm to trust in the standardisation process.[740]

Rambus Inc was a company that, between 1991 and 1996, participated in JEDEC's technical committees for the development of a DRAM[741] standard used for computer memory storage. During this time, Rambus not only concealed some of its patented technologies from the rest of the participants in the standardisation process, but also amended some of its own patent applications to read on the standard.[742]

In 2000, once the DRAM standard was adopted, Rambus proceeded to claim royalties which were, allegedly, not FRAND. Such behaviour triggered complaints from several implementers[743] and resulted in proceedings against Rambus in the US and the EU.

Rambus is the first and only under-disclosure case that has been dealt with in both the US and the EU. Although the facts at stake were

[739] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.
[740] Analysed within the next subsection 3.2.1.
[741] Dynamic Random Access Memory.
[742] As stated by the FTC and the Commission. FTC, 'Opinion of The Commission In the Matter of Rambus, Inc. Docket No. 9302', 67 <www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf> accessed 1 November 2022; European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, para 40 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.
[743] Namely, Infineon Technologies AG and Hynix Semiconductors Inc.

substantially the same, the enforcers had to apply different legal rules and ultimately reached different results.[744]

As regards the legal bases, under Section 2 of the Sherman Act the 'attempt of monopolization' is an unlawful behaviour and Article 5 FTC Act contemplates deceptive acts as potential unlawful behaviours. In the EU, in contrast, Article 102 TFEU requires dominance as a prerequisite for its application and there is no equivalent to Article 5 FTC, forcing the Commission to construe its objections in a different way.[745] Therefore, *in abstracto*, US legal bases were better suited than Article 102 TFEU to tackle the behaviour.

On 27 of July 2007, the Commission decided to start proceedings against Rambus and submitted a Statement of Objections[746] to Rambus based on the alleged infringement of former Article 82 EC. The case was concluded after a commitment[747] from Rambus, which explains why the Commission's reasoning was not reviewed by the EU Courts. According to some authors the Commission's assessment of the case, if it had been included in an infringement proceeding, would not have found support from the Courts.[748]

The Commission termed Rambus' conduct as a 'patent ambush', which is defined as an 'intentional deceiving conduct' consisting in 'not disclosing the existence of the patents and patent applications which it later claimed were relevant to the adopted standard'.[749]

According to the Commission, Rambus' behaviour consisted in non-disclosing 'the existence of patents and patent applications which were later claimed to be relevant to the adopted standard"[750] to later 'claiming royalties for the use of its patents (...) at a level which, absent its allegedly

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[744] The FTC initially charged Rambus for anti-competitive behaviour, considering that, absent the conduct, JEDEC might have either designed around Rambus technologies or requested a FRAND commitment from Rambus. However, the FTC decision was lately rejected by the District of Columbia Court of Appeals (DC Circuit) that, in essence, established that the FTC failed to provide enough evidence to support that this 'what if' scenario might have had taken place. See *Rambus Inc v FTC*, 522 F.3d 456 (DC Cir 2008). For a criticism of the reasoning of the DC Circuit see Jonathan Hillel, 'Standards× Patents÷ Antitrust=∞: The Inadequacy of Antitrust to Address Patent Ambush' (2010) 9 Duke Law & Technology Review 1, paras 25ff.

[745] Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World* - Liber Amicorum Joseph Straus (Springer 2009) 156. See also Eliza G. Petritsi, 'The Case of Unilateral Patent Ambush Under EC Competition Rules' (2005) World Competition 25, 31ff.

[746] European Commission, 'Antitrust: Commission confirms sending a Statement of Objections to Rambus' (2007) MEMO/07/330 <http://europa.eu/rapid/press-release_MEMO-07-330_en.htm?locale=en> accessed November 2022.

[747] Which was included by the Commission in its Commitment Decision. European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[748] See Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 719. Similarly, Petit considers the case to be a 'weak precedent'. Nicolas Petit, 'Injunctions for Frand-Pledged Seps: The Quest for an Appropriate Test of Abuse Under Article 102 TFEU' (2013) 9 European Competition Journal 677, 706.

[749] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[750] ibid para 1.

intentional deceptive conduct, it would not have been able to charge'.[751] This assessment points to exploitative abuse as the underlying theory of harm.

With regard to dominance, the Commission considered that the relevant market was the worldwide market[752] for DRAM interface technology[753] to which JEDEC-compliant synchronous DRAM chips contributed 96% of worldwide sales.[754] Consequently, virtually every chip manufacturer required access to Rambus' patented technology.[755]

In addition, the lock-in effect prevented, on the one hand, Rambus' competitors from developing an alternative standard – due to the substantial costs and efforts that creating a standard entails – and, on the other hand, chip manufacturers from switching to an alternative technology – due to the significant switching costs.[756]

Yet the Commission went beyond a mere exploitative abuse reasoning and analysed the effects of the deception in the current and future innovative performance of the standardisation efforts. In particular, it took account of the negative effects of the deception on trust in the standard developing process among SDO members.

Considering the circumstances of the case, namely, the 'intentional breach of JEDEC's policy and the underlying duty of good faith in the context of standard-setting' resulting in 'a deliberate frustration of the legitimate expectations of the other participants in the standard setting process´, the Commission considered that by asking for 'royalties (...) at a level which, absent its allegedly intentional deceptive conduct, it would not have been able to charge'[757] may amount to an abuse of dominant position.[758]

In particular, Rambus' deceptive behaviour undermined confidence in the standardisation process which in the chipset sector was 'a precondition to technical development and the development of the market in general to the benefit of consumers'.[759]

After analysing the pro and anti-competitive effects of collective standard setting and the role of SDO's IPR policies to promote the former and prevent the latter[760], the Commission analysed JEDEC patent policy concluding that 'JEDEC patent policy and the underlying duty of good faith intended to provide members with an opportunity to develop open standards free from potential patent claims' and overall, that JEDEC's

[751] ibid para 3.
[752] ibid para 17.
[753] ibid para 16.
[754] ibid para 19.
[755] ibid para 21.
[756] ibid paras 22-25.
[757] Although the Commission refrained from using the expression 'excessive royalties', it will be used hereinafter for the sake of clarity.
[758] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022, para 28.
[759] ibid para 29.
[760] ibid paras 30 to 35.

patent policy was designed to prevent companies from capturing the standard by not disclosing their patents and to ensure the access to licences on reasonable terms, in the event that patented technology was included.[761]

While the Commission read JEDEC's patent policy as requiring or expecting the disclosure of potentially essential patents[762] in the US it was largely debated whether this was actually the case.[763] In any event, the Commission stated that a breach of the patent policy is not a necessary requirement as much as the behaviour had influenced the standard process by suppressing relevant information and consequently distorted the decision-making process.[764]

In its preliminary assessment, the Commission considered that Rambus planned to capture the DRAM standard by tailoring its patents to 'gain control' over standard-compliant products[765] and by not disclosing its patents to prevent the standard from '[being] adopted on the basis of all the relevant information'.[766] For the Commission, Rambus acted with full knowledge about JEDEC's requirement to disclose its patents and the underlying good faith duty as well the relevance of its patents for JEDEC standard setting.[767]

In addition, the Commission argued that there was evidence pointing to that, absent the deception, JEDEC member would have designed a patent-free standard. Particularly this evidence was based on cost-related concerns, the exceptionality of royalty payments on memory interfaces, the willingness of members to forego performance in favour of lower costs and the existence of alternative technologies.[768] In other words, by means of the concealment, Rambus excluded other (non patented) competing technologies from the race to the standard[769], which amounts to exclusionary behaviour.

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[761] ibid para 38.

[762] ibid para 36.

[763] The DC Circuit even argued that such assumption from the FTC was based on 'rather weak evidence' *Rambus Inc v FTC,* 522 F.3d 456, 469 (DC Cir 2003), as did the majority in Rambus v Infineon, see *Rambus Inc v Infineon Technologies AG,* 318 F.3d 1081, 1102 (Fed Cir 2003). On the contrary, both the FTC and the dissent in Rambus v Infineon understood that there was sufficient evidence to conclude that Rambus was under a proper duty to disclosure. FTC, 'Opinion of The Commission In the Matter of Rambus, Inc. Docket No. 9302', 66 <www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf> accessed 1 November 2022; and *Rambus Inc v Infineon Technologies AG,* 318 F.3d 1081, 1118 (DC Cir 2003).

[764] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009 para 39 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[765] ibid para 40.

[766] ibid para 41.

[767] ibid para 42.

[768] ibid paras 43-46. Paradoxically the DC Circuit overlooked such evidence when arguing that JEDEC would have standardised the same technologies, *Rambus Inc v FTC*, 522 F.3d 456, 466 (DC Cir 2003).

[769] '[i]t was the preliminary view of the Commission that there was significant evidence that during Rambus' membership of JEDEC, a broad range of alternative technologies to those that were eventually included in the JEDEC DRAM standard was available. The alternative technologies to the ones which were eventually included in the standard were technically and commercially feasible. There is no evidence indicating that there were patents reading on the alternatives that could have been incorporated into the standards.' Ibid para 46.

Such approach deepens 'prevention-of-blockage' function, which cannot be deemed a mere *ex post* aim: what the Commission shows in Rambus is that the IPR Policy and the underlying duty of good faith are structural elements of the SDO-based standardisation process and that their breach can hinder – at least partially – its pro-innovative and pro-competitive effects.

In sum, the Commission in Rambus sketched all potential harms to competition associated to patent ambush and specified the eventual theory of harm applicable in the case at hand. The veracious potential theories of harm are analysed in the following.

## 3.2.2 Patent ambush as an exploitative abuse

### 3.2.2.1 Preliminary considerations: price theory and SEPs licensing

Although the criteria for portfolio pricing will be addressed in depth in section 4 below, it is worth to make here some considerations about SEP licensing prices from a competition law perspective.

Dominant undertakings charging excessive royalties fall within a sub-category of exploitative abuses. However, in SEP-related cases the 'excessiveness' of prices should be evaluated against the specificities of standardisation, which are not present in other cases – eg the impossibility of competing by substitution.

The price of SEPs licences would always exceed the market price under conditions of perfect competition.[770] In classical price theory, the fixation of the price – both in perfect competition and in monopolies – is linked to the marginal cost – ie the cost of producing an additional unit of a 'product'.[771]

The marginal cost for an SEPs licence is the costs incurred to negotiate and conclude a licence agreement. Although substantial, these costs are of relatively low importance if compared to the costs of developing, protecting and standardising a technology.[772] This is one of the reasons why Lemley and McKenna advocate departing from marginal costs as the parameter that defines the competitive level of prices in IPR-based industries.[773]

Indeed, if the price of the licence was artificially fixed at a perfect competition level, this would give rise to an actual risk that the SEP

[770] This would be the case for any IPR that is not constrained by the possibility of competition by substitution.

[771] In addition to the fact that a precondition for a perfectly competitive market is that both consumers and suppliers have perfect information, while SEP licensing is strongly affected by information asymmetries.

[772] In a more general fashion, the decreasing relevance of marginal costs in our society is explained by Jeremy Rifkin, *The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism* (St. Martin's Press 2014).

[773] Mark A Lemley and Mark P McKenna, 'Is Pepsi Really a Substitute for Coke? Market Definition in Antitrust and IP' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 194ff.

holders' efforts are under-rewarded and, therefore, they would have no incentives to engage in further standardisation initiatives.[774]

A common approach to SEP licensing prices is to consider that a non-excessive price is the price that a company would have paid before the technology becomes essential for a standard.[775] This *ex ante* approach[776] implies therefore that the standardisation of the technology is neutral in terms of price.

This approach is however very limited since it overlooks that there is an actual increase of the value of the patent based on its implementation into the standard. Absent opportunistic behaviour by the SEP holder, there is no reason to assign the entire increase of the value to implementers[777], which is essentially what the *ex-ante* approach does.

This is inconsistent with the characterisation of SDO-based standardisation as a genuine competitive process.[778] Arguably, the increase of the value of an SEP does not stem from its mere selection by the SDO, but from its selection after a fierce competition against other competing technologies. Being 'victorious' in such a competitive process is clear evidence of the superiority of the technology, and, thus, one cannot argue that such superiority should not be rewarded.

Nor is the *ex-ante* approach very solid when confronted with the 'developing' approach to standardisation.[779] Since the standardisation process does not consist in a mere selection among technologies but in an actual innovative process[780], it is difficult to see why the contributors to

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[774] See Pinar Akman, 'The Role of Exploitation in Abuse under Article 82 EC' (2009) 11 Cambridge Yearbook of European Legal Studies 165, 172.

[775] Another even less practical approach consists in considering the 'incremental value' ie the added value that the patent contributes to standard-compliant products. For a criticism of the incremental value approach see Anne Layne-Farrar and Gerard Llobet, 'Moving beyond simple examples: Assessing the incremental value rule within standards' (2014) 36 International Journal of Industrial Organization 57.

[776] See Daniel G Swanson and William J Baumol, 'Reasonable and nondiscriminatory (RAND) royalties, standards selection, and control of market power' (2005) 73 Antitrust Law Journal 1, 10ff; Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 63. Yet the feasibility and the benefits of *ex ante* pricing has been contested. See Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 13; Gabriele Carovano, 'Standard-Essential Patents: Huawei Case, a Non-Solution to an Avoidable Problem' (2016) 3 Rivista Italiana di Antitrust/Italian Antitrust Review 1431; Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 111ff.

[777] Damien Geradin, 'Pricing abuses by essential patent holders in a standard-setting context: A view from Europe' (2009) 76 Antitrust Law Journal 329, 343. Layne-Farrar, Llobet and Padilla propose an 'incremental value plus' rule which allocates a share of 'the increased value brought about by cooperative standard setting' to each SDO member. Anne Layne-Farrar, Gerard Llobet and Jorge Padilla, 'Payments and Participation: The Incentives to Join Cooperative Standard Setting Efforts' (2014) 23 Journal of Economic Management Strategy 24.

[778] Teece and Sherry argue similarly as regards the IEEE IPR Policy modification. David J Teece and Edward F 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 6.

[779] Discussed in Chapter 1 above.

[780] As argued by Gupta '(t)he standard setting process starts with the industry creating new requirements for compelling problems that need to be solved. This kick-starts a race to innovation for new technical solutions. The formation of technology standards is not about selecting between equally suitable existing technical alternatives but about firms cooperatively creating new technical solutions where none existed prior to the articulation of the new problem (or requirement) to solve the problem.' Kirti Gupta, 'How SSOs

these innovations are not entitled to a fair share of the returns resulting from it.[781]

It is not clear whether the Commission is supportive of a pure *ex ante* approach. In its 2017 Communication on standardisation, it stated that when defining the value of a licence the '(l)icensing terms have to bear a clear relationship to the economic value of the patented technology. That value primarily needs to focus on the technology itself and in principle should not include any element resulting from the decision to include the technology in the standard."[782] Although such statement can *prima facie* be taken as an indication of the *ex-ante* value approach, it makes more sense to read it as not conflicting with allocating part of the standardisation value to SEP holders in cases where the standardisation constitutes an actually innovative process and not a simple 'decision to include the technology in the standard'.

Hence, all these assumptions are only valid insofar as the technology has been standardised as a result of effective competition on the merits. This is not the case in patent ambushes.

#### 3.2.2.2 Price-related anticompetitive concerns of patent ambush

##### a) Holding-up (an entire industry)

The problem of hold-up in the standard setting context[783] was defined by Shapiro in 2001.[784] *In abstracto*, hold-up refers to the situation where (1) a plurality of inputs (ie licences) are required to produce a given good; (2) the manufacturer has already invested in its production (eg already assembled products, royalty payments) and thereby gets locked into the standard; and (3) the owner of a necessary input takes advantage of such situation and claims a higher price compared to the one it could have charged if the manufacturer had been asked to take a licence before making its investments.

In the very same publication, Shapiro states that 'this holdup problem is very real today, and that both patent and antitrust policymakers should regard hold-up as a problem of first order significance in the years ahead'.[785] It seems that he was not wrong with his warnings.

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Work: Unpacking the Mobile Industry's 3GPP Standards' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 33ff. Similarly Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 29.

[781] Similarly, David J Teece and Edward F 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 6. This view was also echoed by Justice Birss of the England and Wales High Court (Chancery Division) in *Unwired Planet v Huawei* [2017] EWHC 711 (Pat) para 97.

[782] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 6.

[783] Cotter *et al* trace the origins of the hold-up theory back to the 1970´s Thomas F Cotter, Erik Hovenkamp and Norman Siebrasse, 'Demystifying Patent Holdup' (2019) 76 Washington & Lee Law Review 1501, 1514.

[784] Carl Shapiro, 'Navigating the patent thicket: Cross licenses, patent pools, and standard setting' in Adam B Jaffe, Josh Lerner and Scott Stern (eds), *Innovation policy and the economy*, vol 1 (MIT Press 2001) 124ff

[785] ibid 125.

Academia has produced in the last twenty years a vast body of literature dealing with the 'hold-up problem',[786] and similarly governmental bodies all around the world have targeted the issue too.[787] The US Department of Justice, which was very concerned about hold-up back in 2007[788], has later turned its attention to hold-out[789] behaviours under former Assistant Attorney General Makan Delrahim.[790] His statements have however been challenged by the US Federal Trade Commission.[791]

Despite the level of attention that the hold-up phenomenon has attracted, to date there is no conclusive evidence for considering hold-up as a systemic problem in the framework of SEP licensing.[792] Yet this does not mean that it should be overlooked, nor that it does not take place under

[786] It is difficult to condense even a small representative fraction of the publications related to hold-up. A comprehensive compilation of literature concerning hold-up can be found in Norman V Siebrasse, 'Holdup, Holdout, and Royalty Stacking: A Review of the Literature' in C Bradford Biddle *et al* (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge University Press 2019). See also Mark A Lemley and Carl Shapiro, 'Patent holdup and royalty stacking' (2006) 85 Texas Law Review 1991, Damien Geradin and Miguel Rato, 'Can standard-setting lead to exploitative abuse? A dissonant view on patent hold-up, royalty stacking and the meaning of FRAND' (2007) 3 European Competition Journal 101; Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' (2007) 74 Antitrust Law Journal 603; Mark A Lemley, 'Ten things to do about patent holdup of standards (and one not to)' (2007) 48 British Columbia Law Review 149; J Gregory Sidak, 'Holdup, royalty stacking, and the presumption of injunctive relief for patent infringement: A reply to Lemley and Shapiro' (2007) 92 Minnessota Law Review 714, ; Bernhard Ganglmair, Luke M Froeb and Gregory J Werden, 'Patent Hold-Up and Antitrust: How A Well-Intentioned Rule Could Retard Innovation' (2012) 60 Journal of Industrial Economics 249; Timothy S Simcoe and Allan L Shampine, 'Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017); Daryl Lim, 'Patent Holdups' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017); and Gregory J Werden and Luke M Froeb, 'Why Patent Hold-Up Does Not Violate Antitrust Law' (2019) 27 Texas Intellectual Property Law Journal 1, among others.

[787] See the paradigmatic joint article of Kuhn, Morton and Shelanski who respectively were at the time of publication Chief Economist of European Commission DG Competition, former Chief Economist of the Antitrust Division of the US Department of Justice (2011-12), and Director of the Bureau of Economics of the US Federal Trade Commission: Kai-Uwe Kuhn, Fiona Scott Morton and Howard Shelanski, 'Standard Setting Organizations Can Help Solve the Standard Essential Patents Licensing Problem' (2013) 3 Antitrust Chronicle 3. See also European Commission, 'Intellectual Property and Standard Setting' (122nd meeting of the OECD Competition Committee) 2; European Commission, *Motorola - Enforcement of GPRS standard essential patents* (Case AT.39985) Commission Decision [2014] para 418ff and Commission, *Setting out the EU approach to Standard Essential Patents COM(2017) 712 final* [2017] 9.

[788] US Department of Justice and Federal Trade Commission, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition* (2007) 42.

[789] Hold-out refers to the situation where licensees can prospectively exploit licensors which are captive by their investment in R&D, patent protection and participation in standardisation. Without denying that hold-out can also amount to severe consequences for competition and innovation, it has little to do with patent ambush and under-disclosure and therefore it will not be addressed here.

[790] See Makan Delrahim, 'Take it to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law' (2017); Makan Delrahim, '"Telegraph Road": Incentivizing Innovation at the Intersection of Patent and Antitrust Law (2018) 19th Annual Berkeley-Stanford Advanced Patent Law Institute; Makan Delrahim, '"Don't Stop Thinking About Tomorrow": Promoting Innovation by Ensuring Market-Based Application of Antitrust to Intellectual Property', Speech delivered before the OECD (6 June 2019).

[791] Terrell McSweeny, 'Holding the Line on Patent Holdup: Why Antitrust Enforcement Matters' (FTC, 21 March 2018) <www.ftc.gov/system/files/documents/public_statements/1350033/mcsweeny_-_the_reality_of_patent_hold-up_3-21-18.pdf> accessed 1 November 2022.

[792] There are many criticisms on the theoretical basis of and/or the lack of empirical evidence for hold-up. See Damien Geradin and Miguel Rato, 'Can standard-setting lead to exploitative abuse? A dissonant view on patent hold-up, royalty stacking and the meaning of FRAND' (2007) 3 European Competition Journal 101; Alexander Galetovic and Kirti Gupta, 'Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry' (2016), among others.

certain circumstances.[793] Patent ambushes are one of the cases where the hold-up effects are sufficiently evident and acute.

Generally speaking, the situation where a SEP holder can leverage from its SEPs to claim excessive royalties stem from two facts (1) the patent holder's position as a gatekeeper resulting from its SEPs; and (2) the fact that the prospective licensees are locked into the standard after having invested in the standard's implementation resulting in a blockage of competition by imitation and by substitution. The switching costs to an alternative technology can here be used as a measure of how strong the lock-in effects are.

Cotter et al identify three sources of hold-up, all of them linked to path dependence[794], notably, (1) sunk costs – ie the investment already made to design, produce and market the product; (2) the cost of redesigning a non-infringing product – ie the switching costs minus the costs that the implementer would have invested *ex ante* to implement the alternative technology and (3) compatibility problems.

In patent ambush cases occurring in a standardisation context, the sunk costs are not necessarily different from other hold-up cases. However, the costs associated to redesigning a non-infringing product and/or forgoing positive network externalities can virtually block an entire industry.

Compared to a licensor-licensee hold-up, patent ambush (potentially) holds up all the prospective licensees which aim to sell standard-compliant products to a point where, absent any competing standard, licensees should decide between losing all their incurred expenses or paying the excessive fee claimed by the ambusher, without having at their disposal any substitute technology in the short or even medium term.

Therefore, patent ambush entails the potential of an industry-level hold-up, which indeed justifies competition law intervention.[795] Addressing the hold-up problem – when linked to patent ambushes[796] – by means of patent or contract law[797] will only partially alleviate the anticompetitive concerns at stake, offering an *inter partes* solution to a behaviour that

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[793] See Jorge L Contreras, 'Much Ado About Hold-up' (2019) University of Illinois Law Review 875, 896ff; Thomas F Cotter, Erik Hovenkamp and Norman Siebrasse, 'Demystifying Patent Holdup' (2019) 76 Washington & Lee Law Review 1501, 1547. Contreras argues that the reasons why hold-up is not a general problem are, on the one hand, the success of the prophylactic measures put in place by SDOs and, on the other hand, the deterring effect of high profile enforcement actions. Hence these reasons argue in favour of maintaining such measures instead of removing them.

[794] Thomas F Cotter, Erik Hovenkamp and Norman Siebrasse, 'Demystifying Patent Holdup' (2019) 76 Washington & Lee Law Review 1501, 1520ff.

[795] See Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' (2007) 74 Antitrust Law Journal 603, 609.

[796] Cary et al explicitly support that hold-up derived from a deception `is, at its core, an antitrust problem´ George S Cary *et al*, 'The Case for Antitrust Law to Police the Patent Holdup Problem in Standard Setting' (2011) 77 Antitrust Law Journal 913, 945. Similarly, Cotter argues that 'it is at least plausible that the benefits of condemning the exercise of monopoly power that would not have existed, but for the patentee's deceptive conduct, outweigh the costs' and advocates for antitrust intervention in cases of deception-based hold-up Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1199.

[797] Gregory J Werden and Luke M Froeb, 'Why Patent Hold-Up Does Not Violate Antitrust Law' 'Why Patent Hold-Up Does Not Violate Antitrust Law' (2019) 27 Texas Intellectual Property Law Journal 1, 20ff.

potentially can affect an entire industry, or at least, a substantial part of it.[798]

Finally, it should be recalled that the hold-up risk is not necessarily present in under-disclosure cases other than patent ambushes. It does not argue that other types of under-disclosures do also produce other anti-competitive effects, as it will be analysed below.

### b) No positive effect of high prices

However, high prices are not necessarily bad or anti-competitive as they signal the rest of market participants the existence of huge margins and therefore attract competition. This has been a traditional justification for a cautious antitrust intervention in exploitative pricing cases as shown by the approach of Justice Scalia in the US Trinko case.[799] For him, the opportunity to charge monopoly prices is what drives the initial innovation efforts, subsequently, such monopoly prices would attract competitors.

However, this would not be the case in ambushing scenarios where the lock-in effect works as an insuperable barrier to access this market. This scenario, which has been referred to as 'super-dominance'[800], is better explained by the theory of complementarity: the standard, thanks to the lock-in effects, excludes competition by substitution, whereas IPRs block competition by imitation. Consequently, high monopoly prices do not attract competitors since the barrier shaped by the SEPs and the standard prevents them from entering the market.[801]

Therefore, the claim of excessive prices connected to an ambush leads to a higher price for the technology[802] – which can be passed on to consumers[803] – without attracting other competitors, and, moreover, reducing incentives to invest in standard-based technologies and follow-up innovation.[804]

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[798] Similarly M Sean Royall, Amanda Tessar and Adam Di Vincenzo, 'Deterring Patent Ambush in Standard Setting: Lessons from Rambus and Qualcomm' (2009) 23 Antitrust 34.

[799] *Verizon Communications Inc v Law Offices of Curtis V Trinko, LLP*, 540 US 398 (2004).

[800] Andreas Fuchs, 'Patent Ambush Strategies and Article 102 TFEU' in Josef Drexl, Warren S Grimes and Clifford A Jones (eds), *More Common Ground for International Competition Law?* (Edward Elgar 2011) 193.

[801] See above Section 2.3. For Paulis, the inherent difficulties to act as a price regulator should prevent the intervention of the Commission in the cases where the market is likely to self-discipline prices. However, markets where high and long-lasting barriers imped competitors from of entry are candidates for intervention. Emil Paulis, 'Article 82 EC and Exploitative Conduct' in Claus-Dieter Ehlerman and Mel Marquis (eds), *European competition law annual 2007 A reformed approach to article 82 EC* (Hart Publishing 2008) 517ff.

[802] Apostolos Chronopoulos, 'Patenting Standards-A Case for US Antitrust Law or a Call for Recognizing Immanent Public Policy Limitations to the Exploitation Rights Conferred by the Patent Act?' (2009) 40 International Review of Intellectual Property and Competition Law 782, 787.

[803] See Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' 608 and Jonathan Faull and Ali Nikpay (eds), *The EU Law of Competition* (OUP 2014) 500.

[804] '(P)atent holdup can have two negative welfare consequences: static deadweight losses that are not justified by likely increases in dynamic efficiency, and dynamic efficiency losses due to reduction in incentives to invest in standard-specific applications and follow-up improvements.' Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1205.

#### c) Misallocation of royalties

Additionally, patent ambush can lead to a misallocation of revenues among SEP holders, potentially having an impact along the whole value chain. Patent ambush might result in an actual misallocation of royalties if the patent ambush results in the exclusion of alternative technology that might have been chosen absent the deception, since the patent holder of the excluded technology will not be remunerated at all. The misallocation of royalties, in such a case, will happen even if the under-disclosing company does not subsequently ask for excessive royalties, as is further analysed at 3.2.3 below.

Another problematic case may happen if the technology is licensed via a pool and the ambushing demands excessive royalties – ie an excessive share of the pool profits. The members of the pool will be locked in by their investments in setting the pool and therefore might agree in such conditions – provoking a misallocation of royalties. Otherwise, exploitative practices linked to ambushes are more likely to operate as a "tax" which increases the global price of the technology.

### 3.2.3 The exclusionary potential of under-disclosure

The exclusionary potential of under-disclosure materialises at two levels: first, as regards the exclusion of competing technologies (ie, at the pre-market competition level) and, second, at downstream products market level, if the patent holder refuses to license.

#### 3.2.3.1 Exclusion of competing technologies

The first environment in which under-disclosure can have an exclusionary effect is if it results in the exclusion of other competing technologies in the race for being included in the standard. However, in this case, the market does not yet exist as such – the companies compete for the market and not in the market[805] – which is of a high practical relevance when analysing the behaviour under the EU competition law perspective.

This situation is best illustrated by the comparison of the outcomes of the Rambus case in the US and in the EU. In the US, the District Court Circuit did not find evidence that, absent Rambus' behaviour, JEDEC members would have included other technologies in lieu of Rambus' ones. However, the DC Circuit argued that the exclusion of a technology is indeed a case for US antitrust law, insofar it entails an undue acquisition

[805] Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 534.

of market power.[806] Some US scholars have also supported this line of reasoning.[807]

In the EU, the Commission did not leave any room to interpretation: all evidence surrounding the case suggested that Rambus´ behaviour altered the decision-making process to favour its technologies over other alternative – competing – ones.[808] However, the Commission did not analyse in depth the anticompetitive effects of such exclusionary effect[809] – whose consequences were at least as important as those derived from the exploitative pricing – nor advocated at least publicly the inclusion of remedies against such effects within Rambus commitment.[810] At best, such considerations were included by the Commission as *obiter dicta* to somehow reinforce the reproach to Rambus' behaviour but indeed the exclusionary effect of Rambus' behaviour was not the core theory of harm in the EU Rambus case.[811]

Given the plethora of evidence of the exclusionary effect of Rambus' behaviour – at least at the eyes of the Commission, one may ask why the Commission did not base its arguments on the anti-competitive effects of such exclusion. The answer to this question closely relates to the limitations of Article 102 TFEU to prosecute fraudulent acquisition of market power.[812]

Hence, Article 102 TFEU requires that a company is dominant at the time of engaging in the abusive behaviour. This issue[813] represents an almost unsurmountable barrier to address a conduct that consists in expelling competing technologies from the race for the standard, since, as explained above, such competition takes place in a pre-market phase when the ambushing company is not (yet) dominant.

These limitations of EU competition law should not, however, prevent the analysis of this kind of exclusionary behaviours. Rather, they argue

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[806] As a 'prototypical' monopolisation case. This view is shared by former US Assistant Attorney General Makan Delrahim since the patent holder communicates false information. Makan Delrahim, '"Don't Stop Thinking About Tomorrow": Promoting Innovation by Ensuring Market-Based Application of Antitrust to Intellectual Property', Speech delivered before the OECD (6 June 2019) 4

[807] See Mark A Lemley, 'Intellectual property rights and standard-setting organizations' (2002) 90 California Law Review 1889, 1931; Joseph Kattan, 'FRAND Wars and Section 2' (2012) 27 Antitrust 30, 32.

[808] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, paras 43-46 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[809] The position of the Commission in the EU Rambus case hardly argues in favour of considering it as an exclusionary abuse case. Similarly Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 535 fn 91.

[810] In these cases, however, it is extremely difficult to think of remedies whose procompetitive effects can counterbalance the negative effects associated to a modification of the standard once the industry is locked into the standard including the ambusher's technologies.

[811] Rather it focused on exploitative abuse and harm to the standardisation process as such.

[812] As it is arguably the case of Section 2 of Sherman Act and Section 5 of FTC Act.

[813] Which is still challenging – as analysed above – even in the case of exploitative abuses.

for a modification of the EU competition rules, either of the wording of Article 102 TFEU[814] and/or of the traditional market-based approaches.[815]

Depending on the type of the technology selection process, there are two possible scenarios where a technology exclusion can occur. Thus, the dynamics and the effects are different if the SDO takes a purely technical approach to the standard creation or if it also considers royalty-related preferences. Moreover, in each of these cases the exclusionary effect differs depending on whether the excluded technology is superior, inferior or comparable to the ambusher's one in technical terms.

### a) Non-purely technical approaches

The inclusion of royalty-related considerations might entail the discussion of the royalty rates within technical committees, creating a sort of an auction in which the technology with a better trade-off between technological merits and price (royalties) is chosen. However, this is not a very typical scenario and might even rise concerns about collusion in terms of Article 101(1) TFEU.[816]

Yet there is a much more common scenario where price considerations are taken into account, namely, when the SDO – JEDEC in the Rambus case – requires a commitment to license on royalty free terms[817] or expresses its preference for patent free technologies.[818]

In these cases, under-disclosure consists in hiding the existence of the patented technology and/or the willingness to license it in terms other than the pre-defined terms, inducing the technical committee to include it into the standard instead of alternative technologies. The anticompetitive effects depend on whether the excluded technology is (1) superior, (2) comparable or (3) inferior compared to the under-disclosed – and selected – technology.

*Exclusion of a superior technology*

If the discarded technology is superior, the potential anticompetitive effects will, first, consist in undermining the basis of the SDO competitive process – ie selecting the technology with a better trade-of between costs and technological merits.

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[814] Some authors suggest modifying – or at least to consider the modification – of Article 102 TFEU as a means to overcome its limitations when confronted to these cases. See Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 542; Peter Picht, 'Patents on Standards: Highwaymen in Ambush or Driving Force for Innovation and Competition?' (2012) 53 Seoul Law Journal 759, 773.

[815] Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 522ff.

[816] Actually ETSI bans any price-related discussion from taking place at the technical committee as established in points D2.2 and D2.3 of ETSI's Guidelines for Antitrust Compliance (of 9 April 2019).

[817] The outcomes of this analysis can be extended *mutatis mutandis* to cases where actual royalty negotiations take place within technical committees.

[818] Patent free policy, broadly understood, is not limit to cases where the SDO does not accept patents within the standard but also extends to the cases where the SDO – tacitly or explicitly – expresses its preference for non-patented technologies, as it was the case in JEDEC. Commission, *Rambus* (Case COMP/38636) Commitment Decision of 9 December 2009, para 43 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

Further negative effects are those associated with the lock-in of the industry into an inferior technology, which might hamper the performance of all standard-based technologies.[819] If, on top of that, the technology owner insists on licensing the technology on licensing terms that are more burdensome than those set by the SDO's IPR policy, all the concerns related to exploitative abuse arise as well.

*Exclusion of an inferior or comparable technology*

Another possibility is that the excluded technology is comparable or inferior to the under-disclosed technology. It has been argued that if the technology is superior to any of the alternatives, then there are no negative effects since the under-disclosed technology would have been chosen in any event.[820] Nevertheless, this argument misses one essential point. As argued above, SDO standardisation is a pre-market competitive process, which in this case is not only based on technological merits but also in the licensing terms.

Moreover, shall the SDO noticed the existence of the blocking patent – by means of a self-disclosure or any other means –, the SEP holder would have had incentives to offer lower royalties, or at least a FRAND commitment, to increase its technology chances in the standard.[821]

Therefore, if the excluded technology is comparable or inferior, the net innovative performance of the standard will not be negatively affected by the lack of disclosure. Yet the under-disclosure will equally affect the SDO competitive process. By hiding the patent and seeking to license it on less favourable terms, the ambushing company deprives the other participants of the pre-market competitive process to evaluate the trade-off between technological merits and costs.

In addition, such alteration of the decision-making process can result in a misallocation of revenues. Farrell et al consider that, even if the patented technology is superior to the alternatives, the deception will alter the technological competition and, since deception enriches the deceptive party at the expense of others, having the superior technology cannot immunise from antitrust enforcement.[822]

Therefore, potential anticompetitive harm can arise even if the excluded technology was comparable or even inferior, inasmuch the ambushing company is depriving the SDO from one essential piece of information – the licensing terms – which articulates the competitive process.

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[819] See Chapter 2, Section 3.1.2.1.

[820] See Daniel G Swanson and William J Baumol, 'Reasonable and nondiscriminatory (RAND) royalties, standards selection, and control of market power' (2005) 73 Antitrust Law Journal 1, 55.

[821] Stanley M Besen and Robert J Levinson, 'Standards, Intellectual Property Disclosure, and Patent Royalties after Rambus' (2009) 10 North Carolina Journal of Law & Technology 233, 250; Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 127. See also ANSI, 'Guidelines for Implementation of the ANSI Patent Policy', 7 <https://share.ansi.org/Shared%20Documents/Standards%20Activities/American%20National%20Standards/Procedures,%20Guides,%20and%20Forms/ANSI%20Patent%20Policy%20Guidelines%202019.pdf#search=guidelines%20patents> accessed 1 November 2022.

[822] Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' 74 Antitrust Law Journal 603, 657.

This analysis points to the importance of disclosure obligations when considerations other than the technical merits of the technology are taken into account, since, in those cases, the licensing terms are a structural component of the pre-market competitive process. In addition, this shows that an *ex post* offer of the pre-defined licensing terms – either as an individual decision of the SEP holder or as a remedy[823] – does not adequately address all the anti-competitive concerns arising from such behaviour – in particular, if the excluded technology happens to be superior to the under-disclosed one.

Table 1: anti-competitive effects of exclusion of competing technologies when trade-off between technological merits and cost are taken into account

| SEP holder decides to | The excluded technology is | Anticompetitive effects |
|---|---|---|
| Refuse to license on pre-defined terms* (ambush)** | Superior | • Lock-in into an inferior technology (harm to innovation)<br>• Harm to the SDO competitive process<br>• Excessive royalties/ refusal to license<br>• Misallocation of royalties |
| | Comparable | • Harm to the SDO competitive process<br>• Excessive royalties/refusal to license<br>• Misallocation of royalties |
| | Inferior | • Harm to the SDO competitive process<br>• Excessive royalties/ refusal to license<br>• Misallocation of royalties |
| Agree to license on pre-defined terms* | Superior | • Lock-in into an inferior technology (harm to innovation)<br>• Harm to the SDO competitive process<br>• Misallocation of royalties |
| | Comparable | • (Attenuated) harm to SDO competitive process<br>• Misallocation of royalties |
| | Inferior | • Misallocation of royalties |

* After the standard has been created
** Note that in this case both elements of ambush are present

### b) Purely technical approach

The scenario is slightly different if the SDO standardisation process is exclusively based on technical merits.[824] In these cases, the pre-market competitive process represents pure technological competition. However, most SDOs require as a precondition to participate in such technological competition that all competing technologies will be made accessible to third parties, usually on FRAND terms.[825] In other words, had the patent holder expressed its lack of willingness on license on

[823] Remedies are analysed at Section 3.3.1.3.

[824] For example, ETSI precludes any discussion on licensing terms to take place within ETSI. Any price-related discussion is prohibited at the TC as stablished in points D2.2 and D2.3 of ETSI's Guidelines for Antitrust Compliance and in the public statement available on their IPR webpage. ETSI, 'Public Statement' <https://www.etsi.org/intellectual-property-rights> accessed 1 November 2022.

[825] In principle, it might be possible to ask for a RF commitment. However, in such a case, the economic dimension will be tacitly present, and it will be more similar to the prior scenario.

FRAND terms the technology will not even be considered as a potential standardised technology.[826]

*Exclusion of a superior technology*

In principle, if the technology selection is only based on technical merits, a superior FRAND-encumbered technology will never be discarded to favour an inferior but patent free technology. Should this be the case, it would be a signal that either the SDO does not fulfil its functions rightly or that other than pure technical considerations are tacitly taken into account.[827]

*Exclusion of an inferior or comparable technology*

On the other hand, FRAND encumbered technologies either comparable or inferior to the ambushing technology would only be preferred to the latter if the ambushing company seeks to charge supra-FRAND royalties.

Hence, the anticompetitive effects in this scenario substantially depend on whether the SEP holder is prepared to license its technology on FRAND terms or not after the standard adoption. If the SEP holder is not willing to license on FRAND terms, the effects are substantially similar to the prior scenario: altering the competitive dynamics and forcing implementers to pay excessive royalties.

Conversely, if the company offers its technology on FRAND terms most of the anticompetitive concerns disappear – if compared to the prior scenario – since in this case the FRAND commitment (or any other pre-defined licensing terms) operates as a precondition for incorporating a technology to the standard and not as a structural parameter of SDO based competition – ie participants in the technical committee do not evaluate the trade-off between royalties and performance.

Another possibility is that the IPR policy does not mandate any FRAND or RF commitment at all.[828] In such events – leaving aside the issues linked to refusals-to-license – it has to be proven that the alleged absence of a patent was the driving factor for opting for the under-disclosed technology.

[826] Never in the history of ETSI, a patent whose owner explicitly refused to make a FRAND commitment has been included in a standard.

[827] Which might switch the focus from the ambushing company to the SDO as such.

[828] Not all SDOs require it. See Rudi Bekkers and Andrew S Updegrove, 'A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide' (2012) 89.

| Table 2: anticompetitive effects of exclusion of competing technologies when the standardisation efforts are only driven by technological merits | | |
|---|---|---|
| SEP holder decides to | The excluded technology is | Anticompetitive effects |
| Refuse to license on pre-defined (FRAND)* terms (ambush)** | Superior | Not feasible |
| | Comparable | • Harm to the SDO competitive process<br>• Excessive royalties/refusal to license<br>• Misallocation of royalties |
| | Inferior | • Harm to the SDO competitive process<br>• Excessive royalties<br>• Misallocation of royalties |
| Agree to license on pre-defined (FRAND) terms* | Superior | Not feasible |
| | Comparable | • Misallocation of royalties (depending on the circumstances) |
| | Inferior | • N/A |
| * After the standard has been created<br>** Note that in this case both elements of ambush are present | | |

The analysis above – namely the comparison between table 1 and 2 – shows that purely technical standardisation presents less anticompetitive risks in terms of probability and intensity. In other words, standards developed under uncertainty conditions with regard to IP exposure, should opt for articulating purely technological competition within the SDO.

#### 3.2.3.2 Refusal-to-license in the downstream market

In another set of cases, under-disclosure can produce exclusionary effects if ambushing is coupled with a refusal to license the technology to prospective licensees. Even if these cases remain quite theoretical (since most SEP holders prefer to collect royalties from their SEPs[829]), they may happen. For example, a vertically integrated company may hide its essential patents to later prevent its competitors in the downstream market from accessing the standard; similarly, a company might be interested in sabotaging a standard to favour another one.

In the first case, the anti-competitive concerns are not that different from the ones of an 'orthodox' refusal-to-license case whereas the anticompetitive effects may, perhaps, be more intense. In the ICT sector even small delays in market entrance can give the SEP holder a decisive advantage in the downstream market.

[829] As echoed by various authors, SEP holders are more interested in extracting royalties than in excluding downstream firms. See Hanns Ullrich, 'Patents and Standards - A Comment on the German Federal Supreme Court Decision Orange Book Standard' (2010) 41 International Review of Intellectual Property and Competition Law 337, 347; David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 152.

In the second case, it might make (economic) sense to sabotage a standard so as to favour another one which is more favourable[830] to the interests of the SEP holder.[831] This scenario would be probably the one in which the anti-competitive effects are more acute. A single undertaking frustrates all the standardisation efforts from – at least a substantial – part of the industry and distorts the pre-market dynamic competition taking place within the SDO to favour its own interests.[832]

Overall, the anti-competitive effects in these cases are well-defined and, compared to the above-explained scenarios, these cases do not present particular problems with regard to market definition and dominance as they are mostly based in a traditional market-based assessment. Nonetheless, the anti-competitive effects are likely to be more severe if compared to other refusal-to-license cases, in particular taken into account all the innovation-related concerns that the frustration and/or manipulation of the standardisation processes can raise.

### 3.2.4 Other innovation-related anticompetitive harms

As analysed in the previous subsections, under-disclosure can result in harms to innovation. However, the negative effects on innovation from under-disclosure are not exhausted by all those that directly stem from either exploitative or exclusionary behaviours: under-disclosure as such can provoke further harms to competition.

As explained above, in the case of an SDO-based standard, competition between technologies takes place during the creation of the standard, and therefore before the technology reaches the market. The European Commission has characterised collective standardisation efforts in SDOs as a truly pro-innovative and pro-competitive process that takes place before the market for the technology has been created.[833]

Although, as echoed by the Commission in the Rambus case, the 'process of standard setting amounts to collective decision-making where there is a risk of anti-competitive outcome' inasmuch as 'companies come together and agree to exclude certain products or technologies from the market'.[834]

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[830] Not necessarily in terms of royalty incomes, even an Open Source Standard (OSS) might be more interesting for certain SEP holders depending on their business model.

[831] Although this was not exactly the case, it presents certain similarities with the dispute in the late 1990s between Qualcomm and Ericsson (and ETSI), in which the former threatened to use its CDMA essential patents to block ETSI's UMTS standard. The dispute was concluded with a settlement according to which Ericsson acquired Qualcomm's CDMAs wireless infrastructure business. New York Times, 'Ericsson and Qualcomm Settle Dispute' (1999) <https://www.nytimes.com/1999/03/26/business/ericsson-and-qualcomm-settle-dispute.html> accessed 1 November 2022.

[832] Addressing it as a case of limiting technical development – or even markets – to the prejudice of consumers in the sense of Article 102(b) TFEU does not seem particularly challenging.

[833] For a detailed discussion in this regard see Section 4 of Chapter 4.

[834] Commission, *Rambus* (Case COMP/ 38636) Commitment Decision of 9 December 2009, para 30 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

In order to preserve the pro-competitive and pro-innovative effects of such process the Commission has established a series of safeguards.[835] Non-compliance with these safeguards can, in the first instance, raise some competition law concerns and, ultimately, frustrate the goals and pro-competitive effects of SDO-based standardisation.

Such principles– as discussed in Section 3, Chapter 3 – are designed to prevent the eventual blockage of the standard by proprietary technologies[836], ensuring effective access to the technology[837] and informing – by means of a good faith disclosure[838] – about the patent coverage of (potential) standardised technologies.[839] In addition, in the Rambus case, the Commission stressed the importance of trust as a core element of the standardisation process.[840]

In theory, under-disclosure – and more tellingly, patent ambush – in the framework of standardisation process can negatively affect these principles and values, as well as the openness and transparency of the SDOs' proceedings.

With regard to the duty to inform participants in standardisation and prospective licensees, deceptive under-disclosure indeed distorts the information available for both technology developers and implementers, artificially increasing the asymmetries of information. From the side of the suppliers of technology, hiding the patents from the standard developers prevents them from designing around and/or opting for other patent-free or FRAND encumbered technologies. In contrast, from the demand-side, implementers surprisingly find that they have to pay for a number of patents that were not initially considered within their costs structure,[841] whether the ultimate licensing terms will be FRAND or non-FRAND.[842]

As argued above when analysing the exclusionary effect, such withholding of information to the other participants does not necessarily lead to anti-competitive effects. In particular, if (1) the technical committee decides on the basis of technical merits, (2) the under-disclosed technology is technically superior – and (3) the ambushing company agrees on

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[835] Notably in the Standardisation Agreements' Section of the Horizontal Cooperation Guidelines. European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, paras 277ff. See also the discussion above in Section 4 of Chapter 4.

[836] European Commission, 'Standardization in the European economy. Follow-up to the Commission Green Paper of October' COM(1992) 445 final, 17.

[837] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 268.

[838] ibid para 286.

[839] As it seems to be advocated by the Commission in European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3.

[840] European Commission, *Rambus* (Case COMP/ 38636) Commitment Decision 9 December 2009, para 29 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[841] Which in sectors with high structural costs and low margins can make the difference between succeeding and failing to survive. Although for traditional ICT operators this is probably not the case, the IoT dynamics will expand the needs of connectivity to sectors that are more margin-constrained.

[842] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 3 and 4.

licensing it on FRAND terms – no anti-competitive effects will be produced. In other cases the deception can either distort the decision-making process within the technical committee concerned or provoke a misallocation of royalties in favour of the ambushing company.

In addition, failures to meet the disclosure duty could also run counter to another concern that is at least as important as the abovementioned ones: confidence in the standardisation process.[843] In Rambus, the Commission explicitly stated not only that Rambus' behaviour undermined confidence in the standard setting process[844] but also that the duty to act in good faith and therefore the disclosure of potential SEPs are inherent elements of the standardisation process.[845] Moreover, the cost and complexity of standardisation efforts are likely to increase if the SDOs – and participants – cannot rely on the members´ statements with regard to their intellectual property.[846]

The focus on confidence is deeply rooted in SDO-driven standardisation. Before and after the Rambus decision the Commission endorsed principles, which are directly or indirectly related to the confidence in the standardisation process.[847] The 'good faith disclosure' principle as set out in the Guidelines on Horizontal Cooperation[848] together with the call for transparency contained in the 2017 Communication[849] are particularly relevant. The Commission aims at ensuring a smooth standardisation process where technology providers and implementers can participate without fearing that certain free-riders can – unduly – use the standardisation process to compete on a basis other than the merits of their technologies.

Standardisation is a trust-based process in which competitors participate to openly discuss what technology or combination thereof is more suitable to achieve a technical result or to solve a technical problem. Opportunistic under-disclosure – particularly if it is recurrent – is likely to reduce the incentives of other companies to get involved in the development of technologies or plainly to participate in standard setting[850], since they would have to fear that other participants in technical committees capture the standard based on their concealed patents.

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[843] See also Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 534.

[844] European Commission, *Rambus* (Case COMP/ 38636) Commitment Decision of 9 December 2009, para 29 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[845] David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 103.

[846] Stanley M Besen and Robert J Levinson, 'Standards, Intellectual Property Disclosure, and Patent Royalties after Rambus' (2009) 10 North Carolina Journal of Law & Technology 233, 236.

[847] In Motorola, the Commission also explained its decision with the negative effect that an injunction – given the circumstances of the case – might provoke on confidence in the standard-setting process. Commission, *Google - Motorola Mobility* (Case No COMP/M.6381) Decision of 13 February 2012, C(2012) 1068, para 415 ff.

[848] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 219.

[849] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final.

[850] As argued by the FTC in the Rambus case. FTC, 'Opinion of The Commission In the Matter of Rambus, Inc. Docket No. 9302' 25 <www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf> accessed 1 November

In addition, destruction of confidence in the standardisation process could push the system away from a 'developing approach' to a mere 'setting approach' to standardisation.[851] In other words, lack of trust among participants reduces incentives to actually innovate during the standardisation process due to the fear that one or some of the participants capture all or part of this collaborative innovation based on ambushing or just-in-time patenting.[852]

Similarly, implementers usually have the expectation of some certainty concerning the technologies included within the standard and the confidence in that the technologies will be licensed on FRAND terms. Under-disclosure scenarios may therefore lead them to opting for other standards[853] that are more transparent in terms of the technology required and licensing terms, to prefer royalty free standards – even if they are of a lower quality – or to refrain, to the extent possible, from including standard-based technologies in their products.[854]

A scenario where the market loses the trust in consensus-based standards can amount to several negative consequences[855], such as its replacement by de facto standards[856] or the emergence of standard wars.[857] Moreover, such scenario can negatively impact the innovative performance of the market resulting in the selection of lower quality standards and the delayed entrance of certain sectors to the IoT due to the lack of

2022. Similarly FTC, 'Dell Computer Settles FTC Charges' <https://www.ftc.gov/news-events/press-releases/1995/11/dell-computer-settles-ftc-charges> accessed 1 November 2022. This has been referred to as a 'chilling effect on standard setting activities (of patent ambush)'. Jonathan Faull and Ali Nikpay (eds), *The EU Law of Competition* (OUP 2014) 500. See also Claudia Tapia, *Industrial property rights, technical standards and licensing practices (FRAND) in the telecommunications industry* (Carl Heymanns 2010) 122.

[851] In essence, the 'setting approach' to standardisation implies that the participants in the technical committee choose a technology among those presented to the technical committee, while the developing approach implies that participants actively discuss and propose other technologies based on some of the proposed or other technologies. Hence, under the developing approach the technical committee innovates by going beyond the existing state of the art. For a more detailed analysis of the genesis and practical consequences of the debate developing v setting see Chapter 1.

[852] Byeongwoo Kang and Rudi Bekkers, 'Just-in-time patents and the development of standards' (2015) 44 Research Policy 1948, 1949.

[853] Conde and Drexl consider that the IoT dynamics can result in more intense inter-standards competition for certain functionalities, compared to the prior ICT scenario where the competition took place mostly at intra-standard level. See Beatriz Conde Gallego and Josef Drexl, 'IoT Connectivity Standards: How Adaptive is the Current SEP Regulatory Framework?' (2019) 50 International Review of Intellectual Property and Competition Law 135, 139ff.

[854] As argued by the FTC in its press release related to a settlement in the Dell Computer Corp case. See FTC, 'Dell Computer Settles FTC Charges' <https://www.ftc.gov/news-events/press-releases/1995/11/dell-computer-settles-ftc-charges> accessed 1 November 2022. On a more general note Cotter argues that hold-up – not necessarily linked to ambushes – can result in dynamic efficiency losses by reducing the incentives to invest in standard-specific technologies and follow-up improvements. Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1205.

[855] '(T)he mere prospect that a single owner of one essential patent could hold up an entire industry with impunity can deter investment in innovation or the implementation of a standard.' Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 120.

[856] Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 534.

[857] Which are deemed to be less efficient and/or innovative than SDO-based standards. See Chapter 2. For a comparison between consensus-based and *de facto* standards and their performance, including standard wars, see Jorge Padilla, John Davies and Aleksandra Boutin, *Economic Impact of Technology Standards* (Compass Lexecon study on behalf of Qualcomm 2017) 36ff.

predictability of costs and might deter standards´ changes when a superior technology is available.[858]

In conclusion, it is possible that a patent ambush provokes actual anti-innovative effects – by eg paralysing the implementation of a standard – and therefore harm dynamic competition. Fines and remedies in such a case need to take into account these effects.

## 3.1 Under-disclosure: a (not always) abusive behaviour

The analysis above shows that under-disclosure can produce a number of negative effects on competition and innovation. This section aims, on the one hand, to delineate in which circumstances these harms are more likely to arise and, on the other, in which of these situations the application of Article 102 TFEU can successfully tackle – and remedy – such negative consequences.

For these purposes, it is useful to distinguish between two sets of cases: those where under-disclosure is followed by subsequent behaviour consisting in either claiming excessive royalties and/or refusing to license the essential patents – patent ambushes in a broad sense – and those where under-disclosure appears as a stand-alone behaviour.

The reasons for this distinction are twofold. First, patent ambush cases entail behaviours that – by themselves – can be characterised as abusive, leading to more acute anti-competitive effects. Second, the subsequent behaviours take place after the ambushing company has become dominant, which is a requirement for Article 102 TFEU, while dominance is missing in stand-alone under-disclosure cases.

### 3.1.1 Patent ambush as an abusive behaviour: revisiting Rambus

#### 3.1.1.1 Beyond exploitative practices

##### a) An exception to non-interventionism in exploitative practices

The Commission has been traditionally reluctant[859] to act against exploitative behaviours, inasmuch as they entail administrative price-

[858] As argued by Drexl. For him the DC Circuit decision in Rambus took a Schumpeterian competition approach which ignored the effects of lack of trust in the future development of the standards. Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World - Liber Amicorum Joseph Straus* (Springer 2009) 109.

[859] Josef Drexl, 'IMS Health and Trinko - Antitrust Placebo for Consumers Instead of Sound Economics in Refusal-to-Deal Cases' (2007) 35 International Review of Intellectual Property and Competition Law 788, 808.

fixing.[860] Scholars tend to support such self-restrained approach[861] to exploitative abuses: Geradin argues that it is very challenging for competition authorities to define an appropriate costs analysis, a suitable margin and a comparable benchmark.[862] Similarly, scholars point to the administrative and error costs associated with determining whether a price is excessive.[863]

From a historical perspective, exploitative abuses in Article 102 TFEU[864] have fallen into a 'benign neglect'.[865] The reason might well be that the natural playground of the prohibition of exploitative abuses was the protection of the internal market[866], particularly at its early stages, against exploitative behaviours that were likely to affect its proper functioning.[867]

This seems to be one of the reasons why it has been proposed to relegate the exploitative abuse to cases when the exploitative pricing is linked to a prior[868] or a concurrent[869] exclusionary abuse or to constrain its application to marginal cases. These proposals mirror the Commissions´ gradual loss of interest in exploitative abuses[870] and the growing relevance of exclusionary abuses.[871]

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[860] Which explains also the reluctance of US courts to grant a duty to license under Section 2 Sherman Act in cases of a *de facto* standard. Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World* - Liber Amicorum Joseph Straus (Springer 2009) 153.

[861] Neither the Commission nor the CJEU have used Article 102 TFEU to 'micro-manage dominant firms' pricing strategies'. Peter Behrens, 'The ordoliberal concept of 'abuse'of a dominant position and its impact on Article 102 TFEU' in Fabiana di Porto and Rupprecht Podszun (eds), *Abusive Practices in Competition Law* (Edward Elgar Publishing 2018) 12.

[862] Damien Geradin, *The Necessary Limits to the Control of 'Excessive' Prices by Competition Authorities - A View from Europe* (2007) Tilburg University Legal Studies Working Paper 7 ff. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1022678> accessed 1 November 2022. See also Emil Paulis, 'Article 82 EC and Exploitative Conduct' in Claus-Dieter Ehlerman and Mel Marquis (eds), *European competition law annual 2007 A reformed approach to article 82 EC* (Hart Publishing 2008); Pinar Akman, 'The Role of Exploitation in Abuse under Article 82 EC' (2009) 11 Cambridge Yearbook of European Legal Studies 165, 185.

[863] Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1157. In contrast, Culley *et al* consider that the cost of false positives are very little since competition law intervention will be limited to a few cases and it will not deprive, in principle, the patentee of all royalties. Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 149.

[864] And its former version, Article 82 EC Treaty.

[865] Peter Behrens, 'The ordoliberal concept of 'abuse'of a dominant position and its impact on Article 102 TFEU' in Fabiana di Porto and Rupprecht Podszun (eds), *Abusive Practices in Competition Law* (Edward Elgar Publishing 2018) 19.

[866] Damien Geradin, 'Pricing abuses by essential patent holders in a standard-setting context: A view from Europe' (2009) 76 Antitrust Law Journal 329, 345 fn 51.

[867] The Commission pointed more or less explicitly to the key role of the prohibition of charging excessive royalties on the protection of the proper functioning of the internal market in the Guidance Paper. Commission, 'Guidance on the Commission's enforcement priorities in applying Article 82 EC Treaty to abusive exclusionary conduct by dominant undertakings ' [2009] OJ C45/7 para 7.

[868] Pinar Akman, 'The Role of Exploitation in Abuse under Article 82 EC' (2009) 11 Cambridge Yearbook of European Legal Studies 165, 176ff.

[869] Damien Geradin, 'Pricing abuses by essential patent holders in a standard-setting context: A view from Europe' (2009) 76 Antitrust Law Journal 329, 332.

[870] As explicitly acknowledged by former Commissioner Kroes. Neelie Kroes, 'Tackling Exclusionary Practices to Avoid Exploitation of Market Power: Some Preliminary Thoughts on the Policy Review of Article 82' (2005) 29 Fordham International Law Journal 593, 595.

[871] Which, as explained in Chapter 3, became apparent in the Commission's Guidance Paper. European Commission, 'Guidance on the Commission's enforcement priorities in applying Article 82 EC Treaty to

This however does not entail that the Commission cannot and should not intervene[872] in patent ambush cases where it is clear that the value of the licence does not have a reasonable relationship with its economic value.[873] Intervention will even more be justified, if the SDO had otherwise opted for a different technology or if the ambushing SEP holder is charging excessive prices while other SEP holders license on FRAND or royalty-free terms. Excessive prices derived from ambushes might also hinder or impede follow-on innovation[874] since, in many cases, implementers in standard-related markets are not mere users of the technology but actual innovators.[875] As a result, patent ambush is likely to affect the whole the spectrum of companies holding SEPs and implementing the standard.[876] Despite justified concerns about the limitations of courts or competition authorities to define prices, there are reasons to advocate for intervention in certain cases.

On a more principled note, it can be argued that in a patent ambush case the demand-side of the market cannot self-discipline the royalties of the ambushing company unless the existence of the deception and its positive effect on royalties is broadly acknowledged by the industry.[877] In this regard, a proceeding[878] against the ambushing company is likely to flag such situation to participants in the market in an environment where confidentiality in licensing terms is the rule. Hence, participants in the market can – in any event and regardless of the outcome of the proceedings – use the information contained therein to adjust the royalties in the framework of bilateral negotiations. Such adjustment shall not necessarily take place if the excessiveness of the royalties remains unnoticed for a large portion of implementers.

While courts and competition authorities are not as capable as the market to define prices, margins or benchmarks, their decisions are grounded on market information. Both judges and competition authorities rely on the information provided by the defendant, claimants,

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abusive exclusionary conduct by dominant undertakings' [2009] OJ C45/7. Paradoxically, it took fifteen years from the entry into force of the Treaty of Rome, until the Court of Justice decided the first exclusionary abuse case. Peter Behrens, 'The ordoliberal concept of 'abuse'of a dominant position and its impact on Article 102 TFEU' in Fabiana di Porto and Rupprecht Podszun (eds), *Abusive Practices in Competition Law* (Edward Elgar Publishing 2018) 12.

872 In fact, the Commission opened formal proceedings against Qualcomm on the basis of alleged exploitative prices in licensing practices, which later were closed without reaching any formal conclusion. European Commission, 'Antitrust: Commission closes formal proceedings against Qualcomm' (2009) MEMO/09/516.

873 Case 27/76 *United Brands v Commission* [1978] ECR 207, para 250. The Commission recalled such principle for the case of SEPs licensing, arguably increasing the threshold from 'reasonable relationship' to 'clear relationship': 'Licensing terms have to bear a clear relationship to the economic value of the patented technology'. European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 6.

874 Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1161.

875 As argued by Cotter ibid 1169, quoting the work of Merges and Nelson.

876 Which is not necessarily the case for over-disclosure, as will be discussed in Section 4 below.

877 The adjustment of royalties alleviates the anticompetitive harms if the ambush has not resulted in the exclusion of competing technologies – which will be analysed in next subsection. If the ambush has an exclusionary effect, the ability of a locked-in market to face patent ambushes is even more constrained, since it is not very likely that companies are willing to re-design the standard to exclude the hidden technology.

878 Regardless being before a court or before a competition authority.

intervening parties or amicus curiae briefs to define the appropriate royalty. Judges are also familiar with patent valuations, when eg awarding damages in a patent infringement suit.

Of course, the valuation criteria can be criticised.[879] However, the methods of valuation used by judges or competition authorities are used also by businesses. Virtually any party that might have a say on how to calculate the royalty or the relevant data for such calculation may be able to provide the court or the competition authority with this information. Therefore, if it assumed that parties in bilateral negotiations are able – in most of the cases – to arrive to an appropriate valuation by relying on information exchange, arguably a judge with the same information might arrive at an appropriate valuation too.

Another point that it is usually missed by the advocates of non-interventionism is that the intervention does not take place under conditions of a normally functioning market. In SEP licensing cases courts and competition authorities[880] intervene where the parties involved in the negotiation have failed to reach an agreement or if one of the parties – usually the licensee – understands that the royalty offer has little relationship with the actual value of the technology.[881]

Finally, it is sometimes overlooked that bringing proceedings in the framework of SEPs does not necessarily end with the court or the competition authority fixing the royalty rate, although this is an eventual result that should be accepted upfront. Court cases can end with an agreement between parties on the terms of the licence without the need of judicial adjudication; similarly, an investigation can be closed without further consequences – as happened in the EU Qualcomm case[882] – or with a commitment from the company – as in Rambus.[883]

Regardless of the final outcome of the case, intervention – or the possibility of – has a deterrent effect not only for the companies involved but for the rest of the market. It acts as an incentive for companies to

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[879] See Section 4.2.2. See, for example, the work of Galetovic and Haber arguing in favour of comparables vis-à-vis top-down and bottom-up criteria. Although the comparables methodology has also shortcomings, since it is not always possible to have suitable comparables and, moreover, the comparable may equally be excessive, the judicial decision can identify an excessive price which can then be used as a benchmark within an entire industry. Alexander Galetovic and Stephen Haber, 'SEP Royalties: What Theory of Value and Distribution Should Courts Apply' (2019) Hoover IP² Working Paper Series No 19001 <https://hooverip2.org/working-paper/wp19001> accessed 1 November 2022.

[880] Padilla et al consider that royalty determination 'is a task that is best left to negotiations in the market or, as a last resort, to the courts in those limited cases when the parties cannot reach agreement'. Yet it is difficult to find reasons that can explain why courts are better suited than competition authorities to define royalties, particularly if the latter have expertise in economics, which is not usually the case of the former. Jorge Padilla, Douglas H Ginsburg and Koren Wong-Ervin, 'Antitrust Analysis Involving Intellectual Property and Standards: Implications from Economics' (2019) Harvard Journal of Law & Technology 1, 31

[881] Similarly, Lemley argues that in cases of hold-up, antitrust is 'a backstop that's going to apply only if private efforts in SSOs and IP law have already failed'. Mark A Lemley, 'Ten things to do about patent holdup of standards (and one not to)' (2007) 48 British Columbia Law Review 149, 167.

[882] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[883] Commission, 'Antitrust: Commission closes formal proceedings against Qualcomm' (2009) MEMO/09/516.

avoid free-riding behaviours, which might result in malfunctions of the market and in overall higher transaction costs.

Although this line of argument has been mostly addressed from the perspective of excessive pricing by the licensor, intervention should equally be considered, *mutatis mutandis*, in cases where the implementers hold monopsonist market power.[884]

A bottom-line, which might be overlooked sometimes, is that the non-intervention of competition law in patent ambush cases would not prevent a court to decide on royalties. In the counterfactual, namely, if the courts and authorities refrained from applying competition law to ambush cases, the SEP holder can take recourse to patent law and the implementers to contract law [885] or unfair competition law. As a result, non-intervention of competition law will not result in a smooth licensing process where the market will fix the appropriate royalty, but to a scenario where courts will still have to fix the royalties to be paid. In other words, most, if not all, SEP cases dealt under the aegis of competition law will turn into patent cases. One cannot lose sight of Commission's intervention track record in the last thirty years in disclosure-related cases: only two cases[886], both of them started after a formal complaint of private companies.[887]

Additionally, it should be recalled that while a higher or lower level of interventionism is a policy option – in particular for ex officio proceedings from competition authorities – courts deciding in ambush cases cannot ignore the competition law dimension. In other words, less or no interventionism does not imply the inapplicability of Articles 101 and 102 TFEU.[888]

Most of the arguments against the ability of competition courts or authorities to determine royalties can be applied to courts deciding on patent infringement or unfair competition behaviours. Moreover, patent

[884] In fact, it would be interesting to see the opinion of those advocating for non-intervention in case of patent ambush if the case at stake were one against an unwilling licensee that holds out a SEP holder.
[885] Only in the cases when the company is bound to the SDO IPR policy – by means of eg membership to the SDO or participation in technical committees.
[886] Sun Microsystems/ETSI and Rambus.
[887] Although Infineon withdrew its complaint well before the Commission sent its statement of objections to Rambus. European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, paras 5-6 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.
[888] Nevertheless, some scholars, rather than advocating for less or non-interventionism, directly contend that antitrust is not of application to SEPs-related hold-up. Although such positions may have a certain attraction as regards US antitrust law, they cannot be applied to EU competition law, notably when the behaviour results in anticompetitive effects as it is analysed in this section. See Gregory J Werden and Luke M Froeb, 'Why Patent Hold-Up Does Not Violate Antitrust Law' (2019) 27 Texas Intellectual Property Law Journal 1.

law[889], contract law[890] and unfair competition[891] present certain limitations to address the whole dimension of the ambushing behaviour, and in particular, might fail to address some of the anti-competitive effects of excessive pricing in the case of ambushes.

In conclusion, despite the objections to the application of Article 102 TFEU to excessive pricing, it must not be ruled out if the behaviour leads to negative effects on competition.

Patent ambush cases are one of the cases in which the application of the prohibition of excessive prices merits at least consideration. In this regard, Drexl considers that the EU Rambus case can be read as an exceptional application of Article 102(a) TFEU to a case where non-intervention might incentivise restraints in competition in innovation.[892]

An alternative, but arguably complementary view[893], is that the application of Article 102 TFEU to excessive pricing works as a means to solve the 'monopolization gap'[894]: one of the main issues when facing patent ambush cases from an EU perspective.

Nevertheless, the Commission initiated proceedings against Qualcomm on the basis of purely exploitative abuse – which seems more aligned with Drexl's approach – and without the need of a prior deception to justify such intervention.[895] Such proceedings signal that the Commission was willing to intervene in cases of exploitative (hold-up) abuses related to SEPs. Its closing, on the other side, leaves open the question of whether the Commission closed the case due to the lack of substantive grounds

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[889] While in the US the application of patent law can potentially address some of the issues related to patent ambush, in Europe the margin of decision for judges is way more constrained. The role of US patent law to address hold-up situations have been analysed in Daryl Lim, 'Standard essential patents, trolls, and the smartphone wars: triangulating the end game' (2014) 119 Pennsylvania State Law Review 1, 81ff. The limitations of patent law to address patent hold-up has been echoed by Culley et al in Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 143.

[890] Inasmuch as the contractual obligations stem from the SDO's IPR policies, the constraints of contract-based actions are on the one hand, the inherent difficulties of defining the substantive obligations derived from vague and non-precise terms, as explained in Chapter 3 Section 3 above, and, on the other hand, some major international private law issues which have been addressed by Jorge L Contreras, 'Private Law, Conflict of Laws, and a Lex Mercatoria of Standards-Development Organizations' (2019) 27 European Review of Private Law 245.

[891] Unfair competition laws, at least in B2B relationships, is not sufficiently harmonised within the EU, and moreover its guiding principles differ from country to country, putting at stake whether patent ambushes are likely to be addressed successfully in all EU jurisdictions. In addition, as pointed out by Drexl, there is an actual risk that national unfair competition rules are applied in an anti-competitive way. Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World* - Liber Amicorum Joseph Straus (Springer 2009) 146.

[892] Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 535.

[893] Although Drexl refers more precisely to the "loopholes" created by the market-dominance approach rather than to the sole issue of deceptive acquisition of market power. Ibid 542.

[894] The monopolisation gap refers to the inability of Article 102 TFEU to tackle fraudulent acquisition of market power, because at the time of the behaviour the company was not dominant. Lars-Hendrik Röller, 'Exploitative abuses' in Claus-Dieter Ehlerman and Mel Marquis (eds), *European competition law annual 2007 A reformed approach to article 82 EC* (Hart Publishing 2008) 528.

[895] It can be argued that the deception might consist in hindering the willingness of licensing the SEPs on non-FRAND terms despite the FRAND commitment. In practice, however, it is very difficult to differentiate between this scenario and a disagreement between parties of what is FRAND.

to act against Qualcomm or to the lack of evidence of exploitative practices – although the Commission pointed to the latter.[896]

### b) Under-disclosure: a structural element of abusiveness

The analysis above suggests that patent ambush is a case of exploitative practices. Yet it is not one exclusively on exploitation.[897] Hence, it is important to sketch what distinguishes a patent ambush case from a mere claim of excessive royalties, and moreover, what are the effects of that conduct.

The wording of the decision in Rambus opened a discussion concerning the role of the under-disclosure when defining the abuse and its relationship with the disclosure duty. According to the Commission, Rambus´ anticompetitive behaviour consisted in 'abusing its dominant position by claiming royalties for the use of its patents from JEDEC-compliant DRAM manufacturers at a level which, absent its allegedly intentional deceptive conduct, it would not have been able to charge'.[898]

In this regard, the Commission's approach to the abuse in Rambus has opened the floor to several interpretations concerning the role of 'deception'[899] in relation to the abusive conduct. Some authors argue that the Commission considers the deceptive conduct as an abuse by itself[900], or more broadly, that ambushing is a *sui generis* form of abuse.[901]

Others understand that the Commission did not hold the deception to be an abuse by itself[902], by relying on the General Court statements in the AstraZeneca[903] case.[904] On the contrary, it is also argued that it is not necessary to consider the deception abusive, but as an evidence of an increase of market power for reasons other than the technical merits of the technology.[905]

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[896] European Commission, 'Antitrust: Commission closes formal proceedings against Qualcomm' (2009) MEMO/09/516.

[897] Similarly, some authors support that Rambus is not a mere case on exploitative pricing. See Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 391. Similarly Peter Picht, 'Patents on Standards: Highwaymen in Ambush or Driving Force for Innovation and Competition?' (2012) 53 Seoul Law Journal 759, 773.

[898] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, para 28 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[899] Note that here 'deception' is used as a synonym of under-disclosure to follow the Commission's (and scholars') wording. A more detailed analysis on whether deceptive under-disclosure – as compared to non-deceptive under-disclosure – is legally relevant is conducted in Sub-section 3.3.1.2 below.

[900] 'There is no doubt that the Commission also regards deceptive conduct as itself capable of being classified as an abuse'. Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 721.

[901] Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 129.

[902] David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 104; Urška Petrovcic, *Competition law and standard essential patents: a transatlantic perspective* (Wolters Kluwer 2014) 86.

[903] The convenience of applying AstraZeneca conclusions to patent ambush cases has been contested. See Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 721.

[904] Cas T-321/05 *AstraZeneca v Commission* [2010] ECR II-2805; Case C-457/10 P *AstraZeneca v Commission* EU:C:2012:770.

[905] As argued by Mario Mariniello, *European antitrust control and standard setting* (2013) Bruegel Working Paper 2013/01, 15 <https://www.bruegel.org/2013/02/european-antitrust-control-and-standard-setting/>

The Commission's 'construction' could be considered a means to 'bridge'[906] the monopolisation gap -ie the absence of dominant position at the time of the deception, but also raises the question of whether the deceptive conduct alone is a behaviour that might trigger competition law intervention. Some of the criteria required to answer such question are far from being clear.

Considering patent ambush cases as a mere exploitative abuse does not capture the actual anti-competitive dimension of patent ambush, eventually leading to insufficient remedies. This could lead to oversight that the patent has become essential not as a result of effective competition on an equal footing with the rest of competing technologies, but as a result of the failure to disclose the SEPs.

As analysed above, the negative effects of the exclusion of competing technologies are more acute when the SEP holder insists on licensing the technology on terms that are more burdensome than those established by the SDO's IPR policy. Therefore, under-disclosure aggravates the negative effects of excessive SEP prices, and *vice versa* excessive prices aggravate the consequences of the exclusionary effect of under-disclosure.

In sum, the Commission's decision in Rambus opens the floor to consider the deceptive conduct (under-disclosure) as an abusive behaviour – or at least, as part of such behaviour. There are two circumstances that support such reading: the first one is that the Commission based its competition law concerns on the harms that deception caused to the competitive process beyond the prototypical theory of harm linked to exploitative prices. Secondly, it can be argued that under-disclosure was the differential factor that distinguished Rambus from the Qualcomm case. From a practical perspective, it is easier to evaluate the abusiveness of the behaviour if there is a prior deception and, from a substantive perspective, the anticompetitive effects are likely to be more acute if the excessive prices are grounded in a prior deception.

This approach is consistent with the potential anticompetitive effects that under-disclosure can provoke which, first, do not necessarily take place in cases of mere exploitative abuses and, second, will be aggravated if under-disclosure and exploitative pricing concur.

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accessed 1 November 2022. This approach however does not fit the European approach to competition law, according to which mere acquisition of market power – even by means of fraud - is not a competition law violation.

[906] Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 721. On a similar reasoning see Peter Picht, 'Patents on Standards: Highwaymen in Ambush or Driving Force for Innovation and Competition?' (2012) 53 Seoul Law Journal 759, 773.

### 3.1.1.2 Under-disclosure, breach of SDO's IPR policies and deception

#### a) Under-disclosure and breach of the SDO IPR Policies

The question then is under which circumstances under-disclosure amounts to an abuse? At a first step, one has to clarify the role of the SDO's disclosure rules. In this regard, it seems that the Commission endorsed a general 'good faith' approach going beyond what the SDO rules require. The Commission argues legitimate expectations of the participants in the standardisation process.[907] More specifically, the Commission states that a breach of the rules of an SDO 'would not be a necessary requirement for finding an abuse'.[908] Thus, the absence of a violation of the disclosure rules does not rule out the abuse related to the deception.[909] As a result, the Commission relied on Article 102 TFEU as legal basis for its 'good faith' approach.[910]

Conversely, Petit argues – by relying on the European administrative law definition – that 'legitimate expectations' require a 'precise and specific assurance' from the organisation and the lawfulness of the SDO's IPR policy.[911] From an US perspective, Teece and Sherry understand that, absent an explicit disclosure obligations under the SDO's rules, the lack of disclosure of a patent application should not delude anyone into believing that no patent protection was sought or going to be sought.[912]

Yet these arguments are not very consistent with the industry-driven nature of the SDOs standardisation process and, moreover, with the role that trust plays in standardisation, notably as regards the incentivising function that legitimate expectations have for participation in standardisation.

The competition law relevance – ie legal effect – of disclosure rules is somehow slippery. Yet I contend it is appropriate to characterise disclosure rules as contractual clauses that SDOs put in place to prevent some of the potential anti-competitive effects that SDO standardisation might cause. If such rules fail, nothing should prevent competition authorities to tackle the anti-competitive effects either as an individual behaviour, as well as at SDO level.[913] This understanding is coherent with the "broader" approach to disclosure obligation of the Commission in

[907] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, paras 36-38 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.
[908] ibid para 39.
[909] Robert O'Donoghue and Jorge Padilla, *The Law and Economics of Article 102 TFEU* (A&C Black 2014) 723.
[910] As rightly noted by Prof. Drexl on his comments to a prior version of the thesis.
[911] Nicolas Petit, 'EU Competition Law Analysis of FRAND Disputes' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 304.
[912] David J Teece and Edward F Sherry, 'Standards setting and antitrust' (2002) 87 Minnesota Law 1913, 1926.
[913] As discussed in Chapter 6

Rambus.[914] As a result, from disclosure rules' perspective we can distinguish up to three types of cases:

> (1) Disclosure rules are not suited to prevent the anticompetitive effects from arising – a case for Article 101 TFEU intervention to be discussed in Chapter 6;
>
> (2) The ambush takes place in compliance with lenient disclosure rules or due to its absence – arguing for an intervention on the basis of Article 101 TFEU at SDO level and an Article 102 TFEU action against the abusing company[915] rooted on the frustration of legitimate expectations/good faith approach.
>
> (3) Failure to comply with clear and appropriate disclosure rules – a case that can be handled at the light of Article 102 TFEU as failure to comply with a set of rules whose purposes is articulate standardisation as a competitive and innovative process and also as a case of frustration of legitimate expectations – notably those related to honouring the company´s commitment vis-à-vis the SDO.

The different scenarios for Article 101 TFEU intervention in the first set of cases are developed in Section 4 of Chapter 6 below, whereas the third case corresponds to what has been debated above in connection with Rambus. The Commission was quite explicit on the basis for intervention in case of breach of IP policy in Rambus.

> JEDEC patent policy and the underlying duty of good faith intended to provide members with an opportunity to develop open standards free from potential patent claims. In other words, the policy was aimed at preventing one member company from secretly capturing the standard by not disclosing to JEDEC that technologies being included were covered by the member's granted patent or pending patent application and at preventing the manipulation of the standard-setting process by filing patent applications on technologies discussed for inclusion by JEDEC and finally, at ensuring that licences for technologies protected by patent rights included in the standard are offered to JEDEC members on reasonable terms.[916]

The second case, does not present any difference with the first case in which concerns application of Article 101 TFEU, provided that the existent set of disclosure rules fail to prevent the anticompetitive effects discussed above.[917] It is however more problematic than the third case

[914] And moreover with the Standardisation Agreements' Section of the Horizontal Cooperation Guidelines. European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, paras 277ff.

[915] This group of cases largely corresponds to the Sun Microsystems/ETSI case – commented in Chapter 6, Section 4 below.

[916] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, para 38 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[917] Including, but not limited to those echoed within the Horizontal Guidelines.

from the perspective of enforcement against an under-disclosing company whose absence of disclosure is done in compliance with SDO IPR Policy. The Commission, however, provides some guidance in this regard:

> (T)he Commission considered that Rambus may have breached JEDEC's patent policy in its preliminary assessment, an actual breach of the precise rules of a standard-setting body would not be a necessary requirement for a finding of abuse in this context. The finding of abuse would rather be conditioned by the conduct that has necessarily influenced the standard process, in a context where suppression of the relevant information necessarily distorted the decision making process within a standard-setting body.[918]

Following such line of reasoning under-disclosure might be tackled if it has distorting effect on the decision making process of the standardisation organisation, even in compliance of the (lenient) disclosure rules or its plain absence.

However, the workability of Article 102 TFEU in this latter case remains challenging: whether a behaviour distorts a decision-making process depends ultimately on the rules that govern such decision process. Since standard developing is a private ordering and artificially created pre-market competition, speaking of a distortion requires that the 'right' decision-making process is reflected in the values, rules and uses of the SDO.

Therefore the approach of the Commission reveals to be quite limited: any reference to the decision-making requires to revert back to the SDO policies – as articulating rules of the decision-making process. The only cases where under-disclosure might be tackled in this scenario is when other surrounding factors – beyond the letter of the IPR Policy – prove that the under-disclosure altered the decision making process. For example, one may think of regular failures in answering to calls for disclosure in technical committees or the failure to meet an explicit objective of the SDO – eg to design a patent free standard.

Expanding the reach of disclosure rules in ambush cases beyond the letter of the IPR policy remains contested,[919] but is not that troublesome from an EU competition perspective, provided that actual or potential competitive harms are in place.

Nevertheless, this set of cases present major limitations in practice. In absence of clear disclosure rules it is very difficult to prove that the breach of a good faith duty and/or legitimate expectation has altered the decision-making process and produced anti-competitive effects, which is

[918] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, para 39 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[919] Cotter consider it a false positive when evaluating the deceptive behaviour – ie the Court considers that the IP policy imposes heavier duties on the SEP holders than it is actually intending to impose. Thomas F Cotter, 'Patent holdup, patent remedies, and antitrust responses' (2009) 34 Journal of Corporate Law 1151, 1197.

way easier to prove in case of pre-existing, clear disclosure rules. Hence, straightforward disclosure rules would also contribute to a better understanding of the legitimate expectations of the rest of participants within the standardisation process.

These practical limitations might explain why the Commission refrained from acting against an under-disclosing company (Sun Microsystems) which has disclosed its patents in conformity with lenient disclosure rules (ETSI) in the Sun Microsystems/ETSI case.[920] Rather, the Commission put the focus on ETSI IP Policy, which in principle suffices for the first set of cases but falls short of the second one.[921]

Even if such anticompetitive effects are proved, there is a case to argue for an objective justification. Namely, that if companies are expected systematically to go way beyond the letter of the IPR policies in connection to disclosure, they will incur substantial costs and delays in the standardisation process, resulting in a highly inefficient standardisation dynamics.

### b) Wilful under-disclosure: deception

The wording of the Commission in Rambus was not particularly accurate with regard to the nature of an underlying intentionality. As highlighted before, the Commission made constant references to the 'allegedly deceiving conduct' of Rambus, putting excessively the focus on the intentionality of the undertaking.

The question that arises therefore is whether intent is relevant for the purposes of application of Article 102 TFEU to under-disclosure cases. This question is of a paramount importance not only from a pure theoretical perspective, but also from a practical one, since, as analysed in Chapter 3 there is a substantial part of under-disclosures that might be caused by mere lack of awareness of the SEP holder.

Deception is an undesirable behaviour for the market and, even more, for the society, and does not produce any positive economic effects.[922] Both civil and common law systems include provisions that repress deception using various concepts, including fraud and misrepresentation. A radically different question is whether deception in the framework of an SDO is a matter for competition law.[923] Yet, deception can hardly be considered as competition on the merits.[924]

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[920] European Commission (Case COMP/C-3/37926) - ETSI/Sun. See below section 4, Chapter 6 for a detailed analysis.

[921] Sun Microsystems/ETSI is a prototypical example of the second typology of cases.

[922] Maurice E Stucke, 'How Do (and Should) Competition Authorities Treat a Dominant Firm's Deception' (2010) 63 Southern Methodist University Law Review 1069, 1074.

[923] Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World* - Liber Amicorum Joseph Straus (Springer 2009) 109.

[924] Joseph Farrell *et al*, 'Standard setting, patents, and hold-up' 74 Antitrust Law Journal 603, 657; Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 308. See also FTC, 'Opinion of The Commission In the Matter of Rambus, Inc. Docket No. 9302' 28 <www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf> accessed 1 November 2022.

References to the "good faith disclosure" principle and to the intentionality of the abusing company in the framework of the application of Article 102 TFEU are troublesome, inasmuch the CJEU has configured the abuse as an objective concept[925], prima facie ruling out any reference to the underlying intentionality of the dominant company.[926]

Deception constitutes intentional behaviour since it requires that the deceiving company is aware of certain information and, subsequently, either conceals or misrepresents it. In the only event where deception might arguably happen in absence of intentionality would be in the case where a special duty to care is neglected by the deceiving undertaking. In under-disclosure cases, the only ground for supporting an 'objective deception' approach would assume that SEP holders participating in SDO standardisation are under a general duty to know the status of all patents and patent applications of their entire portfolio and to communicate the existence of SEPs accurately to the SDO.

In such event, the deception would take place not on the basis of misrepresented known information but on the breach of a 'duty to care'. Yet, it is too far reaching to configure a harsher duty to care than the one defined by the SDO, with a view to all the aspects discussed in Section 2, particularly the scope of the duty to disclose as defined by SDOs – which, among others, explicitly discard the obligation to conduct a patent search. The question hence is whether the eminently intentional role of deception can – and should – be reconciled with the objective concept of abuse.

The characterisation of abuse as an objective concept, entails that it is irrelevant whether the company intended or not to pursue an anticompetitive goal.[927] Additionally, it prevents dominant companies from shielding the behaviour behind their lack of intentionality and/or negligence-related arguments.[928]

This does not conflict with, nor necessarily prevent the Courts or the Commission to consider the intentionality of the dominant company linked to the deception when evaluating the abusive behaviour[929]:

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[925] Case 85/76 *Hoffmann La Roche* [1979] ECR 461, para 91.

[926] However, Eilmansberger, who is in support of taking into account intentionality when evaluating the behaviour, argues that, in certain cases, intent is helpful to draw a line between normal and improper behaviour by turning around cause and effect in the cases of alteration of the market. Literally, he argues that '(i)t should be considered an abuse of a dominant position if the firm were intentionally to use such practices to change the market mechanism to its advantage, either with a view to reducing the competitive pressure exerted by other firms, or by making it more difficult for them to win customers on the basis of superior performance. It is thus the intention to alter, or to use the ECJ's words in Hoffmann-La Roche, the attempt "to influence", the structure of the market by means of normal business practices which constitutes the specific non-performance competition caught by Article 82 EC.' Thomas Eilmansberger, 'How to distinguish good from bad competition under Article 82 EC: In search of clearer and more coherent standards for anti-competitive abuses' (2005) 42 Common Market Law Review 129, 146 and 147.

[927] Alison Jones and Brenda Sufrin, *EU Competition Law* (Oxford University Press 2016) 376.

[928] Strictly speaking, the statement of the Court in Hoffmann-La Roche was in answer to Hoffmann-La Roche's submission of that 'such breach was not committee (sic) either intentionally or negligently'. Case 85/76 Hoffmann-La Roche [1979] ECR-461, 469.

[929] A broader interpretation of the statement in Hoffmann-La Roche – namely, in the sense that the objective nature of the abuse is not limited to the anticompetitive goals of the behaviour but extends to all the elements of the abusive behaviour – would necessarily lead to the understanding that the claim

Hoffmann-La Roche established that intent is not a necessary requirement to find an abuse but did not state either that it was irrelevant.[930]

Consequently, the objective concept of an abuse does not mean that any reference to the 'good-faith disclosure' principle or intentionality should be omitted upfront in the analysis of the behaviour at the light of Article 102 TFEU. In particular in two cases, first when evaluating the legitimate expectations of the participants in the standardisation[931]; and second, and probably more importantly, when failure to comply with the good faith disclosure principle results in stronger anticompetitive effects. This is arguably the case as regard harm to trust in the standardisation process, which is more acute in cases of bad faith under-disclosure than in cases in which under-disclosure takes place because of lack of awareness of the essentiality of a given patent.

It is undeniable that in AstraZeneca the CJEU considered the misrepresentation of information before national authorities that lead to the (actual and potential) undue extension of protection of a patent by means of a SPC an abuse and not competition on the merits.[932] The judgment in AstraZeneca supports the view that deception, under certain circumstances, can amount to an abusive behaviour if it leads to anticompetitive effects.[933]

From an innovation theory perspective, the intervention of competition law in cases where deception produces negative effects is justified in view of preserving incentives to innovate of all – actual or potential – participants in SDO standardisation.[934] By discouraging free-riders, competition law intervention can help create an environment where the main concern for technology developers should be to beat their

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for a 'good-faith disclosure' approach in the Horizontal Cooperation Guidelines is a programmatic principle which should be included within the SDOs IPR Policies, and whose default must be dealt within the SDOs. Article 101(3) TFEU can be basis for such duty in the framework of SDOs, as will be analysed in Chapter 6. See Daniel Culley, Malik Dhanani and Maurits Dolmans, 'Learning from Rambus—How to Tame Those Troublesome Trolls' (2012) 57 The Antitrust Bulletin 117, 131.

[930] That was also the interpretation of the General Court in Astra Zeneca: '(P)roof of the deliberate nature of conduct liable to deceive the public authorities is not necessary for the purposes of identifying an abuse of a dominant position, intention none the less also constitutes a relevant factor which may, should the case arise, be taken into consideration by the Commission. The fact, relied upon by the applicants, that the concept of abuse of a dominant position is an objective concept and implies no intention to cause harm (see to that effect, Aéroports de Paris v Commission, paragraph 309 above, paragraph 173) does not lead to the conclusion that the intention to resort to practices falling outside the scope of competition on the merits is in all events irrelevant, since that intention can still be taken into account to support the conclusion that the undertaking concerned abused a dominant position, even if that conclusion should primarily be based on an objective finding that the abusive conduct actually took place.' Case T-321/05 *Astra Zeneca v European Commission* [2010] ECR II-2805, para 359.

[931] Which, according to the Commission in Rambus, should be taken into account. European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, para 41 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[932] Case C-457/10 P *AstraZeneca v Commission* EU:C:2012:770, paras 93 and 98.

[933] ibid paras 106ff.

[934] Drexl considers that this is one of the justifications for competition law intervention in Rambus, yet he refers to the case where the deception is coupled with the claim of excessive royalties. Josef Drexl, 'Deceptive Conduct in the Patent World – A Case for US Antitrust and EU Competition Law?' in Wolrad Prinz zu Waldeck und Pyrmont *et al* (eds), *Patents and Technological Progress in a Globalized World* - Liber Amicorum Joseph Straus (Springer 2009) 153.

competitors in the race for the standard, rather than second-guessing whether some of the participants in the technical committee are playing with marked cards.

Such intervention might also have positive effects on follow-on innovation. The sudden appearance of patented technologies for which its holder is asking for royalties after hiding them during the standardisation process can indeed slow down standard implementation[935] – regardless of whether the terms of the offer are FRAND or not. A large number of implementers might prefer to 'wait and see' whether the technology is actually essential, whether the terms offered are FRAND or whether any other company successfully challenges the ambush in courts or before a competition authority.

In conclusion, the intentionality of the SEP holder might not have any relevance whatsoever to assess the abusive nature of the behaviour, and therefore the assessment of the abusiveness of the behaviour must be done on the basis of its actual or potential anticompetitive effects and regardless of the intentionality.

As a result, unintentional under-disclosure can trigger the application of Article 102 TFEU if coupled with a claim of royalties in more burdensome terms than those stablished by the SDO IPR policies. Yet this case is highly theoretical: it is not very likely that a company that, by mistake, has oversight some of its SEPs insists on licensing them in more burdensome terms.

However, intentionality cannot be excluded at the analysis of the effects of the behaviour, particularly in the pre-market dynamic competition and in confidence in standardisation process. The fact that the Commission refers to the intentional and deliberate nature of Rambus´ behaviour up to nine times[936] – within a relatively short decision – argues against of considering the intentionality to be absolutely irrelevant.

#### 3.1.1.3 Remedies

##### a) Duty to license in pre-defined licensing terms

One of the consequences of characterising patent ambush as the combination of two behaviours which result in different anticompetitive harms is that the remedies cannot be limited to those imposed on exploitative pricing or refusal to deal cases.

An obligation to license on FRAND terms[937] can successfully address the anti-competitive concerns derived from either a refusal to license or exploitative practices. However, it presents two substantial limitations:

[935] Jonathan Faull and Ali Nikpay (eds), *The EU Law of Competition* (OUP 2014) 500.

[936] European Commission, *Rambus* (Case Comp/38636) Commitment Decision of 9 December 2009, paras 1, 3, 27, 28, 40, 42 and 72 <https://ec.europa.eu/competition/antitrust/cases/dec_docs/38636/38636_1203_1.pdf> accessed 1 November 2022.

[937] To simplify the explanation, it is assumed here that the SDO established an obligation to license SEPs on FRAND terms. The reasoning can be applied *mutatis mutandis* to any other pre-defined licensing terms.

first, this remedy is not sufficiently deterrent[938] since the message to ambushing companies is 'whether you disclose or not your essential patents, you will be forced to license on FRAND terms'[939] and, second, it does not address the rest of anticompetitive effects[940], in particular those associated with the exclusion of competing technologies.

Fines can reinforce the deterrent effect in certain cases. The most severe cases of deception can be punished with the unenforceability of the concealed patents. This is not very different from the sanction for not disclosing in Article 10.4 VITA Policies and Procedures[941] or the SEP unenforceability in the Conversant Wireless case – although the court acknowledged that Nokia did not engage in 'egregious misconduct'.[942] Reserving this sanction in the EU for the most harmful cases seems appropriate. Yet in the US unenforceability – as a remedy – is used in a more expedited way.

Exclusion of a technology from the standard as a result of an under-disclosure implies that (1) the SDO's competitive process has not evolved in the way it would have happened absent the deception and (2) the holder of the excluded technology is not receiving the returns from its investments that it would have received absent the under-disclosure. A duty to license on FRAND terms does not address any of these anticompetitive concerns.

[938] Chronopoulos opines that while competition law enforcement can lead to over-deterrence in cases of monopoly pricing, while application of competition law to the same behaviour in the context of standard setting risks to under-deter this anti-competitive behaviour. Apostolos Chronopoulos, 'Patenting Standards-A Case for US Antitrust Law or a Call for Recognizing Immanent Public Policy Limitations to the Exploitation Rights Conferred by the Patent Act?' (2009) 40 International Review of Intellectual Property and Competition Law 782, 790.

[939] Or, as Telyas argues, using a biblical metaphor '(the Commission) may send the wrong signal to SSOs participants that their 'sins' can be forgiven'. David Telyas, *The Interface Between Competition Law, Patents and Technical Standards* (Kluwer Law International 2014) 102. On the other hand, according to Layne-Farrar, SDOs have been more sensible to this issue and have modified their IPR policies to be on the safe side with regard to ambush cases. See Anne Layne-Farrar, 'Proactive or Reactive? An Empirical Assessment of IPR Policy Revisions in the Wake of Antitrust Actions' (2014) 59 The Antitrust Bulletin 373 393ff. Similarly, Contreras argues that it was the Rambus case – together with the FTC case against Dell – what triggered the interest of the antitrust community in SDOs' IPR policies. Jorge L Contreras, 'A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historic Lens' (2015) 80 Antitrust Law Journal 39 44.

[940] Lundqvist also echoes this limitation. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 303.

[941] Art 10.4 VITA Policies and Procedures: 'If a WG Member fails to adequately and timely disclose, on behalf of the VITA Member Company he or she represents, a patent claim or license terms for it as set forth in this Section 10, including at any of the times specified in Section 10.2.3, the VITA Member Company must license it to the extent it is essential to a Draft VSO Specification on a royalty free basis and in accordance with the license restrictions set forth in Section 10.3 for purposes of an implementation compliant with the Draft VSO Specification'.

[942] *Conversant Wireless Licensing SARL v Apple Inc*, Case No 15-cv-05008-NC (ND Cal 2019) 6.

| Table 3: Anti-competitive effects of exclusion of competing technologies and effects of a duty to license | | | | |
|---|---|---|---|---|
| Competitive process | The excluded technology is | Anticompetitive effects | Remedies | Post remedy anticompetitive effects |
| Competitive process based on trade-off tech/costs | Superior | • Lock-in into an inferior technology<br>• Harm to the SDO competitive process<br>• Excessive royalties/refusal to license<br>• Misallocation of royalties | Duty to license in predefined licensing terms | • Lock-in into an inferior technology (harm to innovation)<br>• Harm to the SDO competitive process<br>~~• Excessive royalties/refusal to license~~<br>• Misallocation of royalties |
| | Comparable | • Harm to SDO competitive process<br>• Excessive royalties/ refusal to licence<br>• Misallocation of royalties | Duty to license on predefined licensing terms | ~~• Harm to the SDO competitive process~~ (at least attenuated)<br>~~• Excessive royalties / refusal to license~~<br>• Misallocation of royalties |
| | Inferior | • Harm to SDO competitive process<br>• Excessive royalties/ refusal to license<br>• Misallocation of royalties | Duty to license on predefined licensing terms | ~~• Harm to the SDO competitive process~~<br>~~• Excessive royalties / refusal to license~~<br>~~• Misallocation of royalties~~ |
| Competitive process based on technological merits | Superior | Not feasible | N/A | N/A |
| | Comparable | • Harm to SDO competitive process<br>• Excessive royalties/ refusal to license<br>• Misallocation of royalties | Duty to license on predefined licensing terms | ~~• Harm to SDO competitive process~~<br>~~• Excessive royalties / refusal to license~~<br>• Misallocation of royalties (?) |
| | Inferior | • Harm to SDO competitive process<br>• Excessive royalties<br>• Misallocation of royalties | Duty to license on predefined licensing terms | ~~• Harm to SDO competitive process~~<br>~~• Excessive royalties / refusal to license~~<br>~~• Misallocation of royalties~~ |

As illustrated in Table 3, the effects of a duty to license depends on (1) whether the SDO competitive process is done on the basis of the trade-off between technological merits and costs or just on consideration of the technical merits and (2) whether the excluded technology is superior, comparable or inferior to the under-disclosed one.

If the criteria for standardisation is the trade-off between technology and cost, it is not very likely that neither the harm to the competitive process nor the lock in into an-inferior technology – resulting from the exclusion of a superior technology can be remedied. Doing so implies to redesign the standard, which is not very likely to happen, particularly if the standard has been released and part of the industry is already locked in into the standard.

Thus, in this scenario the duty to license on FRAND terms can only mitigate the royalty related concerns, without addressing the rest of anticompetitive harms: namely, the lock-in into an inferior technology, the harm to the SDO competitive process and the misallocation of royalties.

Excluding a comparable or inferior technology does not present a risk of lock-in into an inferior technology; in other words the under-disclosure is neutral (or even positive) as regards the innovative performance of the standard. Nevertheless, the rest of anticompetitive concerns take place also in this scenario.

A duty to license on FRAND terms in these cases can contribute to address both the concerns related to excessive pricing and refusals to license and (at least partially) the harm to the SDO's competitive process. If the excluded technology is inferior and the ambushing company is forced to license on FRAND terms, the hypothetical competition process would have resulted in the selection of the ambushing technology too. Consequently, a duty to license on FRAND terms remedies all the anticompetitive concerns, including the misallocation of royalties.

On the other hand, if the excluded technology is comparable to the standardised one, the duty to license on FRAND terms can, at best, attenuate the negative effects on the SDO's competitive process and leaves open the issue of misallocation of royalties.

Whether additional measures should be put in place to address solely the misallocation of royalties is not clear. Although other means such as unfair competition law might be more suitable for the owner of the unduly excluded technology to claim for compensation of the damages caused by the deception, competition law has also a say. In the EU, the Damages Directive[943] enables the possibility of claiming damages. Likewise, in the US Melamed and Shapiro equate the antitrust relevance of patent ambush with the prosecution of a patent by means of fraud and argue to consider it a violation of Section 2 Sherman Act which entitles

[943] Directive No 2014/104 of the European Parliament and of the Council of 26 November 2014 on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and of the European Union [2014] OJ L349/14.

the owner of the excluded patent to claim damages.[944] Thus, at least in theory, there are legal resorts to solve the misallocation of royalties.

In any event, intervention to solve misallocation of royalties would require proof that, absent the under-disclosure, the discarded technology would have been chosen, which would be easier to produce in the cases were the discarded technology was technologically superior, more complex in cases of comparable technologies and almost impossible in cases of inferior technologies.

The effect of a duty to license on FRAND terms in cases where the technological merits are the driving factor are slightly different, since it puts the technologies on an equal footing and therefore neutralises the eventual negative effect for the SDO' competitive process. Such duty to license, moreover, solves the misallocation of royalties' issue in the case that the excluded technology is inferior and arguably if it is comparable too: the outcome of the standardisation would have been the same if the ambushing company had offered its technology on FRAND terms from the outset.

Unlike the cases where a superior technology has been expelled from competition for the standard, most of the anti-competitive effects associated with the exclusion of a comparable or inferior technology would be substantially attenuated[945] if the under-disclosing SEP holder offered the technology on the predefined licensing terms once it gets aware of this fact, or alternatively if such remedy were imposed on the under-disclosing SEP holder.

### b) Addressing other anticompetitive effects

A duty to license on FRAND terms does not address other anti-competitive concerns stemming from patent ambush such as the harm caused to trust in standardisation processes and the artificial increase of asymmetries of information.

In addition to the obligation of licensing on the pre-defined licensing terms, an appropriate remedy would be obliging the ambushing company to conduct an analysis within its patent portfolio looking for additional patents that can be essential; and subsequently to conduct an essentiality check of its own patents that are potentially essential for the standard concerned. Although in terms of a cost-benefit assessment, essentiality checks are not particularly useful, and therefore the Commission should refrain from imposing mandatory essentiality checks on SEP holders[946],

[944] A Douglas Melamed and Carl Shapiro, 'How antitrust law can make FRAND commitments more effective' (2018) 127 Yale Law Journal 2110, 2124.

[945] Licensing on predefined terms – either as an imposed remedy or as a result of a decision of the SEP holder – remedies the negative effects in the downstream market but leaves in the realm of hypothesis what would have happened if the technologies had have competed on an equal footing. Apostolos Chronopoulos, 'Patenting Standards-A Case for US Antitrust Law or a Call for Recognizing Immanent Public Policy Limitations to the Exploitation Rights Conferred by the Patent Act?' Apostolos Chronopoulos, 'Patenting Standards-A Case for US Antitrust Law or a Call for Recognizing Immanent Public Policy Limitations to the Exploitation Rights Conferred by the Patent Act?' (2009) 40 International Review of Intellectual Property and Competition Law 782, 790.

[946] As argued in section 3.2 at Chapter 6.

they can be used to reinstate trust and to bridge the artificially created asymmetries of information.[947]

Moreover, imposing essentiality checks is very likely to have a more deterrent effect than just forcing the company to license on FRAND terms. If the penalty is to license on the same terms as the rest of companies that have also acted non-deceptively, this would only create incentives to 'give a try' to ambushes. Moreover, such remedy allows a distinction from SEP holders that have unintentionally under-declared or a SEP holder who was not involved in the standard development, but by chance one of its patents reading into a specification. In such cases a duty to license on FRAND terms, inasmuch as only competition by substitution and by imitation are blocked, would suffice.

### 3.1.2 Under-disclosure as a stand-alone abusive behaviour

Beyond patent ambush cases, in the following it will be discussed whether non-disclosure of patents as such can also be sanctioned under Article 102 TFEU. There are situations that merit careful reflection. For example, in the case consisting in the exclusion of a superior or comparable technology in competition for the standard it is not necessary that the under-disclosing company engages in subsequent abusive behaviour to produce anti-competitive effects.

There are two main lines of argument against the consideration of under-disclosure as an autonomous abusive behaviour: the first one is that the negative effects of under-disclosure by itself are either not that acute or not anticompetitive at all, and the second, more pragmatic, is that deception takes place at a point in time when the company is not dominant.

#### 3.1.2.1 Anticompetitive effects of stand-alone under-disclosure?

Although, at a practical level, it is true that in a scenario where under-disclosure coincides with either an exploitative abuse or a refusal to license the anti-competitive effects are more obvious, it does not automatically rule out anticompetitive concerns linked to under-disclosure as such.

At first glance, such line of defence is counterintuitive – and almost illogical: if consensus-based standardisation in SDOs is considered to be pro-innovative and pro-competitive since it fosters pre-market competition on the grounds of openness, transparency and access to the technology, any behaviour that distorts such competition or its preconditions, should be considered having – at least potential – anti-competitive effects.

[947] At least in which concerns the ambushing company.

Yet, the evidence – leaving aside the measure – of such potential anticompetitive effect is hard to obtain in the cases of under-disclosure. Up to which extent a decrease in the level of trust in a standardisation amounts to a truly anticompetitive effect is hardly measurable.

As regards the distortion of pre-market competition, the anticompetitive effects of under-disclosure are easier to analyse if as a result of the deception, a superior technology is excluded. In this event, the deception has an exclusionary effect without the need of further actions from the SEP holder.[948] The more paradigmatic case would be the one a superior patent-covered technology is disregarded in favour of an allegedly patent free technology.

A borderline case is the one in which the deception results in discarding comparable or inferior technology, in particular in cases where the trade-off between cost and performance is a key factor for opting for the under-disclosed technology. In this case, under-disclosure prevents competition that would have taken place if the technical committee had been aware of the existence of the ambushing company's technology.

In all other cases the anti-competitive effects shall in principle not materialise unless the deception is followed by a subsequent behaviour – eg claiming excessive royalties or refusing to license the patent.

Overall, the difficulties related to finding evidences do not necessarily lead to discard the anticompetitive effects of under-disclosure as a stand-alone abusive behaviour but to assess them at the light of the individual case.

#### 3.1.1.2 The issue of dominance

Therefore, in certain cases, the anti-competitive effects of under-disclosure might arise regardless of whether the under-disclosing company engages in other – including subsequent –anti-competitive behaviours. The limitation in these cases is that if the under-disclosing company does not claim excessive royalties or does not refuse to license the technology afterwards, Article 102 TFEU will not apply, since at the moment of the under-disclosure the company was not dominant.

This situation is arguably the major difference between deceptive under-disclosure and the AstraZeneca case, since AZ was already dominant at the time of deception.

The AstraZeneca approach might be applied to under-disclosure cases. However, the grounds for doing so are not an undue extension of the prohibition of competing by imitation, but the wilful alteration of the pre-market competitive process, which results in the limitation of competition by substitution. There are however two hurdles to do so: first, AstraZeneca grounds can only be applied to deceptive under-disclosure, which is particularly difficult to prove when the SEP holder

[948] See above 3.2.3.

does not engage in a subsequent abusive behaviour; and second the requirement of a pre-existing dominance.

Such limitation of Article 102 TFEU, however, might be overcome if it is considered that the deception is not a timely limited event but creates a situation lasting as long as the deception is not discovered. In other words, the deception does not terminate the very moment that the SEP holder denies explicitly or implicitly that it has any relevant patent[949] (deception by action) but it extends over time as long as the SEP holders remains silent on the essentially of its patents (deception by omission).

Taking this approach, isolated under-disclosure could be analysed as an autonomous abusive conduct. Overall, it is less problematic to assess whether deceptive conduct – by action or by omission – is prolonged until the moment the standard is adopted[950] and thereby the SEP holder acquires dominance. Still, this approach is not very convincing and is an artificial way of pushing a monopolisation approach which has little coverage under Article 102 TFEU.

This proposal is similar to the single-and-continuous-infringement approach to patent ambush which consists in combining the two elements of patent ambush (deception and charging of excessive prices) into a single abusive act.[951] However, this was also criticised since at the time of the deception it is not at all clear whether the patent holder will ultimately charge excessive prices, creating legal uncertainty about whether the under-disclosure will finally be considered (part of) an abuse or not.[952] Moreover, this approach is even more doubtful when, as in the case at hand, the SEP holder does not incur in a subsequent abusive behaviour.

There is only one possibility to face under-disclosure as an autonomous abusive behaviour provided that it results in anticompetitive harms. This is the case where the deceptive under-disclosure takes place in a subsequent version of a standard in which the ambushing company already holds essential patents.

In this scenario, the standard is already created and the demand is locked into the standard, therefore, at that moment in time, the company is dominant for the market of standard compliant products. This understanding, however, requires to depart from the Commission's approach in Motorola when evaluating dominance – or at least expand

[949] Which rarely happens only once. Usually the meetings of the technical committees in SDOs start and/or conclude with a call to the participants to disclose their essential patents.

[950] The rather vague and wide drafting of SDOs' IP policies support such interpretation: the obligation to disclose should be done in a 'timely fashion' or when 'it is reasonably feasible' according to ETSI and IEEE IPR policies, and therefore it can be argued that the deception does not only take place in a specific moment but rather over a period of time. For an extended analysis of timing of disclosure in the framework of SDOs, see Chapter 3 Section 3.2.4.

[951] Andreas Fuchs, 'Patent Ambush Strategies and Article 102 TFEU' in Josef Drexl, Warren S Grimes and Clifford A Jones (eds), *More Common Ground for International Competition Law?* (Edward Elgar 2011) 191.

[952] Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 532; Andreas Fuchs, 'Patent Ambush Strategies and Article 102 TFEU' in Josef Drexl, Warren S Grimes and Clifford A Jones (eds), *More Common Ground for International Competition Law?* (Edward Elgar 2011) 191.

it – and construe dominance in part of the standard as dominance in the whole standard.[953]

For the rest of the cases, Article 102 TFEU will not apply despite the eventual negative effects for competition and innovation.

## 3.2The limited role of Article 102 TFEU to deal with under-disclosure

Under-disclosure can result in a number of negative effects on innovation and competition. In general, the Commission in Rambus was quite accurate in identifying the competition and innovation concerns deriving from Rambus' behaviour. Accordingly, some of the negative effects resulting from under-disclosure are excessive prices, exclusion of competing technologies within the SDO pre-market dynamic competition, harms to trust in standardisation, frustration of the procompetitive effects of SDO-based standardisation and the participants' legitimate expectations.

The anticompetitive nature of these harms depends substantially on whether (1) under-disclosure concurs with a subsequent abusive behaviour, such as refusals to license or exploitative practices; (2) the pre-market competitive process is based in pure technological competition or in a trade-off between costs and technological merits; and (3) the excluded competing technology was superior, comparable or inferior to the under-disclosed technology.

Arguably there are two cases where the anti-competitive effects of under-disclosure are more acute: patent ambushes *stricto sensu* – characterised by under-disclosure in the framework of SDO activities and a subsequent claim of excessive royalties – and the cases where under-disclosure leads to exclude a superior technology from competition for the standard (regardless on whether the SEP holder requests excessive royalties or not).

Article 102 TFEU is suitable to deal with prototypical patent ambush cases as well as with other means to leverage from the deception and the lock-in effect, such as refusals to license.[954] Despite this analysis, it cannot be taken for granted that the Commission would have succeeded in the Rambus case if it had been reviewed by the EU Courts. Hence, it is not yet clear whether Article 102 TFEU can be used to sanction patent ambush cases.[955]

On the other hand, Article 102 TFEU cannot be used to prevent negative effects on innovation and competition when the deception is not followed by subsequent abusive behaviour (under-disclosure as a stand-alone

[953] See the discussion at Section 2.1 above.

[954] Similarly, Eliza G Petritsi, 'The Case of Unilateral Patent Ambush Under EC Competition Rules' (2005) World Competition 25, 39.

[955] Wagner-von Papp criticises the use of a commitment decisions that lead to a lack of clarification of EU law on patent ambush cases. Florian Wagner-von Papp, 'Best and Even Better Practices in Commitment Procedures after Alrosa: The Dangers of Abandoning the Struggle for Competition Law' (2012) 49 Common Market Law Review 929.

behaviour), namely, the prevention or distortion of the pre-market competitive process (including the exclusion of a superior technology), the artificial increase of asymmetries of information and the harm to confidence in the standard concerned and in standardisation in general, which affects negatively technology developers and implementers alike.

This exclusionary effect in the context of competition for the standard should be one of the major concerns related to under-disclosure of SEPs (particularly if the excluded technology is superior), yet the EU framework is poorly suited to face it and the ex-post remedies can only at best prevent the distortions that such behaviours provoke in downstream markets.

Absent a subsequent action, which takes place after the SEP holder has becomes dominant, Article 102 TFEU cannot apply. In addition, the evidence related to the effects of under-disclosure and causation under the 'what if' test (counterfactuals) is, sometimes, difficult to obtain.

Even in those cases where Article 102 TFEU might be able to tackle under-disclosure, a subsequent commitment of the SEP holder – or the imposition of a remedy – to license the technology on pre-defined terms (eg FRAND) is not capable of addressing some of the competitive harms caused by under-disclosure. For example the effects of a lock-in into an inferior technology. Failing to address this issue in the long run might disincentivise other technology developers to compete for the standard or compromise the deterrent effect of any measure directed against patent ambushes.

This argues in favour of amending Article 102 TFEU to include acquisition of market power through means other than competition on the merits, in the same fashion as Section 2 of Sherman Act does.

Such amendment would overcome some of the loopholes[956] that the current wording of Article 102 TFEU leave to address some relevant competition concerns resulting from deception. On a more practical note, such change could also include a reversal of the burden of proof as regards the eventual 'what if' scenarios. Once proven that the deception has altered pre-market competition in the SDO, it should be for the SEP holder to prove that the technical committee would have chosen their technology regardless of the deception.[957]

[956] According to Drexl. Josef Drexl, 'Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market' (2012) 8 Journal of Competition Law Economics 507, 541.

[957] This reversal of the burden of proof seems more troublesome in the US, despite the existence of a monopolization claim in Sec 2 of the Sherman Act, since the plaintiff is required to prove that the deception is the cause of the acquisition of the market power to fulfil the causation requirement.

# 4. Over-disclosure as an abuse of dominant position

The 'thorny'[958] issue of over-disclosure of SEP is the other side of the coin. While under-disclosing consists in non-disclosing patents that are essential to a standard, over-disclosure designates the disclosure of patents as essential, while they are actually non-essential.

A number of studies show that over-disclosure of (non-)SEPs is a common practice. Goodman and Myers[959] examined almost 7,800 essential patents declared for 3GPP and 3GPP2 standards and conclude that only slightly over a 20% were truly essential. This study received criticisms due to methodological gaps, insufficient analysis of each patent and the fact of being funded by Nokia.[960]

Other studies have also shown that there is a high volume of non-essential patents that are declared essential: only a 27% of families declared essential patents for GSM standards were truly essential.[961] A later study of the LTE and SAE standards concluded that only about 50% of the patent families have at least one essential or probably essential patent, while the rest of families were found not to include any essential or probably essential patents.[962] The Cyber Creative Institute conducted a study with a sample of 38.2% declared essential patents for the LTE standard, 55,4% of which were considered to be 'really essential'.[963]

These results strongly match with Tapia's[964] conclusion from her interviews with relevant experts in the field: a large percentage of declared

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[958] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 62.

[959] David J Goodman and Robert A Myers, '3G Cellular Standards and Patents', in IEEE (ed), *Communications and Mobile Computing – 2005 International Conference on Wireless Networks* (IEEE 2005) 415-420.

[960] At the same time, the authors of these critiques were working for Qualcomm. Donald L Martin and Carl De Meyer, 'Patent counting, a misleading index of patent value: A critique of Goodman & Myers and its uses' <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=949439> accessed 1 November 2022.

[961] Fairfield Resources International, *Analysis of Patents Declared as Essential to GSM as of June 6, 2007* (2008) <https://www.scribd.com/document/91311335/GSM-FINAL> accessed 1 November 2022.

[962] Fairfield Resources International, *Review of Patents Declared as Essential to LTE and SAE (4G Wireless Standards) Through June 30, 2009* (2010) < https://vdocuments.site/review-of-patents-declared-as-essential-to-lte-and-saewwwfrlicensecomlte-final.html?page=1> accessed 1 November 2022.

[963] Cyber Creative Institute, *Evaluation of LTE essential patents declared to ETSI* (2011) <http://www.cybersoken.com/file/lte01EN.pdf> accessed 1 November 2022.

[964] Claudia Tapia, *Industrial property rights, technical standards and licensing practices (FRAND) in the telecommunications industry* (Carl Heymanns 2010) 44.

essential patents – up to 60% – may not be essential. Courts are well aware of this.[965]

Hence, the existence of over-disclosure as an economic phenomenon has been largely proved[966], while its effects, despite relying on robust theoretical assumptions, have not been soundly demonstrated. While policymakers[967] and scholars[968] alike have pointed out some of the negative effects of over-disclosure – and linked its origin to unfair licensing practices – the reality is way more complex: the high number of patents that are disclosed as essential, while they are not, is due to a different range of causes, which need to be taken account of when assessing whether competition law should come into play.

As anticipated above, over-disclosure may result in certain negative effects without providing substantial efficiencies – aside from cost-savings for SEP holders. However, it remains doubtful whether such negative effects impact on competition or innovation and therefore should be addressed by competition law – specifically Article 102 TFEU.[969]

There is indeed a substantial difference between the impact of under-disclosure and over-disclosure. As shown above[970], under-disclosure – and notably patent ambushes – can influence not only royalty rates but also pre-market competition, which takes place within the SDO. Over-disclosure mostly affects the licensing level, it is not likely to affect the creation of the standard and technology selection. In the end, the fact that a company extends its FRAND declaration to patents which are not (very likely to be) essential does not affect the decisions of the technical committees involved in the standard development.

In the following, this Section explains the different reasons for patent holders to over-disclose and why these reasons might eventually be relevant, to later analyse what are the actual or potential effects of over-disclosure on the royalty rates, to finally assess the anticompetitive relevance of these behaviours from the perspective of Article 102 TFEU.

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[965] '(W)e recognise the existence of the practice of over-declaration and we acknowledge that it is a problem. (...). In summary, very many more patents are declared to be essential than are truly essential and the fact that royalty rates are negotiated by counting patents creates an incentive to over-declare. *Unwired Planet v Huawei* [2018] EWCA Civ 2344, para 96.

[966] Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017).

[967] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 5.

[968] While recognising its existence, scholars tend to be less categorical when considering its effects. Particularly, Regibeau et al did not retrieve any declaration from practitioners that assert that over-disclosure leads to an inflation of royalties. Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 62.

[969] The role of Article 101 TFEU is addressed in Chapter 6.

[970] See Sub-section 4.2.

## 4.1 (Internal) Motivations for over-disclosing

Traditionally, over-disclosure has been assimilated to the absence of essentiality. This assimilation, which could suffice from an economic perspective, might not be accurate from a legal perspective. Some of the studies that analyse the essentiality of patents included in a standard tend to explicitly or implicitly understand that lack of essentiality equals over-disclosure.[971] Nevertheless, the relationship between lack of essentiality and over-disclosure is not that clear.[972]

Even from an economic point of view, it would make more sense to speak, in broader terms, of an inflation of SEPs[973], partially caused by over-disclosure, but also by the mere standard and patent dynamics. Thus, the inflation of SEPs is the phenomenon consisting in the existence of a high number of disclosed patents which are not essential for the standard they are referred to.

According to this approach, an over-disclosed patent would not be essential, while a non-essential patent cannot automatically be deemed over-disclosed. Not all over-disclosures should be perceived as aimed at deceiving the rest of the market participants.[974] As it will be analysed below, there are legitimate reasons for engaging in over-disclosure – it can take place even in compliance of the SDOs disclosure rules –, nor do all types of over-disclosure result in harms to competition.

This situation argues for different levels of intervention from a legal perspective, depending on whether the intention is to increase the number of SEPs in general, over-disclosure or harmful behaviours linked to over-disclosure.

Apart from objective internal limitations which can distort the SEP holders' information concerning the essentiality of their patents, there are also reasons which could make them more prone to over-disclose their patents. Namely (1) avoid under-disclosure; (2) save costs; (3) build a reputation; (4) extract royalties and (5) defensive over-disclosure.

Although – as it has been analysed above[975] – the legal consequences of under-disclosure might not be that deterrent (notably in the UE)[976], there are up to date no comparable competition law decisions that have addressed over-disclosure as a potential abuse. Thus, companies that adopt a conservative approach to the disclosure of their SEPs might

[971] The European Commission itself bases its comments on this assumption. Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 4; See also, among others, Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 48; Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017) 3.

[972] Nor between essentiality and under-disclosure.

[973] This terminology has been used by Baron and Pohlmann yet the authors do not specifically made a distinction between over-disclosure and inflation. Justus Baron and Tim Pohlmann, *Patent pools and patent inflation* 4th ZEW Conference on the Economics of Innovation and Patenting.

[974] See Chapter 3. Liguo Zhang, 'How IPR Policies of Telecommunication Standard-Setting Organizations Can Effectively Address the Patent Ambush Problem?' (2010) 41 International Review of Intellectual Property and Competition Law 380 389ff.

[975] See section 4.1.1.

[976] In the US, under-disclosure or more specifically late disclosure might render the patent unenforceable. *Conversant Wireless Licensing SARL v Apple Inc*, Case No 15-cv-05008-NC (ND Cal 2019) 10.

prefer to risk over-disclosure (not legally sanctioned so far) to under-disclosure (with eventual, yet uncertain legal consequences).[977]

In other words, companies might tend to over-disclose to protect themselves against being accused of ambushing behaviours. When a company is not a hundred percent sure of whether a patent is or is likely to be essential, an understandable approach is to 'walk on the safe side' and disclose the patent.[978] Additionally, SDOs rarely foresee sanctions for over-disclosure. Therefore, if a declared SEP turns out to be non-essential, SEP holders do not face any additional risk.

The second reason why companies over-disclose is essentially pragmatic. Disclosure tends to be costly for SEP holders[979] and particularly for big companies whose portfolios could be as big as containing some ten thousand patents. Neither SDOs nor SEP holders review the disclosures.[980] As analysed above, the SDOs' IPR policies tend to be vague and therefore SEP holders do not have incentives to go beyond the obligations established by them.

The third reason for inflating the number of disclosures is mostly reputational.[981] A high number of disclosed patents convey the image of a leading company, which in turn contributes to a better positioning of the company in the market, as the number of disclosed patents could be deemed to be a proxy of the innovativeness of the SEP holder.

The fourth reason to over-disclose is close to the former, and consists in using the high number of patents as an indication of high portfolio value and, consequently to claim more royalties[982]: although licensing

[977] Similarly Contreras affirms that ` Given that patent holders could face serious potential liability for failing to disclose essential patents to an SDO (including claims of anticompetitive behaviour, fraud, and deceptive conduct), patent holders have a strong incentive to disclose to an SDO and make FRAND commitments with respect to, all patents that have even a remote possibility of being relevant to a standard´ Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 60 ; see also Jorge L Contreras, 'Essentiality and Standard Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 223. See also Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 49.

[978] Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608, 629.

[979] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016).

[980] See Richard Hawkins, 'Standards, systems of innovation and policy' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 231; Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608,f 610.

[981] The reputational effect of having patents included in a standard is a motivation that should not be overlooked. Stoll identified a high correlation between reputational reasons as motivation to contribute to a standard. Thimo P Stoll, *Essays on the Economics of Patents, Standards, and Innovation* (1st edn, Verlag Dr Hut 2015) 11.

[982] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016).

agreements are confidential, the number of disclosed patents has historically been used as a proxy to the value of the portfolio.[983]

The fifth reason is a consequence of over-disclosure for both the third (reputational) and forth reasons (extracting more royalties) and it has a negative impact that goes beyond the mere exploitation of prospective licensees. If over-disclosure is widespread for a given standard, companies that did not engage so much in over-disclosure at the initial phase of standardisation might be forced to do so in order to prevent their portfolio from being diluted by a myriad of over-disclosed patents of other companies.

As a result, relevant and truly essential patents might end up buried by several thousands of irrelevant patents that only add noise and increase the information asymmetries. These patents distort the perception of licensees as regards who has a stronger portfolio, and ultimately, artificially alter the allocation of royalties among SEP holders.

Hence, one company's over-disclosure can incentivise the rest of SEP holders to over-disclose as a defensive means[984] to a point where some SEP holders have argued that '(they) would likely be happy to declare fewer patents provided that other patent-holders do the same'.[985] Such practices, in sum, trigger an endless feedback of increasing disclosure without relation whatsoever with the underlying technical merits and without producing any efficiencies, increasing the negative effects associated with over-disclosure. These dynamics mirror the findings of Hall and Harhoff who concluded that patenting has partially become a zero-sum game where the driving force for applying for a patent is that competitors are patenting too.[986]

## 4.2 Measuring the price effects of over-disclosure

### 4.2.1 SEP licensing agreements

The simplest scenario in which over-disclosure can result in excessive royalty rates is if the SEP holder licenses all its patents related to the standard – including the over-disclosed ones – and the number of patents plays a major role in determining the license price.

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[983] See subsection 4.2.3.1 below.

[984] Arriving to an equilibrium point caused by the 'mutual assured destruction' capabilities of all market incumbents. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 21.

[985] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 43.

[986] Bronwyn H Hall and Dietmar Harhoff, 'Recent research on the economics of patents' (2012) 4 Annual Review of Economics 541, 559. In the same fashion, de Rassenfosse *et al* have found that defensive motivations were a major reason for patenting Gaétan deRassenfosse, Dominique Guellec and Bruno van Pottelsberghe Potterie, 'Motivations to Patent: Empirical Evidence from an International Survey' <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.490.1294> accessed 1 November 2022.

However, the licensing negotiations, the scope of the agreements and the valuation criteria have become more sophisticated to a point in which the effect of over-disclosure on price is not that evident.

The scope of SEP licensing agreements has evolved. Contrary to the views of commentators in the past[987], nowadays SEP licensing agreements do not necessarily include endless lists of the licensed rights.[988] In this regard, current SEP licensing contracts are a hybrid between a non-assertion (freedom-to-operate) agreement and a traditional licensing contract whose more accurate definition is a licence over a dynamic package of technologies.[989]

The contract on a dynamic package of technologies[990] is not limited to the current essential patents of the SEP holder. It also extends to all the patents that become essential during the lifetime of the agreement, limited to the intended use defined in the contract.[991] SEP licensing agreements have not a static object, but a rather dynamic one.

What matters for the implementers is not that the SEP holder licenses the patents that are essential at the moment of the signature of the contract, but to ensure that during the lifetime of the contract the SEP holder will not sue them on the basis of current and future essential patents.

The price of the licensing agreement therefore does not reflect the royalties associated to closed list of patents vis-à-vis an unmodifiable implementation of the standard, but rather the freedom to operate, conditioned by the expectations and the eventualities that can modify essentiality, patent validity or the implementer's patent exposure.[992]

There are two main reasons which explain this approach and have already been analysed above at Chapter 3[993]: first, and in contrast to past standards whose scope used to coincide with a single (type of) product,

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[987] Eliana Garcés Tolón, 'Licensing Of Standard Essential Patents: Antitrust Intervention is not Big Enough A Fix' (2013) 9 Competition Policy International 90 94.

[988] As explained by a licensing expert, the scope of the contract is not defined by referring to a list of specific patents but to the scope of the use – or the type of product that the implementer wants to produce. Similarly Picht and Loderer 'SEP owners will usually not license their portfolios on a patent-specific basis, by enumerating all covered patents, but rather by way of a comprehensive licence to all patents that are or might become essential.' Peter G Picht and Gaspare T Loderer, 'Arbitration in SEP/FRAND Disputes: Overview and Core Issues' (2019) 36 Journal of International Arbitration 575, 584.

[989] Leistner also echoes the dynamic character of SEP licensing contracts. Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 15.

[990] From an economic point of view, Baron defines SEPs as 'a right to a right to partake in the control over a jointly developed technology' rather than 'exclusive property rights on units of technology'. Justus Baron, 'Innovation and Coordination for ICT Standards: the Role of Essential Patents' (Thesis, École nationale supérieure des mines de Paris 2013) 12.

[991] For instance, if the licence scope is limited to smartphones, the implementer will not be entitled to use the standardised technology in household appliances.

[992] Sidak argues similarly with regard to invalidity. 'The parties to a portfolio licensing negotiation rationally expect that some of the patents will turn out to be invalid, and they account for that possibility when determining the portfolio royalty. Put differently, the portfolio royalty upon which the parties agree reflects the possibility that some of the patents will be invalid. It would therefore be incorrect economic reasoning to claim that a patent holder is charging the licensee for invalid patents.' J Gregory Sidak, 'Evading Portfolio Royalties for Standard-Essential Patents through Validity Challenges' (2016) 39 World Competition 191, 202.

[993] See also Section 4.3 and 5.

current standards include technologies that are not needed for all types of implementations and therefore it is appropriate for both parties to limit the scope and consequently the price of the licence to the technologies which effectively will be used by the implementer.

Second, the lifetime of the standard (or the standard version), and also of the product, usually tend to be shorter than the term of the licence agreement. With a view to the length of licensing negotiations and the huge transaction costs involved, it is better for both parties to agree on longer terms for the agreement, instead of being required to re-negotiate each time a new version of the standard is released, licensor's patents are included/excluded from the standard or the products' exposure changes.

Therefore, the adjustments to the licence price and scope are usually done only when the agreement is about to expire. In the meantime – ie during the lifetime of the contract – both parties benefit from a higher predictability of costs/incomes and more legal certainty.

### 4.2.2 Patent portfolio valuation methods

Notwithstanding that it is not practical – neither feasible, in some cases – to evaluate the value of the portfolio by aggregating the value of each individual patent, both courts and parties to a licensing agreement need some guidance when defining the price to be paid for a license. There are three main methodologies that could be used to assess the value of SEPs and define FRAND terms: bottom-up, top-down and comparable licences.[994]

#### 4.2.2.1 Bottom-up approach

The bottom-up approach is essentially based on the calculation of the contribution of each patent to the standard in comparison to other alternative technologies. While, if properly done, it will provide parties with an accurate valuation of each patent – and its aggregation can be used to calculate the portfolio and the standard value – it presents additional limitations to the patent-by-patent valuation from the courts' (and the licensees') perspective.

Notably, the requirement of comparing with alternative technologies requires knowledge of the standardisation *iter* which courts are not very likely to have. Even if courts can access such information, the calculation of the differential value between the patent and its technological alternative necessarily need to rely on hypothesis and assumptions that judges are not in the best position to define.[995]

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[994] Yet there are other proposed methods to determine the value SEP portfolios such as the present value-added method. Roya Ghafele and Jan Schmitz, 'Economic Perspectives on FRAND' (2020) 11 Journal of European Competition Law & Practice 90, 91.

[995] Galetovic and Haber strongly criticise this methodology for being based on 'assumptions instead of empirics'. Alexander Galetovic and Stephen Haber, *SEP Royalties: What Theory of Value and Distribution Should Courts Apply* (2019) Hoover IP² Working Paper Series No 19001, 26ff.

One example of a potentially flawed assumption is that a technology can be interchangeable with its alternative without affecting the rest of the standard. Such facts where explicitly considered by Judge Selna in TCL v Ericsson[996]: 'In identifying alternatives (....) Dr. Kakaes did not analyse whether his alternatives are mutually inconsistent with each other, would perform worse than the standard, would even create a viable, functional standard, or require other patents owned by Ericsson' (thus defeating the point of the analysis).[997]

The bottom-up approach is based on the *ex-ante* price of the technology - contested above at Section 3.2.2.1. In short, the only situation where *ex ante* approach resembles the actual standardisation process is if (1) all the technologies included in the standard existed before the standard – ie there were no innovations produced in parallel to or within the standardisation efforts[998] – and (2) the decision within the SDO is limited to choosing among different technologies without further looking into eg potential synergies between the proposed alternatives. Therefore, the bottom-up is not suited for valuating innovative standardisation.

As a result, it is not surprising that the bottom-up methodology has never been used by courts to determine a portfolio value. Nevertheless, the bottom-up approach can still be useful for standards that include a relatively reduced number of patents.

### 4.2.2.2 Top-down approach

The top-down approach starts with an estimation of an aggregate value of the standard for the specific product, to later make an apportionment of the relative contribution of a patent – more likely a portfolio – to the standard. The inherent difficulties of the top-down approach are first, to fix an appropriate value of the standard[999] and second, to define an accurate criterion to define the right apportionment of the technology value.[1000]

The limitations of the top-down approach are better illustrated by two landmark cases that applied such methodology: the TCL v Ericsson case[1001] in the US and the Unwired Planet v Huawei[1002] case in the UK, in particular when it comes to assessing the essentiality of the patents

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[996] *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al*, Cases No 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx (CD Cal 2017).
[997] ibid 42.
[998] Arguably, this reality was taken into account by the Commission when referring to 'cases where the technology is developed mainly for the standard and has little market value outside the standard'. European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 6.
[999] Contreras proposes to base such aggregated value on *ex ante* price commitments. However, *ex ante* price commitments are not a widespread practice. Jorge L Contreras, 'Aggregated Royalties for Top-Down FRAND Determinations: Revisiting "Joint Negotiation"' (2017) 62 The Antitrust Bulletin 690, 709.
[1000] To do this courts have to rely on quantitative and qualitative proxies to technological relevance, which are discussed below at 4.2.3.
[1001] *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al*, Cases No 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx (CD Cal 2017).
[1002] *Unwired Planet v Huawei* [2017] EWHC 711 (Pat).

included in the portfolio, which is the most relevant topic from the over-disclosure perspective.

In Unwired Planet, Justice Birss, unpersuaded by the calculations offered by both parties with regard to the number of 'relevant'[1003] SEPs – 1812 and 355, respectively – decided to split the higher amount by two and multiply the lower by two and then calculate an approximate mean of the two results.[1004] Similarly, in TCL v Ericsson, Judge Selna used as a basis of calculation 'TCL´s conceded number of patents' and 'Ericsson´s disputed number of SEPs' applying the top-down methodology to each of them.[1005] Such Solomonic decisions, motivated by the need of taking a decision on the basis of the information provided by the parties shows how arbitrary the top-down approach can be.[1006]

Galetovic and Haber consider the top-down method to be arbitrary for a different reason: it considers that the value of a technology in a given stage of the production chain is independent from the generated value along the entire value chain.[1007] While this understanding is consistent with pricing theory, if taken at face value, it will lead to the impossibility to value components of virtually any complex product and even simpler ones.

For example, the work of the miller is of little value if there is no wheat to mill, which results in flour that is sold to the baker, who bakes the bread and sells it to the consumer, and conversely, the wheat, the flour and the work of both the miller and the baker are of little value if consumers do not want to buy bread. The very same authors reason along this line.[1008] Nevertheless, it does not mean that the wheat or the flour do not have a value (ie a price) for either the miller or the baker, provided that consumers want to buy bread.

Despite such limitations, the European Commission has endorsed the top-down approach as a secondary – or subsidiary – method for royalty calculation.[1009]

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[1003] That is essential.

[1004] 'I think both values are out by about a factor of two. Half of 1812 is 906 while twice 355 is 710. Splitting the difference takes one to 800. Standing back, about 800 is fair and in my judgment an appropriate figure for the pool of 4G/LTE patents.' *Unwired Planet v Huawei* [2017] EWHC 711 (Pat), para 377.

[1005] *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al, Cases No. 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx* 33 (CD Cal 2017).

[1006] It should be recalled that both decisions were appealed, and while the decision on the application of the methodology by Justice Birss remained uncontested (the scope of the appeal did not refer to it either – Justice Birss himself explicitly delimitated the scope of the appeal to the global scope of the licence, the non-discrimination prong and the abuse of a dominant position at the light of the Huawei v ZTE test – , the outcome in TCL v Ericsson might be very different since the Federal Circuit reversed Judge Selna FRAND determination on the basis of Ericsson's deprivation of its constitutional right to trial by a jury. See the outcome of the appeals at *Unwired Planet v Huawei* [2018] EWCA Civ 2344 and *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al*, Appeal Nos. 2018-1380, 2018-1382 (Fed Cir 2019).

[1007] This critic also applies to the *ex-ante* approach to pricing. See supra at 3.2.2.1. Alexander Galetovic and Stephen Haber, *SEP Royalties: What Theory of Value and Distribution Should Courts Apply* (2019) Hoover IP² Working Paper Series No 19001, 4.

[1008] ibid 12.

[1009] 'In cases where the technology is developed mainly for the standard and has little market value outside the standard, alternative evaluation methods, such as the relative importance of the technology

#### 4.2.2.3 Comparable licences

The third method for determining the portfolio value is to rely on pre-existing licensing agreements for the purpose of comparison. This approach, strongly supported by Galetovic and Haber,[1010] has the virtue of relying on prior transactions entered into under market conditions. It is therefore less likely to reflect deviations resulting from insufficient knowledge of the market or wrong assumptions from the court.

The comparables method faces three limitations: (1) reduced availability of licensing information; (2) eventual translation of non-FRAND terms to other contracts; and (3) the need first adjusting prices.

First, it should be born in mind that in SEP-licensing agreements confidentiality is the rule to a point that, absent a non-disclosure agreement (NDA), parties typically refuse to commence licensing negotiations. NDAs limit the availability of 'comparables' to a handful of cases.

It also has been argued that 'patent pools licensing rates charged for the same or similar standards may offer useful guidance as comparable licences'.[1011] Yet its actual usefulness is at stake, notably because, as argued above[1012], neither the prices – since they are usually fixed at a discount – nor the transaction costs are comparable, leaving aside the need to compare only 'similar' standards.

Second, the comparable licences method assumes that the prior licence(s) are FRAND because they were the result of bilateral negotiations. Such assumption neglects that some concluded licences can also reflect a huge imbalance between the SEP holder and implementer or *vice versa*. It can also be the result of urgency or strategic decisions. For example, an implementer facing litigation against one SEP holder might be more willing to 'close' the deals with other SEP holders before opening up another front, even if the terms are not as favourable as the ones they would have agreed absent the litigation.[1013]

Compared to the bottom-up and top-down methodologies, one of the virtues of the comparables approach is that it is not affected by the theory of hold-up or royalty stacking.[1014] However, in practice, it can actually

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in the standard compared to other contributions in the standard, should be considered.' European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 6.

[1010] The authors argue that, when using 'comparables', the judge is not trying to replicate the market process which results in a given royalty, but rather to observe the market equilibrium, which economises information relating to the different interacting market dynamics. Alexander Galetovic and Stephen Haber, *SEP Royalties: What Theory of Value and Distribution Should Courts Apply* (2019) Hoover IP² Working Paper Series No 19001, 20.

[1011] Oscar Borgogno and Giuseppe Colangelo, 'Disentangling the FRAND Conundrum' (2019) DEEP-IN Research Paper 23.

[1012] See Chapter 3 at 4.1.2.1.

[1013] It is hardly justifiable that the result of such strategic decision should be transferred to further licensees.

[1014] Alexander Galetovic and Stephen Haber, *SEP Royalties: What Theory of Value and Distribution Should Courts Apply* (2019) Hoover IP² Working Paper Series No 19001, 3.

extend hold-up effects or cause royalty stacking,[1015] notably when a non-FRAND agreement ends up to be used as the benchmark for a number of cases – hence creating a 'poisonous tree situation'.[1016]

Thirdly, the comparable licences method is, *prima facie*, more precise than the other two methods. Yet this does not mean that it will always arrive to a better valuation than the other two methods, in particular when adjustments are based on wrong assumptions.

Where the court does not have access to a representative sample of licensing agreements, it will be very likely that it has to make adjustments on the basis of assumptions that can be as wrong as the ones made under the top-down and bottom-down approaches. Nevertheless, the number of decisions based on assumptions, which are more prone to errors, are more reduced than under the two other methodologies.

#### 4.2.2.4 The workability of portfolio valuation methodologies

Overall, all the three methodologies have their virtues and flaws and show how impracticable it is to try to define the value of a licence by relying on a patent-by-patent value assessment.[1017] Courts therefore tend to evaluate the value on the basis of a few patents or, alternatively, on the estimated relative value of the portfolio as compared to the whole standard.

In general, the comparable licences method can arrive to more accurate results provided that there is available information of comparable licences, such licences are FRAND and the eventual adjustments to adapt the licence to the case at hand are based on accurate assumptions.

Alternatively, the top-down approach might lead to a 'proportional' valuation of the portfolio and simultaneously define a fictitious aggregated cap that can prevent royalty stacking. It is important that to the extent possible the court applies this methodology on the basis of market information such as the value of the implementing product, other licences in the market[1018] or the information made available by third parties, including patent pools.[1019]

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[1015] Galetovic and Haber define three hallmarks to evaluate whether there is a functioning licensing market, namely, the existence of (1) a set of market-specific practices according to which companies behave; (2) a considerable degree of vertical separation across the production chain; and (3) steady royalty rates earned by the technology developers. ibid 21ff. Yet the existence of a well-functioning market does not preclude individual opportunistic behaviours (hold-ups) that can be transferred to court-determined royalties. See the discussion above at 3.2.2.3 and Jorge L Contreras, 'Much Ado About Hold-up' (2019) University of Illinois Law Review 875, 897.

[1016] Claire Guo, 'Intersection of Antitrust Laws with Evolving Frand Terms in Standard Essential Patent Disputes' (2018) 18 John Marshall Review of Intellectual Property Law 259, 264.

[1017] In theory, the bottom-up approach evaluates the value of the portfolio on a patent-by-patent basis. However, in practice, it is more realistic to calculate the value of the portfolio by referring to a representative sample of SEPs.

[1018] Licences that cannot be used as comparables for different reasons can still provide the court with relevant information.

[1019] Although patent pools are not that useful for using the comparable licences methodology, they can still be used for calculating the hypothetical aggregated cap.

This combinational use[1020] of top-down and comparables approach can provide a more accurate valuation where there is scarcity of suitable comparables or where comparables are likely that the comparable licences are affected by hold-up.[1021] This approach is arguably the one followed by Justice Birss and Judge Selna in Unwired Planet[1022] and TCL[1023], respectively, and shows that is always preferable to rely as much as possible in market information rather than in any other kind of assumptions.[1024]

Yet these methods of valuation require information that probably not many implementers can access.[1025] The bottom-up approach requires deep knowledge about the standardisation process and the valuation of alternative technologies, the top-down approach requires a certain degree of implementation of the technology to define its overall value, and the comparable licences approach requires the pre-existence (and subsequent disclosure) of licences that could be used as comparables.

Courts determine FRAND terms based on the submissions from the parties – and sometimes from third parties. At the end both parties have incentives to disclose as much information as needed for convincing the judge of the reasons why they consider the value of the portfolio should be the one they propose. Such dynamics are not the same in bilateral negotiations.

Parties' submissions might not provide the court with the full picture of the real value of the portfolio for the standard, but still contain valuable information of the boundaries between which the bilateral licensing negotiations take place.

In any event, and compared to non-SEPs infringement suits, where strategic considerations might influence the amount of royalties claimed, in the case of FRAND-encumbered SEPs both parties have incentives to define the royalties to be paid within a reasonable range. Otherwise, the

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[1020] Claire Guo, 'Intersection of Antitrust Laws with Evolving Frand Terms in Standard Essential Patent Disputes' (2018) 18 John Marshall Review of Intellectual Property Law 259, 266.

[1021] Picht goes further by affirming that 'on the availability of meaningful Comparables, top-down may even, in some cases, generate the most trustworthy results'. Peter G Picht, 'FRAND determination in TCL v. Ericsson and Unwired Planet v. Huawei: Same same but different?' (2018) Max Planck Institute for Innovation & Competition Research Paper No 18-07, 36 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3177975&download=yes> accessed 1 November 2022.

[1022] Although Justice Birss (in theory) used the top-down methodology as a mere cross-check. *Unwired Planet v Huawei* [2017] EWHC 711 (Pat), para 272.

[1023] *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al*, Cases No 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx (CD Cal 2017).

[1024] A comprehensive comparison of how both cases implemented the top-down and comparables approaches can be found at Peter G Picht, 'FRAND determination in TCL v. Ericsson and Unwired Planet v. Huawei: Same same but different?' (2018) Max Planck Institute for Innovation & Competition Research Paper No 18-07.

[1025] Tsilikas and Tapia propose that SMEs should rely on a top-down-like methodology to arrive to a valuation of a given portfolio. This position is very optimistic with a view to how difficult it is, despite arguably having more information, even for a court to arrive at an accurate valuation by using such methodology. Haris Tsilikas and Claudia Tapia, 'SMEs and standard essential patents: licensing efficiently in the Internet of Things' (2017) 52(4) les Nouvelles-Journal of the Licensing Executives Society 170 173.

SEP holder's position might be considered abusive and, conversely, the prospective licensee can be deemed to be an 'unwilling' licensee.[1026]

### 4.2.3 Proxies to SEP portfolio valuation

As argued before, courts are likely to decide cases by considering a broader body of evidence than in bilateral negotiations. Therefore, in the framework of bilateral negotiations, the parties need to rely on certain proxies to adjust the royalty to be paid.

Proxies to the technological relevance of SEP portfolio – or more broadly proxies to portfolio value – can be of a quantitative or a qualitative nature. Some of the quantitative proxies that are used for patent valuation are the count of disclosed patents, the count of contributions and the number of specific disclosures while the discussion of claim charts is the main qualitative proxy.

#### 4.2.3.1 Quantitative proxies

The main quantitative proxy – which traditionally is used in the sector – is the mere count of disclosed SEPs. In principle, the number of disclosed SEPs in relation to the total number of SEP disclosed to the standard can be used as a proxy of the relative importance of the portfolio for the technology.

The main criticism that can be done to this proxy is that it overlooks that patent value is skewed and therefore some patents are more valuable for the standard than others.[1027] In addition, these proxy to portfolio valuation can be artificially altered by over-disclosure of SEPs, leading to a distorted picture of the real value of the portfolio and the technology.

Another proxy which is more and more used is the number of contributions to the SDO. To put it simple, a contribution is an input that is provided to the SDO from the companies to develop the standard specification. Nevertheless, contributions are not necessarily referred to actual technical inputs and usually also include minor technical aspects or mere requests of formal changes.

Using contributions to SDOs have been fiercely criticised[1028], in particular because making a contribution does not entail that the contribution will be accepted by the SDO, nor even discussed. Hence, contributions differ

[1026] This is one of the positive outcomes of the Huawei judgment. However, as pointed out by Leistner, it is doubtful whether non-FRAND offers should be accepted if the overall behaviour of the parties is deemed to be FRAND – the approach taken by Justice Birss in Unwired Planet v. Huawei – or whether a specific non-FRAND should automatically be considered in breach of the Huawei v ZTE requirements – the approach taken by German courts. Matthias Leistner, 'FRAND Patents in Europe in the Post-Huawei Era: A Recent Report from Germany' (2018) 10.

[1027] J Gregory Sidak and Jeremy O Skog, 'Citation Weighting, Patent Ranking, and Apportionment of Value for Standard-Essential Patents' (2018) 3 Criterion Journal on Innovation 201, 215.

[1028] Justus Baron, 'Counting Standard Contributions to Measure the Value of Patent Portfolios-A Tale of Apples and Oranges' (2018) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3223878> accessed 24 July 2022.

by outcome.[1029] Additionally, contributions widely differ in terms of actual impact and technological significance for the standard.[1030] A single functional contribution can be more relevant for the standard than a thousand iterative contributions.[1031]

In addition, counting contributions presents similar problems as counting disclosed patents. If it is accepted, companies might be incentivised to split their contributions and to make more non-significant contributions[1032], leading to an over-contribution scenario, which can compromise the ability of SDOs to focus on the relevant ones.[1033]

Similarly, in TCL v Ericsson, Judge Selna argues that the two 'major flaws' of counting contributions are that contributions do not necessarily refer to IPRs and they do not allow to adjust the value assessment in the light of transfers or expiry of patents.[1034]

Although it might be true that contributions to the standard is not an objectively verifiable criteria[1035] – at least at the same level as patent validity or essentiality, which can be analysed by a court – it still shall be feasible to trace back their *iter* from the contribution to the standard specification and to calculate their acceptance ratio.

Overall, the number of contributions might not be the most accurate proxy to technological significance of a company portfolio for a given standard. But it still provides a measure of the degree of involvement of such company in the actual development of the technology. A great dissonance between the number of disclosed patents and the number of contributions might signal that a company has decided to parachute over the standard without being very involved in its development. Although this should not necessarily affect the price to be paid, it can be used by prospective licensees to consider more carefully the actual relevance of the portfolio.

In conclusion, all quantitative proxies to portfolio valuation are flawed and exclusively relying in one or more of them is not very likely to end in an appropriate valuation of the portfolio. In addition, since the basis for calculation – disclosures and contributions – depend on the SEP holders there is a risk that the outcome of any of this valuation methods will favour them.

That is the reason why quantitative proxies to patent valuation should be complemented by other proxies to portfolio evaluation.

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[1029] ibid 9.
[1030] ibid 10.
[1031] ibid 12.
[1032] ibid 17.
[1033] ibid 17.
[1034] *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al,* Cases No 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx, 75 (CD Cal 2017).
[1035] Justus Baron, 'Counting Standard Contributions to Measure the Value of Patent Portfolios-A Tale of Apples and Oranges' (2018) 16.

#### 4.2.3.2 Qualitative proxies

The most relevant qualitative proxy for portfolio valuation are the bilateral discussions of some selected claim charts, usually some dozens. As explained in Chapter 3, claim charts are documents that present on a self-explanatory way why the SEP holders consider that its patent(s) match some of the specifications included within the standard – ie why it considers that its patents are essential.

The discussions of claim charts are a usual practice in the framework of bilateral negotiations. By engaging in such discussions, prospective licensees can better understand the technological relevance of the SEP holder portfolio. Moreover, claim charts put implementers on an equal footing and allow them to challenge the justifications offered by the SEP holder.

In addition, this exercise proves to be useful to SEP holders too, since claim chart discussions provide them with insights regarding the actual market essentiality of their technologies whenever the implementer argues that a given patent is not necessary for manufacturing its products.

Nowadays, the creation and discussion of claim charts is one of the cornerstones of the SEP licensing negotiations. If the prospective licensee is not persuaded of the technological relevance of the discussed patents, licensing negotiations will typically fail, regardless of the number of disclosed patents or contributions that the SEP holder relies upon to substantiate the value its portfolio.

#### 4.2.3.3 Mixed proxies

Other mixed proxies for patent valuation have been suggested, such as the half-life citation-weighting method suggested by Sidak and Skog.[1036] Although citations from other patents have been used as a measure of patent relevance or value[1037], citations are not necessarily indicative of the value of SEPs. While some technologies protected by SEPs might be the basis for follow-on innovation – and therefore are more likely to be cited – others might be enabling technologies that do not generate citations.[1038] Whether the former is more valuable than the latter is not that clear, inasmuch some of the latter might be the cornerstone for the standard.

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[1036] J Gregory Sidak and Jeremy O Skog, 'Citation Weighting, Patent Ranking, and Apportionment of Value for Standard-Essential Patents' (2018) 3 Criterion Journal on Innovation 201, 229ff.

[1037] See Dietmar Harhoff *et al*, 'Citation frequency and the value of patented inventions' (1999) 81 Review of Economics and statistics 511.

[1038] Judge Selna argued similarly in TCL v Ericsson with regard to the forward citation methods. '(T)he Court is not convinced on this record that it provides a meaningful way to value SEPs (…). It does not appear that any other court or company has used a forward citation analysis for such a task, and it is unclear whether companies would have the same incentives to cite to potential prior art, particularly in the context of multiple standards. In addition, while ignoring self-citations reduces the risk of gaming the system, it would also appear to ignore the possibility that one patent owner would naturally cite to itself because it is (sic) has been the leader in developing a particular technical area.' *TCL Communication Technology Holdings Ltd et al v Telefonaktiebolaget LM Ericsson et al,* Cases No 8:14-CV-00341 JVS-DFMx and 2:15-CV-02370 JVS-DFMx (CD Cal 2017) 42.

A limitation of forward citation counting proxies is that they tend to be useful to evaluate portfolios *ex post*, but present limitations to evaluate its contemporaneous value.[1039] Although the method proposed by Sidak and Skog partially overcomes such limitation, it implies to develop projections on the expected citations and/or to make adjustments that will require both parties to agree on the criteria[1040] and increase the complexity of an already complex matter.

Another 'mixed' method is to count the number of disclosures that include a description or a reference to the specific part of the standard for which the patent is relevant. Such proxy is an 'improved' version of mere patent counting and has been found to be a strong predictor of the actual essentiality of the patent.[1041] Disclosures that include a reference to the standard have, in principle, gone through a more in-depth analysis of essentiality. Therefore, they are more likely to be essential. Nevertheless, it should be noted that such requirement is not mandatory in all SDOs[1042] and sometimes is not even possible.[1043]

### 4.2.4 Adjustments on price

Finally, the price of a SEPs' portfolio licence is adjusted depending on other criteria which are not necessarily linked to the strength of the portfolio as such. These are, among others, the actual scope of use of the patent, the pre-existence of a business relation or the involvement in other joint projects.

As argued in Chapter 3, there is a substantial difference between the standard essentiality of the patent and whether a specific product requires full or partial implementation of the standard. Even a company with a large portfolio and an impressive record of proven standard essential patents will be forced to offer lower royalties to a company whose product reads only in a reduced part of the standard, therefore the actual scope of the intended use is a key aspect to determine the price of the licence.

To a certain extent the price – or more broadly speaking the terms of the agreement – reflect not only the agreed value of the object of the transaction (the SEPs portfolio) but also all the transaction costs which are incurred or are likely to arise during the lifetime of the agreement. For example, if there are reasonable doubts about the viability of a licensee in the short run, it is very probable that the SEP holder would

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[1039] 'Forward citations are particularly helpful in situations when we are interested in historical declarations, but they naturally are not available when assessing contemporaneous SEP declarations. Such cases require predictors of essentiality based on contemporary, available data.' Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017) 20.

[1040] This method is based on some assumptions that are not very likely to be shared by both parties.

[1041] Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017).

[1042] In ETSI a reference to the specific part of the standard is not mandatory whereas in VITA it is. See Chapter 3 section 3.

[1043] Either to make such reference to the specific part of the standard or to make publicly available this information by means of a database.

require from it an upfront payment. In this regard, companies that have been concluding contracts on a regular basis with the SEP holder are more likely to obtain more favourable prices or payment conditions.

Far from being discriminatory, such practices are justified since they build on mutual trust among business partners and, hence, result in lower transaction costs. The negotiations are very likely to be shorter and the starting point for such negotiations in terms of portfolio knowledge are more advanced than in the negotiations with a newcomer. Overall, past agreements and negotiations can be used as a benchmark for new agreements.

Finally, the price of a SEP licence can be influenced by other side agreements that are concluded in parallel: for example if licensor and licensee aim to stablish cooperation by means of joint R&D efforts, or if the licensee wants to include the licence for non-SEPs within the same agreement.

## 4.3 The potential anti-competitive effects of over-disclosure

There are circumstances where over-disclosure can potentially lead to an artificial increase of licensing prices and therefore can pave the way to consider the claim of excessive royalties based on over-disclosed patents to be an abusive behaviour.

The reasoning is the following: if the value of the royalty is defined with reference to a number of patents that are not needed for the purposes of offering standard compliant products, the royalty will not be linked to the actual value that the licence offers to the implementer. In other words 'the value of the licence does not have a reasonable relationship with its economic value'.[1044]

In this case, one may intuitively think that the price to be paid for the licence would be higher than if only the truly essential patents are licensed. Hence, the royalty rate should be deemed to be excessive. The potential anti-competitive effects of such excessive royalties are fourfold: (1) the over-disclosing company extracts part of the consumer surplus; (2) if royalties are high enough, they will be capable of favouring the existence of royalty stacking[1045] eventually leading to exclusionary effects in downstream markets, (3) the over-disclosing company(ies) might artificially alter the allocation of the value of the standard, reducing the amount of royalties received by other SEP holders who do not engage in over-disclosure[1046]; and (4) harms to confidence in the standardisation process.

[1044] Case 27/76 *United Brands v Commission* [1978] ECR 207, para 250.

[1045] Royalty stacking refers to a situation where a product is covered by multiple patents and their holders consequent claim royalties to a point where the total price of the technology – ie the aggregate of all individual royalties – turns out to be excessive. Mark A Lemley and Carl Shapiro, 'Patent holdup and royalty stacking' (2006) 85 Texas Law Review 1991, 2010.

[1046] Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608, 630.

Dewatripont and Legros have identified a trend to 'padding'[1047], ie including (disclosing) non-essential patents in a standard. They conclude[1048] that, being comparable their capacity to generate patentable inventions, an upstream firm and a vertically integrated firm will produce the same number of essential patents, but the former will pad more.

Why are pure licensing (non-practicing) companies more prone to over-disclose? In principle, both non-practicing SEP holders and vertically integrated companies have incentives to increase the number of disclosed patents in order to get higher royalties. And vertically integrated firms may also seek to get better conditions in cross-licensing agreements.

A possible answer is that the (1) reputation of vertically integrated SEP holders within the market is not only linked to their portfolio's size, but also to their overall performance in the downstream market. Another explanation is that (2) their knowledge of the technology is better[1049] and therefore their disclosures are more accurate. And, (3) vertically integrated companies have more incentives to preserve their reputation in the long run[1050] compared to companies whose main income source are licensing revenues.

However, the effects of over-disclosure might by rather limited as regards hypotheses 1 and 3. Once the market has adopted the standard and the licensees enter in licensing and cross-licensing negotiations, the market has a better impression of which companies are more prone to over-disclosure and, therefore, licensees take this into account in their negotiations. As a consequence, companies with a long-term perspective[1051] might be even less willing to risk their reputation by over-disclosing while companies aiming at generating as much revenue as possible in the short term might still be willing to benefit from over-disclosure as far as the effects on royalty rates survive.

### 4.3.1 Extracting excessive royalties

Beyond doubts, one of the reasons why SEP holders might have an incentive to engage in over-disclosure is the prospect of maximising revenue on the basis of an ostensibly bigger portfolio. In such events, Article 102 TFEU might have a say, despite general concerns about dealing with pricing abuses under competition law.[1052] But in any event, the intervention will only be justified if over-disclosure leads to excessive royalty rates in the specific case.

On the one hand, the means used by the over-disclosing company are rather different from the ones used in patent ambush. Rather than

[1047] Mathias Dewatripont and Patrick Legros, '"Essential" Patents, Frand Royalties and Technological Standards' (2013) 61 Journal of Industrial Econonomics 913, 937.
[1048] ibid 928.
[1049] They are able to get the full picture of the two sides of essentiality discussed at 2.3 (ie patent-standard/specification-product).
[1050] To the extent that their structural investments and fixed costs in the industry are higher.
[1051] This not only includes vertically integrated companies but also pure SEP holders with a long-standing trajectory in the sector and stakes in future generations and versions of the standard. Yet Dewatripont and Legros study is not that far-reaching.
[1052] Which is discussed supra at 3.2.2.

concealing the patents to improve the chances of its technology to be included within the standard, and later leveraging from such inclusion, the over-disclosing company benefits from its legitimate dominance, to the extent it owns a portfolio of truly SEPs, and the asymmetries of information vis-à-vis certain implementers to charge them more on the basis of over-disclosed SEPs, which the licensee is not in need to use to market its standard-compliant products.

This opens the possibility of considering the licensing of over-disclosed patents to be an atypical case of tying, whereby the prospective licensee could, in theory, refuse to take a license for patents that are not mandatory for implementing the standard, whereas in practice the licensee cannot do it for lack of knowledge.

On the other hand, the effects of such excessive pricing are not different to those related to hold-up: the over-disclosing company will extract part of the consumer surplus. Eventually, it can negatively affect follow-on innovation and lead to an exclusionary effect, but these effects are more likely to appear if a plurality of companies attempt to extract excessive prices, bringing the concerns closer to the royalty stacking problem.

### 4.3.2 Over-disclosure and royalty stacking

Compared to ambushes, which are non-systematic individual behaviours, nothing prevents a large number of patent holder to concur[1053] in the same behaviour of claiming excessive royalties based in over-disclosed patents, resulting in royalty stacking.

In their seminal article 'Patent Hold-up and Royalty Stacking',[1054] Lemley and Shapiro explain that royalty stacking occurs when a single product requires the taking licences for many patents, creating multiple royalty burdens and increasing litigation costs[1055] – the usual case of standards – which may imply that the aggregated amount of a bundle of "reasonable royalties" may not be reasonable overall.

Such situation leads to inefficiencies that harm both consumers and producers: the complements paradox.[1056] The premise of this paradox is a product that needs two complementary inputs (A and B) belonging to two different suppliers (Scenario 1). If each provider aims to maximise its margin and consequently raises the price, the raise on the price of A leads to a decrease on the demand of B and vice versa, since both inputs are complementary. As a consequence, neither the consumer surplus – perfect competition – nor the producer surplus – monopoly – is maximized, reaching a suboptimal result from both angles – hence

[1053] As analysed above at 4.1, a companies' over-disclosure can motivate others to over-disclose as well to prevent their 'share' of the technology from being diluted.
[1054] Mark A Lemley and Carl Shapiro, 'Patent holdup and royalty stacking' (2006) 85 Texas Law Review 1991.
[1055] ibid 1993.
[1056] Initially formulated by Cournot in 1838, Shapiro analysed it with respect to SEPs in Carl Shapiro, 'Navigating the patent thicket: Cross licenses, patent pools, and standard setting' in Adam B Jaffe, Josh Lerner and Scott Stern (eds), *Innovation policy and the economy*, vol 1 (MIT Press 2001) 123.

increasing deadweight loss at expenses of both consumer surplus and producer surplus.

In such cases, a company owning both A and B (Scenario 2) will be able to fix the prices of A and B in order to reach the optimum level of demand, thereby reaching a higher level of profits. The result is that a firm controlling the supply of both complements, is more efficient[1057] than a market structure where different firms control the supply of each of the complements. This second scenario mirrors a perfect monopoly situation, whereby at least producer surplus is maximised – reducing the deadweight loss, at least partially.

As any other microeconomics theory, the complements paradox suffers from the fact that is based on ideal conditions. In this case, it requires in both scenarios that the companies be able to freely fix a price – ie that they are perfect monopolists. Although, as discussed above[1058] ownership of a SEP can confer a dominant position, one may argue that SEP holders are far from being able to freely fix the price. This lack of ability is largely explained by the interdependence among technologies of such a complex sector, the SDO rules, and the structure of market itself. Implementers and SEP holders coexist with vertically integrated companies, creating a somehow more complex system of incentives.[1059]

In any case, the effects of such paradox will be slightly different in the standards case. In contrast to the brass producer case, proposed by Cournot, that needed zinc and copper, implementers do not need 'units' of licence. Once an implementer takes a licence for the technologies A and B, it will not need additional licences for each product it produces. Consequently, it will not necessarily create a problem of insufficient supply or scarcity, as may be the case for the production of brass. Rather this will lead to a case[1060] of overpricing of the final product and a case of limitation of implementers, since higher royalties restrict access to the standard and consequently create entry barriers to the downstream product market.

On the other side, many authors have argued that Lemley and Shapiro's concerns as regards royalty stacking are merely theoretical, with little impact in the real market. Galetovic and Gupta conducted an empirical study on the wireless industry and proposed a model that contradicted certain assumptions, concluding that such market is not subject to royalty

[1057] In maximising producer surplus.

[1058] See section 2.1 in this Chapter.

[1059] This different system of incentives (and business models) explains why some companies even refrain to charge royalties over essential technologies. For a discussion on the rationale and dynamics of such business models, please see Vicente Zafrilla Díaz-Marta and Carlos Muñoz Ferrandis, 'Open Source, ICT Standards and Softwarisation: Hybridisation Dynamics and Competition Law Concerns' Journal of Law, Market and Innovation (forthcoming).

[1060] Both in cases of lump-sum royalties and per-unit royalties.

stacking[1061], while argues that the results may challenge Cournot 's complements theory itself.[1062]

There is another factor that might run counter to the presence of the complements' paradox in SEP licensing. If this paradox existed, SEP holders would seek to engage in pool licensing as a way of maximising producer surplus – ie coordination to make the cake bigger. However, as echoed in Chapter 3 above, only 9% of SEPs are licensed via pool.[1063]

The reasonable doubt about the scope and effects of the complements' paradox, however, does not automatically prevent royalty stacking concerns from appearing. In two joint articles, Geradin has positioned himself as one of the most critical voices against the alleged impact of royalty stacking. The first one, co-authored with Layne-Farrar and Padilla,[1064] argued that the mere possibility of royalty stacking is not enough to justify policy interventions, since there is little evidence of royalty stacking as a general problem. The second article[1065], co-authored with Rato, identifies four implicit propositions required for the royalty stacking to occur: (1) essential patents are perfect complements, (2) there are many patents, (3) they belong to numerous holders and (4) no or few standard implementers have patents to trade.

Propositions (2) and (3) are widespread in standards, while the first proposition is implicit in the very nature of essential patents. By definition, an essential patent is a complementary patent.[1066] Moreover, it makes little sense to put the emphasis on the 'perfect'[1067] – or strict – nature of complements. As explained in Chapter 3, section 2.2, licences deserve a slightly different treatment when they only cover complementary technologies, particularly because even a partially substitutable technology – imperfect complement – might also have a blocking effect.

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[1061] Alexander Galetovic and Kirti Gupta, 'Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry' (2016) 24.

[1062] Norman V Siebrasse, 'Holdup, Holdout, and Royalty Stacking: A Review of the Literature' in C Bradford Biddle *et al* (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge University Press 2019).

[1063] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 36.

[1064] Damien Geradin, Anne Layne-Farrar and Jorge Padilla, 'The Complements Problem within Standard Setting: Assessing the Evidence on Royalty Stacking' (2008) 14 Boston University Journal of Science & Technology Law 144.

[1065] Damien Geradin and Miguel Rato, 'FRAND commitments and EC competition law: a reply to Philippe Chappatte' (2010) 6 European Competition Journal 129, 138ff.

[1066] At least in principle, not all complementary patents are *vice versa* essential. The complementary nature of SEPs and the suitability of disclosing substitute patents as (co)essential has been discussed in Chapter 3 Section 2.2.

[1067] Moreover, in complex industries there are only rare cases of perfect substitutes/complements. 'Intermediate cases between perfect complements and perfect substitutes are far more numerous and also more complex. For example, patents may block one another in some uses but not others and even patents that are predominantly substitutes can have blocking claims.' Erik Hovenkamp and Herbert Hovenkamp, 'Patent Pools and Related Technology Sharing' in D Daniel Sokol and Roger D Blair (eds), *The Cambridge Handbook of Antitrust, Intellectual Property, and High Tech* (Cambridge University Press 2017) 363.

Finally, the fourth proposition is correct: cross-licensing can contribute to reduce or eliminate royalty stacking. However, such proposition cannot imply the assumption that most operators within a given standard – not even in telecommunications sector – are in a condition to cross-license.

At the time of publication of their paper, the number of standard implementers was more reduced and there was a higher relative ratio of vertically integrated companies (more willing to engage in cross-licensing). Nowadays the scenario is radically different, with more and more companies not traditionally participating in ICT sectors seeking access to connectivity standards.

Furthermore, even in a scenario where only a limited number of undertakings – pure implementers – were not able to cross-license and, consequently, were affected by royalty stacking, competition concerns would also arise.

An interesting point – made by Regibeau et al[1068] – which might explain the difficulties to find evidence of systemic royalty stacking is that there might be a comparable hold-out effect which somehow counterbalances the impact of royalty stacking. In other words, that SEP holders compensate the loss of royalties resulting from hold-out – arguably caused by those implementers which have a more negotiation power – by extracting more royalties from companies that have less negotiation power or which are more likely to be affected by asymmetries of information. This idea, however, requires further empirical evidence.

Even small increases on price derived from over-disclosure can indeed aggravate royalty stacking, in particular if there are various companies that concurrently engage in such practice, leading to a situation referred to as 'confusopoly'.[1069]

Some scholars have suggested imposing an aggregated royalty cap to address such situations.[1070] The Commission made explicit reference to a reasonable aggregate royalty rate to address the royalty stacking risks.[1071] Indeed, this is the right approach to face royalty stacking, since the nature of the problem is not how to split the cake (see misallocation of royalties below), but rather that a group of companies are making the cake bigger at the expenses of implementers, other SEP holders[1072] and consumers.

Such decision might require evidence of systemic royalty stacking based on the existence of over-disclosure and, moreover, might be better

[1068] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016).
[1069] Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 9.
[1070] See Jorge L Contreras, 'Aggregated Royalties for Top-Down FRAND Determinations: Revisiting "Joint Negotiation"' (2017) 62 The Antitrust Bulletin 690; Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47.
[1071] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 7.
[1072] Notably those that do not charge any royalties and directly generate their revenues from the sale of products and services in the downstream market.

addressed by Article 101 TFEU. Article 102 TFEU at best might be actionable against a company which has decisively contributed to the existence of royalty stacking by charging excessive royalties – as specifically discussed in the next subsection.

From an Article 101 TFEU perspective, systemic over-disclosure by a plurality of companies which results in royalty stacking might be tackled as a concerted practice consisting in artificially increasing the asymmetries of information and subsequently exploit such asymmetries of information within licensing negotiations with companies that do not have the means to overcome them. Nevertheless, it would be pointless to address royalty stacking stemming from over-disclosure as a tacit collusion case in a fora whereby competitors actually have explicit means of coordination – namely the very SDO policies, as it subsequently be discussed in Chapter 6.

### 4.3.3 Misallocation of royalties

Regardless of whether an aggregated royalty cap has been fixed, over-disclosure can artificially alter the allocation of royalties among SEP holders. If disclosed SEPs are used, at least partially, as a criteria of portfolio price determination it is very likely that companies which have disclosed more patents will perceive more royalties than those which have disclosed less, irrespectively of their actual contribution to the technology.[1073] As a result, some actually innovative efforts can be under-rewarded.

Whether the misallocation of revenues is a genuine competition harm is not very straightforward. At first hand, competition law should refrain from intervening in the regulation of the consequences of over-disclosure as such and focus on the effects on competition. On the other hand, the misallocation of revenues can lead to under-rewarding the innovative efforts of other SEP holders and/or to deter them from participating in further standardisation initiatives,[1074] which should raise more attention from a competition law perspective.

Such misallocation of royalties does not only take place directly – ie at royalty level – but also indirectly: some SEP holders do not engage in licensing activities and do not enforce their patents but extract their revenues in other parts of the value chain. For them, a higher price in the licensing of enabling technologies can represent a reduction of volume – less demand for their products or services – and eventually, a margin reduction.

### 4.3.4 Harms to standardisation

Finally, over-disclosure can amount to a number of negative effects with regard to the transparency, the creation of artificial asymmetries of information or the trust in standardisation process. Regardless of their

[1073] Cody M Akins, 'Overdeclaration of Standard-Essential Patents' (2019) 98 Texas Law Review 579, 590.
[1074] See Rudi Bekkers, 'Where patents and standards come together' in Richard Hawkins, Knut Blind and Robert Page (eds), *Handbook of Innovation and Standards* (Edward Elgar Publising 2017) 236ff.

intensity, there is not any attributable positive effect, which might justify a higher level of tolerance.

Harms to transparency through an artificial increase of asymmetries of information largely pertains to the licensing aspect, however a reduction of trust in standardisation can trigger a number of negative effects beyond those connected to licensing – discussed at subsection 3.2.4 above.

If trust is understood as the subjective perception about the likelihood of (legitimate) expectations' fulfilment, it is not difficult to argue that harms to trust in standardisation are more intense whenever a SEP holder fails to honour its contractual commitments in connection to the development of the standard[1075] than when some incumbents attempt to extract extra royalties at licensing level. This is particularly evident when considering that the understanding of disclosures as a licensing tool is quite recent[1076] and inconsistent with actual practices and tools: most SDOs neither mandate specific disclosures nor do they maintain a public database of disclosures.

Systemic royalty stacking as a result of over-disclosure is the case where harm to trust in standardisation can result in anti-innovative effects. Implementers might be dissuaded from obtaining a licence – affecting follow-on innovation – and other prospective innovators will refrain from diving in a shark tank, where a substantial number of incumbents are trying to get the lion share simultaneously – affecting the innovative performance of subsequent standardisation efforts.

In the rest of the over-disclosure cases, trust in standardisation will not be affected to a point where anticompetitive harms would – potentially or actually – arise. In absence of systemic royalty stacking it is more probable that the loss of trust will concern only those SEP holders which attempted to unduly benefit from their over-disclosed patents. This scenario is not likely to discourage other standard developers to join further standardisation effort. Nor will it prevent follow-on innovation – although it might impose a small 'tax' on it.

## 4.4 The real dimension of over-disclosure anticompetitive effects

### 4.4.1 Over-disclosure, licensing and asymmetries of information

Licensing negotiations nowadays cannot be deemed to be a mere exercise of counting patents. Yet over-disclosure might provoke a price-increasing effect. It cannot be ignored that, in many cases, the number of disclosed SEP is the main – if not the only – quantitative proxy to portfolio valuation for certain licensees. One shall recall that most SDO do not provide for an obligation of public disclosure or do not have a

[1075] Similarly when SDO rules are insufficient to prevent anticompetitive effects linked to the standardisation process itself.
[1076] Section 3.1, Chapter 3.

database where prospective licensees can get a taste of the SEP holders' portfolios.

Regibeau et al[1077] argue that the inflation of SEP disclosures should be neutral in terms of price if (1) licensing takes place on the basis of counting the total number of patents and arriving to a share of the total and (2) if pricing is based on the licensor's jewels. The first condition only works well if referred to agreements between SEP holders that have a comparable level of knowledge with regard to the technology joining to create a patent pool or a pseudo-pool[1078] or if all the SEP holders engage in the same level of over-disclosure, which is not very realistic.

The second condition requires that both parties know which are the licensor's jewels, which it is not always possible – provoking asymmetries of information. Only companies that have for a long time been involved in standardisation and have the appropriate number of resources will be able to do so.

To which extent this situation is frequent in licensing negotiations is not clear. SEP holders argue that the number of disclosed SEPs is not used as a proxy of portfolio value, however, implementers are confronted with portfolios of some hundreds disclosed patents and are more concerned about their own limitations for assessing the standard essentiality of these patents.[1079] Therefore, it is difficult to argue that the number of disclosed patents does not have any relevance whatsoever for the royalty calculation.[1080]

Probably, the more accurate analysis is that over-disclosure was irrelevant in the past where there were only a handful of SEP holders and implementers – and a substantial number of vertically integrated companies –, which were all largely aware of the technological relevance of the respective portfolios – ie low asymmetries of information. Moreover, most of the companies engaged in cross-licensing, and the range of standard-compliant product was relatively reduced.

This situation was perfectly illustrated by a SEPs expert who stated:

> You sit down at the table, show your thousands of patents and start to negotiate. It is more or less a 'weight thing'. You see who has more patents and then you talk about the small group [of patents which] you know are really important. And by the end of the day, usually the one who has fewer patents pays the other an amount of money.[1081]

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[1077] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 48.

[1078] This is arguably the situation taking place in the framework of Avancii. See Jorge L Contreras, 'Fixing Frand: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47, 78.

[1079] According to the views of professionals working for SEP holders and implementers.

[1080] Peter G Picht and Gaspare T Loderer, 'Arbitration in SEP/FRAND Disputes: Overview and Core Issues' (2019) 36 Journal of International Arbitration 575, 584.

[1081] Excerpt from an interview in Claudia Tapia, *Industrial property rights, technical standards and licensing practices (FRAND) in the telecommunications industry* (Carl Heymanns 2010) 43.

While this 'gentleman's agreement' might have worked 'reasonably well'[1082] in the past, it is highly dubious that this is the right approach provided the number of newcomers to the ICT standardisation, most of them without any knowledge whatsoever about the technological relevance of SEP portfolios or without patents to cross-license.

Thus, the effects of over-disclosure in SEP licensing should be analysed more carefully than in the past, since the structural safeguards that prevented over-disclosure from increasing the royalty rates in the past are not in place anymore or, even worse, protect certain companies while leaving the rest exposed to the effects of over-disclosure.[1083]

The scenario consisting in a reduced group of companies that are immune to the negative effects of over-disclosure due to their high level of knowledge of the technological relevance of individual portfolios and the rest of companies exposed to the asymmetries of information might (1) call for an evolution of the disclosure system and (2) eventually argue in favour of competition law intervention on the basis of Article 101 TFEU.[1084]

### 4.4.2 Over-disclosure as an abusive behaviour

The abusive behaviour in this case can be formulated as claiming excessive royalties on the basis of over-disclosed patents. Thus, over-disclosure can only be deemed to be an abusive behaviour if two elements concur: first, there is actual over-disclosure and, second, over-disclosure results in an increase of royalties. In practice, both requirements are difficult to prove.

In comparison to patent ambushes, that can affect virtually any company that aims to implement the standard, over-disclosure is more likely to affect those companies which have a lower level of awareness of the technological relevance of the over-disclosing company´s contribution – ie those negatively affected by asymmetries of information.

#### 4.4.2.1 Existence of over-disclosure

As analysed before[1085], the mere existence of a high number of disclosed patents which are not in fact essential cannot be equated to over-disclosure.

As discussed in section 3.3.1 above, the Commission found in Rambus that a breach of SDO rules was not necessary to find an abuse – and nothing might signal that the conclusion should be different in over-disclosure cases.

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[1082] Being optimistic and ignoring the smartphone wars.

[1083] The scenario consisting in a limited group of companies that are immune to the negative effects of over-disclosure due to their high level of knowledge of technological relevance of patent portfolios and the rest of companies exposed to the asymmetries of information.

[1084] Discussed in Chapter 6, section 4.

[1085] See above the introductory considerations to this Section (4).

Nevertheless, in absence of more or less clear disclosure rules – and measures – it will be difficult to argue that over-disclosure has taken place. In other words, the threshold to consider that a patent has been over-disclosed can only be made with a reference to the rules of disclosure of the specific SDO at hand.

In general, if the disclosure is done in timely fashion, according to the degree of diligence demanded by the SDO and according to the type of disclosure defined by the SDO policy, a patent cannot be deemed to be over-disclosed – even if at the end the patent becomes non-essential. Absent an obligation to update, the relevant moment to evaluate whether the SEP holder has incurred in over-disclosure is the moment where the disclosure was made[1086], regardless of the changes that its essentiality status might have undergone as a result of the specification or patent evolution.

Another relevant criterion for assessing the existence of over-disclosure is whether – at the moment of disclosure – the patent was essential for the draft specification or, at least there were reasonable expectations that the patent might read in some of the alternative technologies that were discussed within the technical committee. An alternative reading – which still argues in favour of SEP holders' immunity – is to consider that under these circumstances SEP holders' disclosure practices are covered by an objective justification.

In sum, disclosures made in accordance to the SDO disclosure rules that are referred to patents which had – or were likely to have – relevance for the implementation of the specifications discussed at the moment of disclosure cannot be deemed to be over-disclosed.

Conversely, disclosures in breach of the SDO disclosure rules or referred to patents that were not related to the technical solutions discussed within the technical committees are more likely to be over-disclosed.

These particularities are of paramount importance when assessing the existence of anticompetitive effects. First and foremost, in absence of straightforward disclosure rules the case will not be a case of over-disclosure, but rather a case on excessive pricing, with some specificities.

Second, whether a SEP holder has indeed engaged in over-disclosure requires evaluating to which extent the disclosures have been done in accordance to the SDO disclosure rules, which at the same time are the benchmark against which the legitimate expectations of prospective licensees must be evaluated.

Legitimate expectations from prospective licensees come again into this picture. This concept which the CJEU brought up in Huawei – not an over-disclosure case but rather a hold-up case – largely assumes that the standardisation ecosystem expects SEP holders to behave in good faith

[1086] Contreras is supportive of this understanding: 'In making this determination years after a disclosure allegedly should have been made, it is important to avoid hindsight bias and to assess the patent holder's compliance based solely on information and technical capabilities available at the time that the essentiality determination was made.' Jorge L Contreras, 'Essentiality and Standard Essential Patents' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardisation Law* (Cambridge University Press, 2017) 222.

to fulfil its legitimate expectations[1087], at the risk of otherwise provoking anticompetitive effects that might trigger Article 102 TFEU intervention.

Good faith and legitimate expectations are two sides of the same coin: SEP holders are expected to diligently fulfil their duties in order to meet licensees' legitimate expectations. In the case of under-disclosure it is easier to argue that legitimate expectations might go beyond the content of the disclosure rules – ie it is legitimate to expect that no submarine patents will thwart the standardisation process regardless of the scope of disclosure rules.

It is way more difficult to argue so in over-disclosure cases. In particular, where SDOs do not mandate specific disclosure nor provide for means to transfer such information to the market such as SEPs databases. Otherwise the threshold of diligence expected from SEP holders would go way beyond a generic good faith duty.

The corollary is that breach of SDO rules is needed to speak of over-disclosure: not as a consequence of a forms-based approach but as a factual requirement. Clearly defined disclosure rules are paramount to characterise over-disclosure: the more lenient they are, the more difficult would be to argue that the SEP holder has incurred in over-disclosure.

This finding does not prevent anti-competitive effects from arising under certain circumstances, but in these cases, intervention on the basis of Article 102 TFEU must be ground on excessive pricing, with some additional specificities linked to the effects on follow-on innovation derived from the standardisation dynamics. One may think that an action based on the FRAND commitment might be also more appropriate – to a large extent courts have decided cases of inflated portfolios by balancing these figures against other evidences.[1088]

#### 4.4.2.2 Impact on price

The mere existence of over-disclosure, however, does not suffice to trigger application of Article 102 TFEU. For example, if the SEP holder does not actively enforce its patents or does not seek to monetise its portfolio, it is irrelevant whether it has over-disclosed patents. Similarly, if there are only a few over-disclosed patents it is not very likely that such over-disclosure will result in an increase of royalties.

Over-disclosure would only have a price-increasing effect if the counting of disclosed patents is used as the only or the main portfolio valuation criteria, without balancing it against other quantitative or qualitative valuation methods such a representative selection of claim charts. In particular, the price increasing effect is more likely to happen – and be more intense – when there are important information asymmetries between licensor and licensee in favour of the former.

[1087] Defined above as the subjective perception about the likelihood of (legitimate) expectations' fulfilment.
[1088] See Unwired Planet and TCL v Ericsson in section 4.2.2 above.

In essence, if counting patents is not considered for defining the royalty, the number of over-disclosed patents becomes irrelevant to define the price and hence over-disclosure too. But even when counting patents is used, informed licensees would be able to assess the real value of the portfolio regardless over-disclosure.[1089]

On the contrary in the event of less knowledgeable implementers who do not know what the truly valuable patents are, it would be too naïve to assume that the SEP holder will not be tempted to include an additional little bijouterie among the jewels, incrementing the royalty to be paid.

Consequently, the price-increasing effect of over-disclosure is more likely to occur the bigger the asymmetries of information are.[1090] In principle, companies which have been involved in standard development are much more aware of the technological relevance of other participants' portfolios for the standard and, therefore, they are not very likely to be negatively affected by over-disclosure. Similarly, companies with a high degree of understanding of the technology are more likely to detect the truly valuable patents within a large portfolio. On the other hand, companies with little or no knowledge of the technological dynamics are more likely to be negatively affected by over-disclosure.

Conversely, in those scenarios where the SEP holder has provided the prospective licensee with additional information to enhance the latter's understanding of the value of the portfolio, the effect in price can turn to be more moderate, negligible or even non-existent.[1091] If the SEP holder provides the prospective licensee with a selection of claim charts that is representative enough, presents some of its contributions and traces them into the standard and has specifically disclosed its SEP holders, it is very likely that the terms of the agreement end up to be FRAND.

Therefore, from a pricing perspective, over-disclosure can inflate the price of a patent portfolio in particular when the only – or the main – criterion for portfolio valuation is the number of disclosed patents.

#### 4.4.2.3 Remedies

As a result of all the above mentioned, an appropriate remedy would be to impose the over-disclosing company the duty to conduct an essentiality check[1092] of the portfolio he/she intends to license vis-a- vis the standard specifications, and make it publicly available. By so doing, the over-disclosing company would eliminate the artificial asymmetries of information created by over-disclosure, enabling a fairer price formation.

On top of that, fines can reinforce the deterrence of the measure, and damages can be awarded whenever actual harms have been produced to competitors or licensees – eg in cases of misallocation of royalties or excessive prices.

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[1089] This situation is largely equivalent to the dynamics of licensing in the past explained a 4.4.1 above.
[1090] The dynamics of asymmetries of information are discussed in Chapter 3.
[1091] Letting aside the inherent difficulties to prove in court that the over-disclosure has resulted in an increased price.
[1092] See also section 3.3.1.3 above.

# 5. Conclusion

Both over and under-disclosure can give rise to harms to competition that justify competition law intervention under Article 102 TFEU. Under-disclosure can result in hold-up, the alteration of the pre-market competitive process – including the exclusion of competing alternatives, harm follow-on innovation and frustrate the legitimate expectations of participants in standardisation and consequently trust in standardisation, which is a core value for standards-based innovation.

Over-disclosure can also result in hold-up, contribute to royalty stacking – particularly if various SEP holders concur in the same practice –, provoke a misallocation of royalties, artificially increase asymmetries of information and ultimately harm trust in standardisation.

In general, under-disclosure is a more harmful behaviour for standardisation than over-disclosure. While both behaviours can negatively affect the licensing dynamics, under-disclosure has the potential to harm them to a larger extent. In particular, patent ambush behaviours can potentially affect any prospective licensee, regardless of its position or negotiation power, whereas over-disclosure is more prone to affect licensees which are more exposed to asymmetries of information.

In addition, under-disclosure might affect the dynamic pre-market competition that takes place within SDOs, while over-disclosure can potentially alter such dynamics in marginal cases. Overall, these concerns justify why SDO disclosure rules are primarily targeted at preventing under-disclosure – as well as the higher level of intervention of courts and competition authorities in under-disclosure cases.

This, however, should not hide the fact that there is a substantial number of under-disclosure and over-disclosure cases – or more accurately patent inflation cases – that do not have any effect on competition or innovation, and therefore competition agencies and courts must abstain from intervening at the risk of over-deterring SEP holders. The experience in the past shows that an excessive zeal to target under-disclosure can promote over-disclosure and vice versa.

Yet there is a significant number of situations where, despite the existence of harm to competition, Article 102 TFEU is not suitable to tackle them. Under-disclosure cases are particularly troublesome when the lack of disclosure is not linked to a subsequent abusive behaviour – such as the claim of excessive royalties or a refusal to license – which takes place after the standard has been approved and the patent holder has acquired a market dominant position. This type of cases could be more easily addressed, if fraudulent acquisition of market power were made illegal following the model of Section 2 Sherman Act. Such amendment of the

law might also contribute to draw a clearer line between deceptive under-disclosure and other cases of under-disclosures.[1093]

Finally, there are non-negligible practical limitations when it comes to prove the existence of under-disclosure and their effects, notably when trying to delineate the 'what if' scenarios (counterfactuals) that might have occurred absent the under-disclosure of a given patent.

Likewise it is challenging to prove the existence of over-disclosure and its impact on royalties. Article 102 TFEU can only apply where such evidence can be produced. Clearer disclosure rules can substantially contribute to a better definition of disclosure duties and to delineate which behaviours can and should be tackled by Article 102 TFEU. Yet pushing for improved disclosure rules is completely alien to Article 102 TFEU and must be addressed in the framework of Article 101 TFEU, as it will be argued in the next – and final – Chapter.

[1093] As discussed above in Section 3.3, the existence of deception is not absolutely irrelevant, but a clearer distinction might contribute to better tackle its – arguably – more severe harms to competition.

# Chapter 6: A competition policy approach for improving SEPs disclosure

## 1. Introduction

As seen in the preceding Chapters, the current disclosure system is not able to prevent under and over-disclosure of SEP, nor is Article 102 TFEU capable to tackle some of the negative effects resulting from over and under-disclosure as unilateral behaviours.

Therefore, it is appropriate to evaluate whether other actions in the framework of SDOs can contribute to reduce the likelihood of under and over-disclosure or, at least, mitigate their harmful effects on competition and innovation.

In the Huawei case, Advocate General Wathelet expressed his strong support for addressing some of the SEP-related misbehaviours in the framework of SDOs, rather than waiting for their negative effects to flourish in the market:

> (T)he risk of bad faith of the parties or of breakdown of negotiations in this field can be, at least in part, avoided or mitigated, if the standard bodies establish certain minimum conditions or a framework or certain 'rules of good conduct' for the negotiation of FRAND licensing terms. Without these, not only actions for a prohibitory injunction but also the rules on abuse of a dominant position, which should be employed only as solutions of last resort, are being used as a negotiating tool or a means of leverage by the SEP-holder or the undertaking which implements the standard and uses the teaching protected by that SEP.[1094]

There are also further reasons for advocating an improvement of SDOs disclosure rules.[1095] As analysed in Chapter 5, the application of Article 102 TFEU will not be able to tackle under and over-disclosure in all cases – even if they result in anticompetitive effects[1096] – or the remedies derived

[1094] Opinion of AG Wathelet in Case C-170/13 *Huawei* EU:C:2014:2391, para 11.

[1095] Similarly, Lundqvist advocates more stringent rules applicable to SDOs, in particular as concerns interoperability standards necessary to reap the benefits of network effects. Björn Lundqvist, *Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation* (Edward Elgar Publishing 2014) 393 and 413.

[1096] As explained in Chapter 5, for example when under-disclosure is not followed by a subsequent behaviour after the company becomes dominant, or when lenient disclosure rules allow for over-disclosure.

from its application will not necessarily suffice to eliminate all anti-competitive effects.[1097]

The issue therefore is to decide (1) whether to modify the current disclosure system; (2) how to modify it and (3) who should take these measures, and, in particular, whether the Commission is entitled to impose – or push for – measures addressed to improve the current system.

Therefore this chapter analyses what is the potential role of IPR policies to address under and over-disclosure (section 2), proposes a disclosure system which might be suitable to achieve such objective (section 3), and evaluates whether and how the Commission can intervene – on the basis of Article 101 TFEU – and under which circumstances (section 4).

## 2. The role of SDO policies to address over and under-disclosure

As analysed above[1098], SDO disclosure rules are key to understand under and over-disclosure. Depending on its scope, timing or type of disclosure, SDOs can prevent, discourage or even promote under-disclosure as well as over-disclosure.

Vague disclosure rules leave more margin for opportunistic behaviours. Therefore, clearer rules can contribute to deter such behaviours and to provide more legal certainty to all operators in the market. Ideally, disclosure rules should properly define the behaviour that is expected from disclosing companies, including, *inter alia*, what, when and how SEP holders must disclose. SDOs could even go a step further, defining sanctions for the breach of such rules.[1099]

One of the most challenging aspects, however, is that amendments of the SDO IPR policies require adoption by consensus or qualified majority on the relevant SDO bodies. Hence, the aim of this Section is to analyse whether SDO disclosure rules should be modified, and, if so, how.

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[1097] Eg when under disclosure results in the exclusion of a superior technology and the market is consequently locked in by the technologically inferior standard.

[1098] See Chapter 3 Section 3.2.

[1099] In the same fashion that Art 10.4 VSO IPR Policy does. 'If a WG Member fails to adequately and timely disclose, on behalf of the VITA Member Company he or she represents, a patent claim or licence terms for it as set forth in this Section 10, including at any of the times specified in Section 10.2.3, the VITA Member Company must license it to the extent it is essential to a Draft VSO Specification on a royalty free basis and in accordance with the licence restrictions set forth in Section 10.3 for purposes of an implementation compliant with the Draft VSO Specification.' VITA, 'Policies and Procedures' (*VSO*, 2015) <https://www.vita.com/Disclosure> accessed 1 November 2022.

## 2.1 Disclosure rules: maintain, modify or eliminate?

The first possibility is to eliminate disclosure rules. Biddle supports this approach.[1100] In essence, he identifies various problems associated with disclosure rules that he links to patent hold-up, namely under-disclosure, over-disclosure, timing, the action problem[1101] and cost and complexity problems. In addition, any improvements would be either impossible or very costly.[1102]

Yet Biddle's approach is flawed by his own excessive expectations on what the disclosure rules can achieve. For him the purpose of disclosure rules 'is to allow SSO participants to make fully informed choices concerning the inclusion of technologies in a standard and to have an accurate roadmap for engaging in licensing discussions'.[1103] Obviously, if one assumes that the objective of disclosure rules is to provide stakeholders with an 'accurate roadmap' of essential patents, indeed the conclusion is that the system does not work and, moreover, will never work for the reasons identified in Chapter 3 – namely the dynamic nature of essentiality and the limitations of both SEP holders and implementers to deal with such huge amounts of information.

Hence, as advocated in Chapter 4, the function of disclosure rules should be more modest, but conducive, namely to bridge information asymmetries and prevent the creation of artificial information. From this perspective, little information is better than no information.

As analysed in Chapter 5, the number of disclosed patents is one of the most relevant proxies for portfolio valuation: depriving the market from this (yet incomplete) information would considerably complicate the definition of FRAND royalties.[1104]

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[1100] Biddle suggestion of abolishing the disclosure system was presented in a draft paper which later was not published in any journal. Moreover, in a subsequent publication with Ohana, Biddle himself took a less radical approach to disclosure, however the fierce criticism of the disclosure system in his first publication is very illustrative of the drawbacks of the current system and the different understanding as regards the scope of disclosure obligations. See C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015); Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017).

[1101] 'The "action problem" highlights a difficult dilemma SEP disclosure policies pose for SSO participants. A SEP is potentially a significant issue for SSO stakeholders, and giving each claimed SEP serious attention is a rational response. On the other hand, it may be impossible to do so, due to the sheer volume of claimed SEPs and the difficulties of collective action around high stakes legal issues. The only winning move in this game may be to not play: if SEP disclosure polices do not result in information that can be acted upon in a useful way, then the value and necessity of disclosure policies is questionable.' C Bradford Biddle, 'Five Reasons Why Patent Disclosure in Standards-Setting Organizations Doesn't Work (And What to Do Instead)' - Working paper (2015) 6.

[1102] Ibid.

[1103] ibid

[1104] 'SEP declarations are typically the only comprehensive and systematic source of information available not only to the researcher, but also to economic agents interested in the standard.' Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 10.

In addition – and contrary to Biddle's views – improvements to the disclosure rules are not impossible or too costly to implement as will be analysed in Section 3 below.

The second scenario is to keep things as they are right now. In sum, the arguments that might support maintaining the *status quo* are that (1) the sanctions foreseen against violations of the disclosure rules are not severe; (2) wilful deviations from disclosure rules are relatively infrequent[1105], and those which are not wilful tend to be corrected by the market or remedied by the participants themselves once they acquire knowledge about the deviation; (3) most of the alternatively proposed measures are very costly and can lead to reductions of efficiency or disincentivise SEP holders from participating in SDOs, ultimately leading to a de facto standardisation scenario; and (4) the costs of implementing these measures will be passed on the entire value chain, reducing social welfare.

These arguments are particularly strong in the case of under-disclosure: patent ambush cases are not widespread and even stronger disclosure rules are not very likely to dissuade companies willing to engage in these behaviours. One could only think of enacting more severe sanctions in SDO rules. This however would not enjoy great popularity among the SEP holders, making it rather unlikely that they would vote for such an amendment. Aside from being an understandable position, leaving the rules as they are is probably the most efficient decision as regards under-disclosure. It is hard to advocate increasing the threshold of diligence and thereby the associated costs for all disclosing companies to prevent an almost marginal behaviour, which in any event can still happen regardless of the SDO rules.[1106] Current disclosure rules together with the – yet not very consistent – enforcement of patent and competition law should suffice[1107] to keep under-disclosure at an acceptable low level.

Yet there are arguments to at least mandate early blanket declarations. This small amendment could tackle the impact of standalone under-disclosure in the pre-market competitive process, preventing the exclusion of superior technologies, which is something that Article 102 TFUE is hardly able to do.

However, the current system is not able to address over-disclosure and its eventual negative effects for competition and innovation. Although over-disclosure does neither automatically lead to harms to competition[1108] nor imply that companies intentionally provide wrong information to the SDO, the current setting tolerates – or even more, promotes – behaviours leading to an inflation of the number of disclosed SEPs.

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[1105] Yet the data related to the number of over-disclosed patents does not allow to differentiate among wilful over-disclosures and the rest of cases.

[1106] If a company decides to sabotage, or free-ride on, the standard by means of patent ambush it is not very likely that clearer disclosure rules will prevent it from doing so.

[1107] With all the limitations discussed in Chapter 5 Section 3.4.

[1108] As analysed in Chapter 5 Section 4

An interesting argument in favour of maintaining the *status quo* is that, although licensees are acquiring a bundle of patents that include patents that eventually lack essentiality or are invalid, those risks can be taken into account when parties negotiate the royalty rate.[1109] Sidak compares such situation[1110] with the acquisition of a sealed basket of strawberries: the buyer can only examine the visible strawberries and will finally choose the basket that seems to include fewer rotten or damaged strawberries, while he is also aware of the risk that some of the non-visible ones are equally rotten or damaged.[1111]

Although relevant, this comparison omits a substantial factual difference between the licensing of SEPs and the acquisition of a sealed strawberry basket. In the case of the strawberry basket, the buyer can always choose a different basket (perfect substitute) or, if all of them include a substantial number of damaged strawberries, opt for another type of berries (imperfect substitute). Moreover, if the problem persists, it is very likely that the buyer will either complain to the grocery shop manager or start buying strawberries in another shop.

Therefore, the strawberries distributor and the shop have incentives to ensure that the percentage of damaged fruit remains at an acceptable level, by, for example, improving the packaging or the selection process. This is not the case in SEPs licensing.

An implementer who is in need of a SEP portfolio licence can neither choose a different 'basket' nor go to another 'shop'. As analysed above, the combined effect of the standard and the essential patents preclude competition by imitation and competition by substitution. Therefore, the buyer needs to buy the one and only strawberries basket in the world.

In such situation, the prospective licensee can only negotiate the price of the basket in order to ensure that the price paid is adjusted to the value offered. While the prosecution and granting process of the patent creates transparency with regard to the validity, the disclosure process provides information with regard to the essentiality.

This leads to the third alternative, which is to modify the current disclosure system: the disclosure system cannot and should not be understood as aiming at ensuring that all the strawberries in the basket are not damaged, which is impossible. It rather aims at making the basket as transparent as possible in order to provide both parties of the

[1109] Which is also discussed above in Chapter 5 Section 4.

[1110] Although he specifically refers to the invalidity of individual SEPs, the same reasoning can be applied *mutatis mutandis* to the lack of essentiality. J Gregory Sidak, 'Evading Portfolio Royalties for Standard-Essential Patents through Validity Challenges' (2016) 39 World Competition 191.

[1111] 'Before buying the basket of strawberries, the buyer can inspect the basket to verify the quality of the strawberries. Although the buyer cannot examine each individual strawberry, he can infer the basket's average value by examining the visible strawberries. Based on that inference, the buyer determines whether he values the basket of strawberries at least as much as its posted price. A rational buyer would not buy a basket that visibly contains a significant number of damaged or rotten strawberries (unless that basket is offered at a significant discount). Nevertheless, when buying the basket at full price, the buyer will account for the probability that some strawberries in the basket will be damaged.' ibid 205ff.

transaction with a similar level of information. This would ultimately produce a positive impact on price formation.

## 2.2 A principled approach to disclosure

### 2.2.1 The aims of the disclosure system

Of course, the current disclosure system can be improved. Nevertheless, any step taken shall be based on a series of principles that ensure the disclosure rules' coherent application and appropriate scope, avoiding excessive expectations.

First, as analysed in this thesis, the primary objective of disclosure rules should be to prevent the distortion of the standardisation process by means of under-disclosure or patent ambush. This was its first and most relevant aim in the early 1990s,[1112] since patent ambush is arguably the behaviour that cause most severe harms to competition and innovation.[1113]

Its secondary objective is split into two: preventing an artificial increase of information asymmetries by means of over-disclosure, and bridging the inherent asymmetries of information caused by the essentiality dynamics. Thus, disclosure rules cannot aim at providing certainty to implementers to a level of knowledge that not even the patent holders have. Moreover, any modification of the disclosure system must consider that harmful deviations from disclosure obligations is a rather marginal behaviour.[1114] As a consequence any amendment to the current disclosure system should avoid imposing excessive burdens on the contributors to standards for the purpose of only discouraging a handful of opportunistic companies.

### 2.2.2 The SMEs challenge(s)

The arguments related to SMEs and the problems they face in standardisation tend to be biased: they respond to a scenario where a big SEP holder squeezes an SME that wants to implement the standard and therefore merits protection. The Commission itself has been sensitive to this narrative. The Commission's focus concerning SMEs in standardisation is mainly on the access to technologies, and particularly on licensing conditions, assuming that SMEs tend to be implementers.[1115] This view disregards the role of SMEs as SEP holders in upstream markets and ignores the difficulties that SMEs can face when participating and contributing to standardisation processes.

There is no evidence of actual – leave aside systemic – attempts of SEP holders to either squeeze SMEs or expel them from the market in licensing negotiations or litigation based on their SEP portfolios. Moreover, this narrative presents an obvious shortcoming: SMEs are not

[1112] As analysed in Chapter 3.
[1113] See conclusions to Chapter 5.
[1114] As echoed in Chapter 4. While over and under-disclosure are relatively frequent, harmful patent ambushes or royalty stacking derived from over-disclosure are not that common.
[1115] European Commission, 'ICT Standardisation Priorities for the Digital Single Market' COM(2016) 176 final; European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final.

very attractive for SEP holders due the transaction costs associated to licensing negotiations – particularly those SMEs with a modest volume of sales.[1116] For SEP holders, it is rather more attractive to tacitly 'grant' them freedom to operate and then extract royalties once the SME is better stablished in the downstream market.[1117]

Notwithstanding this, the Internet of Things would substantially change the industry composition and it is more likely that a substantial number of SMEs will need access to connectivity or compatibility standards[1118], attracting the attention of SEP holders, which might be, at that point, more interested in obtaining royalties from them directly or indirectly – by means of privateers.[1119]

The increasing number of SMEs whose products need to be standard-compliant, can however not hide the fact that SMEs also develop connectivity technologies and can therefore be SEP holders. This type of SMEs can potentially face substantial constraints at two levels: when participating in SDOs and when litigating with big implementers.

Without denying the risks that dilatory practices or multijurisdictional litigation can pose to small SEP holders in the latter scenario (that is, hold-out related problems), the relevance of disclosure rules is higher in the former. Essentially, an SME that wants to participate in a standardisation process and have its technology included within the standard is likely to face constraints at participation level, and later to get their contributions accepted.[1120]

Membership to SDOs – although sometimes offered at a discount to SMEs – can operate as a first barrier. In addition, lack of knowledge regarding the standardisation process or the SDO dynamics can negatively impact the ratio of acceptance of meaningful contributions – ie when, where and how to make a contribution. For making a contribution it is not sufficient to show up once in a while in the meetings of the technical committee but rather to closely follow the evolution of

[1116] Which might be more interested in devoting such costs to negotiations where the margin is potentially higher.

[1117] Unless the SEP holder is vertically integrated and wants to expel a competitor. However, in such case the concerns are not linked to the disclosure of SEPs but rather to a pure exclusionary conduct.

[1118] For an overview of the obstacles that SMEs face when implementing a standard see Henk De Vries *et al*, 'SME access to European standardization: Enabling small and medium sized enterprises to achieve greater benefit from standards and from involvement in standardization' (2009), 17. <https://www.erim.eur.nl/fileadmin/default/content/erim/content_area/news/2009/smeaccessreport%202009.pdf> accessed 1 November 2022.

[1119] Privateers are a subtype of patent assertion entities whose business model is to obtain royalties over an acquired portfolio whose former owner was not proactively exploiting them. Unsurprisingly, privateers tend to target big implementers and not SMEs. Niccolò Galli, *Patent Aggregation, Innovation and EU Competition Law* (forthcoming)

[1120] The variety reduction dynamics of standards plays against smaller companies. 'Variety reduction typically enables economies of scale to be achieved, but larger production volumes tend to promote more capital-intensive process technologies. This common evolutionary pattern of a technology over a number of product life cycles usually reduces the number of suppliers and increases their average size. Such trends may or may not reduce competition, but often progressively exclude small, potentially innovative firms from entry due to increased minimum efficient scale thresholds.' Gregory Tassey, 'Standardization in technology-based markets' (2000) 29 Research Policy 587, 591.

such technical committee – and other related ones. This can amount to a non-negligible level of costs for an SME.[1121]

In 2011, ETSI[1122] counted 28% SMEs among its members, with 65% of them actively involved in standardisation activities, while in 2020 the membership figure was 26%.[1123]

Gupta studied the participation and contributions of SMEs to 3GPP within the period 2000-2014. He found that a 15% of members/attendees to 3GPP were SMEs and their unique contributions amount to 10.3% of the total. In addition, he founds that SMEs contributions are more likely to be accepted (34.42%) than those from the rest of contributors (28.91%).[1124] Despite this positive score, the percentage of the SMEs' accepted contributions versus the total of accepted contributions is really poor (1.6%).[1125] In a similar vein, Lopez Berzosa and Gawer highlight that the number of SMEs in 3GPP is substantially lower than in other private-public collectives such as open source initiatives or Android. For the authors, this fact can partially explain the difficulties of 3GPP to compete in agile markets.[1126]

Further efforts to modify the disclosure system must take into consideration the effects of such measures on SMEs' contribution to the innovative performance of standards. This will contribute to design a more coherent and encouraging framework, that, among other side effects, will serve also as a balance when deciding which burdens should SEP holders bear, including innovative upstream SMEs in the equation.

# 3. Measures to address disclosure-related issues

Rather than a one-stop solution the improvement of the disclosure system requires a systematic approach that impacts the disclosure dynamics at different levels.

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[1121] De Vries *et al* listed some of the main barriers that SME face to benefitting from participation in standardisation activities. Henk De Vries *et al*, *SME access to European standardization: Enabling small and medium sized enterprises to achieve greater benefit from standards and from involvement in standardization* (2009) 18ff. See also Cesare AF Riillo, 'Profiles and Motivations of Standardization Players' 20.

[1122] Franck Le Gall and Martin Prager, 'Participation of SMEs in Standardization' (2011) 6 ETSI white paper No 6.

[1123] ETSI, 'Small and Medium-sized Enterprises in ETSI' <https://www.etsi.org/membership/sme> accessed 25 October 2022.

[1124] Kirti Gupta, 'The Role of SMEs and Startups in Standards Development' <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3001513> accessed 1 November 2022.

[1125] This figure is obtained by dividing Gupta´s figure of SME´s accepted contributions by the total number of accepted contributions -> SME´s accepted contributions / (SME´s accepted contributions + accepted contributions from other participants) -> 1,851/ (1,851 + 112,925).

[1126] David Lopez-Berzosa and Annabelle Gawer, 'Innovation policy within private collectives: Evidence on 3GPP's regulation mechanisms to facilitate collective innovation' (2014) 34 Technovation 734, 742.

## 3.1 Scope and timing of disclosure obligations: a proposal

### 3.1.1 The proposal

The starting point is that early specific disclosures are useless to achieve any of the functions analysed above: they do not prevent submarine patents – since SEP holders can disclose only part of their SEPs (under-disclosure) and they do not contribute to provide useful information for licensing purposes. Rather, early disclosures create 'noise'.

Therefore, it makes more sense that in the time that goes from the starting of standardisation process to the approval of the standard, the participants to the different working groups issue a blanket declaration in which they commit themselves to license any of their patents which is or becomes essential. In addition, it should be possible to combine such blanket declaration with negative disclosures, whenever a SEP holder wants to exclude certain patents from its general commitment.

In addition, any patent holder should be allowed to make a provisional specific disclosure for any reason (eg showing its technological relevance) basis provided that the holder deems the patent essential based on the provisional drafting of the standard specification and the text of the claims at date of disclosure.

Depending on the circumstances and the SDO dynamics, this provisional disclosure can also be made mandatory for those patents that are related to technical groups where the SEP holder makes a substantial contribution, therefore increasing the threshold of diligence for analysing their portfolios in such cases.

Once the standard is approved, a mandatory specific disclosure should be made for all those patents that have already been granted. In contrast, patent applications should only be provisionally disclosed until the moment they are granted. Such specific disclosure must include an explicit reference to the part of the standard for which it is essential.[1127]

After the final disclosure, no generalised obligation of updating shall be imposed other than in the cases that the patent has been cancelled, substantially modified, has expired or has been found to be non-essential by a court.[1128]

As part of these rules, blanket declarations serve to grant freedom to operate to technical committees, preventing ex-post blockages by participants to the SDO. Negative disclosure would likewise serve to define some boundaries for such technical committees.

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[1127] As argued above, indicating the specific part of the standard for which the patent is essential has been found to be the 'strongest predictor' of patent essentiality. Robin Stitzing *et al*, 'Over-Declaration of Standard Essential Patents and Determinants of Essentiality' (2017).

[1128] If the database provides for such functionality, it will be useful to indicate in which jurisdiction the patent has been cancelled, has expired or found to be non-essential.

Provisional disclosures should be deemed nothing more than a piece of information of a potentially changing reality – aiming at providing circumstantial information about the involvement of a given SEP holder in a standard or in a technical committee. Although this can be seen as translating the problem of over-disclosure to provisional disclosures, the ratio provisional disclosures/ final disclosures can contribute to offer a better picture.

Specific 'final' disclosures can indeed contribute to provide useful information for licensing purposes, to the extent that they are used as a global indicator of technological relevance. To this effect, the scope of disclosure should be understood as a patent that at the time of its grant and/or the release specification is rationally deemed to be essential for such specification. Therefore, an over-disclosed patent can be characterised as a patent that in such moment in time was not essential at all or was not very likely to be essential.

Depending on the characteristics of the SEP holders, it is possible to make this final specific disclosure mandatory only vis-à-vis SEP holders who obtain, or seek to obtain, revenues from licensing, enforcing or selling their patents. This will prevent those SEP holders that merely hold patents for defensive purposes or to protect their freedom to operate by means of cross licensing from incurring additional costs.

The relevant moment for assessing the actual essentiality of the patent will be either at the release of the standard or once the patent is granted, without prejudicing that in a later moment the patent will be considered non-essential for, or non-infringed by, a given implementation because of lack of market/specific implementation essentiality.

This approach puts mainly the focus on forcing the SEP holder to share the information with the SDO – and the market – at the moment when there is more certainty as regards their technological relevance. This occurs at the time of the release of the standard and the grant of the patent, with a special duty of care in those circumstances where they have been actively participating in the technical committee that drafted the specification.

Before that moment, SEP holders are subject to similar uncertainties as the rest of the market. For example, they do not know whether their proposal will be included in the specification, nor whether the patent will be granted without any modification in the claims.

Likewise, after that moment, the actual essentiality of the patent for products offered in the market does not depend anymore on the patent holder – or does depend only to a little extent, insofar it is out of the patent holder's control whether implementers will implement the full standard or only parts of it. As analysed in Chapter 3, SEP holders are in a better position to assess the patent-specification side of essentiality, while implementers have a better understanding of the specification-product side.

These circumstances argue against imposing a general obligation to update disclosures – except under certain circumstances[1129] –for three reasons (1) the post-release essentiality depends more on how the standard is implemented than on decisions of the SEP holders; (2) implementers gradually have a better knowledge of the standard specifications and of the technological relevance of each SEP holder´s portfolio for such specification, thanks to the subsequent licensing negotiations, and therefore asymmetries of information are steadily reduced; (3) in these scenario absolute certainty cannot be achieved and therefore makes more sense that SEP holders resources are destined to develop further releases of the standard or new standards and disclose them appropriately.

The proposed approach, which requires a blanket declaration (plus an eventual negative disclosure) as a precondition to participate in the technical committees, also contributes to prevent under-disclosure.[1130] The blanket declaration also brings more consistency to specific disclosures, which can help to reduce over-disclosures and address its negative effects.

By defining the moment and the scope of specific disclosures, the system addresses the variations derived from different disclosure practices and simplifies the detection of over-disclosures. Moreover, it refines the definition of over-disclosures as disclosures of patents when, at the moment of disclosure, it was not rational to assume that such patent read on the specification indicated in the disclosure.[1131]

If the SEP holder has reasonable doubts – yet also expectations – about the patent essentiality, it will always be able to make a provisional disclosure, flagging its potential relevance but, at the same time, avoiding affirming its essentiality.

Under this setting, SDOs, implementers and competition authorities should direct their attention to SEPs for which there are final specific disclosures and put the focus on those SEP holders which have a representative number of "final" specific disclosures which have no o little relationship with the specification for which they are declared to be essential.

### 3.1.2 Pros and cons

This approach has certainly many virtues and, of course, some shortcomings. First, a clearer scope of the duty to disclose, together with the differentiation between provisional and final disclosures can

[1129] In case of patent pools, the Commission understands that the assessment of essentiality should not necessarily end with the creation of the pool, since new substitutes and complementary technologies might be created after that moment. However, the Commission acknowledges that this is not the only measure to prevent the foreclosure of third parties´ technologies. European Commission, 'Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements' [2014] OJ C89/3, para 263.

[1130] At least as much as any other current system.

[1131] This definition excludes cases where the SEP holder is not 100% sure about the essentiality of the patent or as regards events where, for example, a specific interpretation makes the patent essential while other renders it non-essential.

contribute upfront to reducing the inflation of disclosed SEPs; facilitate the detection of over-disclosed patents or, more generally, inflated portfolios

Second, it ensures more consistent interpretation of how a disclosure should be understood. SEP holders, who will better know what, how and when to disclose, and implementers, who will have a better understanding of the reach of the disclosed information, would benefit from more legal certainty. Moreover, it would provide competition authorities and judges with a more solid factual base to tackle harmful over-disclosure.

Third, it presents an appropriate balance between the objectives of disclosure rules and its costs, compared to other alternatives such as updating obligations or mandatory essentiality checks.[1132] It rather builds on the expectations of the SEP holders and implementers, and its starting point is the dynamics and limitations of the current system.

Fourth, it has been argued that more clarity as regards essentiality will 'make it harder for unwilling licensees to "hold-out" by hiding behind the need to make their own thorough assessment'.[1133] This might be an overly optimistic view since hold-out is an opportunistic behaviour. Nevertheless, more clarity will indeed contribute to reducing transaction costs associated with licensing negotiations.

Fifth, the absence of updates – coupled with a clearer scope of the disclosure duty – can provide certainty for other monetisation strategies. Those companies that want to sell part of the portfolio to NPEs would be able to define more clearly what the object of the agreement is. In addition, it is often overlooked that not all NPEs have the knowledge and the skills to update their acquired portfolios.

On the other side, the system can be criticised too. One eventual criticism is that it might be more costly for SEP holders than the current system. However, it would not be necessarily the case. Those SEP holders who want to keep a 'low profile' would only need to make a blanket disclosure plus a later specific disclosure – which in principle will include less patents than current disclosures. Instead of focusing on detecting all the potentially relevant patents for the standard at an early point of its development – which would be covered by the early blanket declaration – they need to devote their resources to detect and communicate more information on the patents they genuinely believe are essential at a later moment.

In other words, the trade-off is between disclosing of more patents in less detail – earlier, when there is less certainty – or a more reduced number with a higher level of detail – at a moment in time when patent holders have more certainties. Whether this redounds in higher costs for SEP

[1132] Which are addressed in section 3.2 below.

[1133] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 32 <http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=9028&lang=en> accessed 1 November 2022

holders is not that clear. In principle, companies that undertake diligent efforts to properly disclose their patents under the current setting are not very likely to experience a drastic increase in costs. Moreover, by making the disclosure voluntary to those companies which do not extract royalties from patent licensing the proposed system reduces their costs.

The second criticism that can be made is that this system increases the threshold of diligence and therefore the likelihood of causing liability of SEP holders. This is not the case: disclosures are aimed at providing the market with the information that SEP holders have with regard to the technological relevance of their portfolio, but should not be understood as an assurance of the essentiality of the patent beyond the (reasonable) doubts that SEP holders might have. In other words, a disclosure cannot be equated to a warranty of that any judge in whatever jurisdiction will consider the patent valid, essential and infringed.

As regards validity, it is of common knowledge that judges' views do not necessarily coincide with those of the patent holder or the Patent Office. Similarly, patent holders do not usually bring proceedings against third parties based on patents that they positively consider as not infringed[1134], yet on many occasions judges find that the patents are not infringed.[1135]

A study by Lemley and Simcoe provides some relevant insights in this regard. First, SEPs are more likely to be valid.[1136] Second, SEPs do not perform significantly better in litigation than non-SEPs – and perform significantly worse when they are asserted by NPEs.[1137] Both conclusions are contrary to the authors hypotheses that 'expected that proving infringement of SEPs would be easy—they are, after all, supposed to be essential—but that the breadth of the patents might make them invalid'.[1138]

One plausible explanation of why SEPs 'score' better in terms of validity is a deeper knowledge of the state-of-the-art which leads to narrower and more accurate scope of the claims – which in any case tends to be the rule in complex industries.[1139] As regards infringements, narrower claims result usually in less likelihood of infringement, yet there is another reason that might explain why SEPs do not perform much better than non-SEPs (and NPEs quite worse). This cause draws substantially from the insights in Chapter 3: the differences between the patent-standard and the standard-product pairings and its corollary: essential does not mean infringed nor infringed means essential.

As a brief recall, this implies that a patent P that reads on the standard specification A (standard essential) might not be infringed by a certain

[1134] Leaving aside certain strategic litigations.
[1135] Lemley and Simcoe found that the ratio of successful litigations 'on the merits' is very similar between SEPs and non-SEPs patents (control group). Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608, 624.
[1136] ibid 627.
[1137] ibid 623 ff.
[1138] ibid 608.
[1139] As opposed to discrete industries where innovation is less cumulative and therefore it is feasible to apply for broader patents.

implementation X as far as X does not implement A[1140]: in this case P is standard essential for A, but A is not essential for X. The problem is not of the patent, but of the standard specification, which, once approved, is beyond the control of the SEP holder.

A different scenario arises when P' is not essential for any specification A', but it is *de facto* essential for a specific implementation I': in this event, the owner of P' can rightly argue that P′ does not read on any specification, ie it is not standard essential. Yet P' confers on him a 'gatekeeping' position. Such gatekeeping position can – under certain circumstances – argue in favour of imposing a duty to license and/or extending the FRAND commitment but in no event to extend the disclosure duty to analyse the hundreds or thousands implementations that, not reading on the specification, might eventually read on some of their hundreds or thousands of patents.

Although Lemley and Simcoe consider this explanation[1141], they underestimate it: after the standard is approved and released it evolves informally (market essentiality) – as a result of the implementations – while formally (standard essentiality) remains unaltered.[1142] It will be unfair to oblige the SEP holder to catch-up with all the developments that are taking place in the market way beyond they sphere of expertise and influence.

This explanation, moreover, can partially explain[1143] why NPEs have a lower ratio of success than practising entities: part of them do not even participate in the creation of the standard – being therefore less knowledgeable than SEP holders who do participate – and they do not commercialise standard compliant products – thus, they are less aware about how the standard is implemented.

All these dynamics and uncertainties explain why it is not advisable to extend the interpretation of what a disclosure should be: the communication to the SDO of those patents which are reasonably likely to be infringed by the standard specifications at its release date.[1144] This definition of disclosure rules does not increase the risk of liabilities derived from disclosure neither substantially increases the threshold of diligence.

Another criticism that this proposal is very likely to face is that – compared to current systems – it reduces the quantity of available

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[1140] Because X does not need A for any reason eg A functionality is not needed for X, X invents around A or A has become obsolete. See Chapter 2 Section 2.

[1141] 'While it is possible that SEPs are being asserted against devices that do not practice the standard, that seems unlikely to explain most of our cases. When plaintiffs assert SEPs in litigation they are likely to assert them against the standard they purport to cover. And in many cases, adoption of that standard is sufficiently widespread that almost any defendant uses it. It would be surprising to sue on a patent that covers a standard widely used in the industry but to assert that something other than that standard infringes a patent on the standard. Nonetheless, we cannot exclude the possibility that that is happening in some of the cases we observe.' Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell Law Review 608, 628 fn 69.

[1142] Until it is updated and/or replaced.

[1143] Leaving aside eventual opportunistic behaviour and their probabilistic approach to patent litigation.

[1144] See the opinion of the US District Court, ND Illinois in the Innovatio case. 'If later technological development creates another, non-infringing means to comply with the standard, a patent claim is still standard-essential.' *Innovatio IP Ventures, LLC Patent Litigation* 956 F.Supp.2d 925, 939 (ND Ill 2013) 939.

information which might be for used purposes other than developing the technology or improve licensing practices.

In principle, it is legitimate that the information contained in the database is used for purposes beyond their main aims, such as business intelligence (detecting technological trends and modelling SEP holders' behaviours) or economic research[1145] (either by scholars or consulting firms).

The effect of reduction the quantity of information is undeniable, yet this approach reduces the volume of information in exchange of more quality. In particular, companies that prefer to have more quantity and less quality of information are those that are capable of analysing the database and retrieve a more or less accurate picture of a portfolios' technological relevance. For those companies that are less likely to be subject to information asymmetries or suffer from their negative consequences, the current disclosure system is useful. On the one hand, it provides them with a technological roadmap (regardless of the patents being SEPs or not) of the patenting trends of the SEP holders. On the other, it gives them the possibility of blaming the SEP holders for inaccurate disclosures and, moreover, benefitting from it, such as the Conversant/Core Wireless case has shown.[1146]

However, it cannot be ignored that SEP databases are not – and should not be – a business intelligence tool, nor an amalgam of patents whose essentiality ranges from unlikely to almost certain. Disclosure obligations imply burdens for SEP holders. Such burdens should be proportional to the ultimate goal of promoting the pro-competitive effects of the standard instead of only serving the desires and aspirations of a handful of stakeholders (either SEP holders or implementers).

Overall, the proposed disclosure system is targeted at reducing the asymmetries of information for all those implementers who are more likely to suffer from them. Databases as a business intelligence tool is just a positive side effect that should not condition the shaping of the disclosure system, in particular because such information might be as well be extracted from IPOs databases.

## 3.2 Essentiality checks: not enough a fix?

### 3.2.1 Essentiality checks: status and limitations

Essentiality checks have been proposed by some scholars as a possible solution for the problems derived from the asymmetries of

[1145] Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 10.

[1146] For the District Court, insufficient disclosure of SEPs was the legal ground to declare its unenforceability. *Conversant Wireless Licensing SARL v Apple Inc*, Case No 15-cv-05008-NC (ND Cal 2019). See also the discussion on disclosure timing at sub section 3.2.4 in Chapter 3.

information.[1147] Such proposals have been backed by the Commission[1148] which has funded a pilot project to study their scope and feasibility. However, there are a number of arguments for not being particularly optimistic about their usefulness: (1) the proposed essentiality checks are more focused on the patent-standard side of essentiality, (2) they are costly and (3) they frequently exaggerate their reliability, in particular with a view to the dynamics of essentiality.

The dual nature of essentiality – ie patent-standard/ standard-product – makes it highly difficult to take the outcomes of an essentiality check at face value, regardless of whether the check is performed internally by the company or by an external expert. That a patent is considered standard essential does not imply that all standard-compliant products will infringe it.[1149] Conversely, that a patent is be infringed by a specific implementation does not imply that the patent is not standard essential.

This duality has arguably not been taken into account by the Japanese Patent Office for its 'hantei essentiality checks' system[1150], which is just limited to assessing whether a specific implementation infringes an (in principle) standard essential patent. The outcome of this analysis can therefore not be understood as excluding the standard essentiality of the patent nor arguing in favour or against considering the product to be standard-compliant.

Therefore, this approach is interesting only in those cases where both parties respectively acknowledge that the patent is standard essential and the product is standard-compliant and, moreover, it is only relevant *inter partes* and limited to the product and the patent defined in the request for the essentiality check.[1151]

In absence of an agreement on the essentiality of the patent for the standard and of the standard specification for the product, the result of the 'hantei' opinion might at best be of use as a preliminary opinion on infringement of the patent by the product – according to JPO practices.[1152] Hence, it has little or nothing to do with the essentiality either of the patent for the standard or of the standard for the product.

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[1147] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 32; Tim Pohlmann and Knut Blind, *Landscaping study on Standard Essential Patents* (2016) 3; Cody M Akins, 'Overdeclaration of Standard-Essential Patents' (2019) 98 Texas Law Review 579, 594.

[1148] European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 5.

[1149] As rightly noted by Cody M Akins, 'Overdeclaration of Standard-Essential Patents' (2019) 98 Texas Law Review 579, 595.

[1150] JPO, 'Manual of "Hantei" (Advisory Opinion) for Essentiality Check (Revised version)' <https://www.jpo.go.jp/e/system/trial_appeal/hantei_hyojun.html> accessed 1 November 2022.

[1151] The JPO only performs an analysis within the scope defined by the requesting party, ie whether product X infringes patent Y, which in any event precludes product X from infringing other patents from the same SEP holder. Additionally, the opinion cannot automatically be extended to other similar products of the same or other implementer. ibid 4.

[1152] Which do not necessarily have to coincide with the outcome of an infringement case in Japan or other jurisdictions.

The standard is not the only aspect of a dynamic nature. It is frequently overlooked that the product lifecycle in ICT-related markets is relatively short. For example, in the smartphone and tablets market new products or versions are released practically every other year and improvements in standard-related functionalities might alter their standard exposure.[1153]

Against this background, the essentiality check can only offer a static picture of a dynamic reality. Moreover, the essentiality check – particularly for a large portfolio vis-à-vis a large number of implementations – can take quite a large amount of time[1154] and imply huge costs.

Moreover, mandatory essentiality checks impose an additional burden on SEP holders who do not rely on SEP licensing as a source of revenues[1155]: an increase of the already existing burdens can substantially reduce the incentives of this type of companies to participate in SDO standardisation, leading to a reduction of the innovative performance.

These facts argue in favour of being very cautious when arguing in favour of the imposition of a general obligation of conducting external essentiality checks.[1156] Yet essentiality checks can be useful in specific cases, for example when creating a patent pool or a licensing platform as well as those cases where the behaviour of the SEP holder artificially increases information asymmetries. In any event, the usefulness of such essentiality checks will be largely constrained to the case at hand and to the scope defined.[1157]

### 3.2.2 A more comprehensive approach to essentiality checks

Analysing essentiality in its full dimension – which is relevant indeed for assessing the existence of market power – requires an in-depth knowledge of its two sides: a comprehensive overview of the SEPs portfolio and a complete understanding of each one of the products implementing the standard. For this reason, a more comprehensive approach to essentiality checks is subsequently proposed.

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1153 Either reducing it or increasing it.

1154 If during the time the essentiality check is being conducted a new standard version were released or the implementer modified its products, the essentiality check could be rendered outdated even before it is completed.

1155 'One aspect that is frequently overseen is that current disclosure obligations in certain SDOs (eg specific disclosure) are already quite burdensome for companies whose business model is not to actively enforce their SEPs. For such companies, imposing mandatory essentiality checks would be an additional burden which will not positively impact the standard development nor serve the interest of implementers.' According to the informal opinion from a Policy Director of a multinational company.

1156 In this sense Oscar Borgogno and Giuseppe Colangelo, 'Disentangling the FRAND Conundrum' (2019) DEEP-IN Research Paper 33, while most of the authors are persuaded of the virtues of selective or random essentiality checks. See among others Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 11; Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 61.

1157 Ie the result of an essentiality check vis-à-vis a specific product can only be used for such specific product.

An ideal essentiality check would have to require the SEP holder to provide the external expert with information related to all its potential SEPs, together with claim charts of a representative selection of SEPs, so as to analyse the patent-standard side. In addition, the implementer would need to provide the expert with a sufficient technical description of its allegedly standard-compliant products and analogous 'product charts' explaining to which extent the product includes or not the features as described in the standard specification.

To a certain extent, these two aspects of essentiality are discussed within the framework of bilateral SEP licensing negotiations. On the one hand, SEP holders usually provide their counterpart with a selection of claim charts coupled with the information disclosed to the SDO[1158], to provide the prospective licensee with an overview of the patent-standard pairing. On the other, one of the arguments of the licensee to reduce the royalty to be paid is to argue that a part of the standard – and consequently the patents covering it – are not implemented in its products.[1159]

By matching the two pieces of information – and arguably by trying to go a little bit further – the external expert might be able to arrive to a more or less complete picture of the essentiality of the patents of the SEP holder and of the standard (and consequently patent) exposure of a given implementer. On the contrary, absent this information from both sides it is very unlikely that the essentiality check conducted might have any relevance whatsoever.

Yet the task seems almost insurmountable for a single expert, even if both parties duly provide this person with the necessary information. Moreover, an exclusively technical perspective might not suffice if it is not complemented by a legal and a business approach. Therefore, rather than an external expert, it would be advisable to rely on a panel or a committee of experts with expertise in business, legal and technical matters.[1160]

However, the usefulness of such 'ideal' essentiality check would be mostly constrained to the parties involved and only of value for a short period of time. As argued the standard scope is dynamic. Modifications to the standard and any subsequent release would question the essentiality of certain patents.[1161]

Summing up, essentiality checks, which have produced favourable and sceptical[1162] reactions alike, would have to require both implementers and

[1158] Again it is important to recall that SDOs offering a fully functional SEP database are in the minority.
[1159] Still, the specification-product side it is mostly present as a 'defensive' argument ie it is very unlikely that the licensee provides to the licensor a list of products explaining how the products read on the standard.
[1160] Similarly, Peter G Picht and Gaspare T Loderer, 'Arbitration in SEP/FRAND Disputes: Overview and Core Issues' (2019) 36 Journal of International Arbitration 575, 579.
[1161] Some patents will not be essential anymore and other – not analysed in the essentiality check – will become standard essential.
[1162] See Fredrik Erixon and Matthias Bauer, *Standard essential patents and the quest for faster diffusion of technology* (2017) ECIPE Policy Brief, 12; European Commission, 'Setting out the EU approach to Standard Essential Patents' COM(2017) 712 final, 5; Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on*

SEP holders to provide the expert – or the committee – with enough information as regards the implementation of the standard in products and the 'infringement' of the patent by the standard.

By having access to this information, the committee would be able to decide on (1) which patents are essential to the standard, (2) which standard specifications are implemented in a product and (3) which of the non-essential patents – and therefore non-FRAND-encumbered – are likely to be infringed by the product(s). With this information, both parties might be able to conclude a licensing agreement.

This configuration is more similar to an arbitration procedure than to a proper external essentiality analysis. Yet it presents more advantages in terms of accuracy and reliability for the parties than the existing (and proposed) essentiality checks. Moreover, it gives the parties the opportunity to participate in oral hearings where they can explain to the panel why they do consider that a technology is standard essential or that it is infringed by a product. This type of essentiality checks is suited for licensing negotiations, in the framework of arbitration proceedings or even as a remedy in cases of over and under-disclosure.

### 3.2.3 Further approaches to essentiality analysis

Apart from patent-by-patent essentiality assessment, there other means to analyse essentiality. Text similarity between patent claims are standard specifications – as proposed by Brachtendorf et al [1163] – is a promising approach which allows to have a taste of a portfolio technological relevance.

Nevertheless, textual similarity will perform better if a patent holder has been able to push the wording of its patent claim into the standard; and arguably perform worse when the wording is not exactly the same – eg when using synonyms – or when the scope of the claim is implicitly included within the specification or *vice versa*.

As a result, a patent which presents a high degree of text similarity with a specification is highly likely to be essential but conversely, not all patents which have a low degree of text similarity are non-essential.

Therefore, text similarity assessment can be used as a first phase of essentiality analysis in order to identify those patents that are more likely to be essential. Moreover, it is possible that an appropriately trained Artificial Intelligence would be able to go beyond mere text similarity and provide preliminary assessments on whether the wording of a standard specification 'infringes' a patent claim by relying on past decisions from courts and Intellectual Property Offices such as the EPO.

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*Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 58ff.

[1163] Lorenz Brachtendorf, Fabian Gaessler and Dietmar Harhoff, 'Truly Standard-Essential Patents? A Semantics-Based Analysis' (2020) CEPR Discussion Paper No DP14726<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3603956> accessed 1 November 2022.

## 3.3 Pay for disclose

Another measure to address over-disclosure is to make declaration costly. This measure, proposed by Regibeau et al, promises to be effective, given the elasticity to modification of patent renewal fees.[1164]

This measure might address not only the issue of over-disclosure but also another practice whose effects are substantially similar to over-disclosure: patent splitting. It consists in dividing the technological solution into as much patents as possible in order to increase the number of patents that compose the portfolio.

Making disclosure costly should *prima facie* discourage patent holders from engaging in over-disclosure and patent splitting. Yet the mere existence of patent splitting challenges the effectiveness of the pay-for-disclose measure. If there are certain companies that are willing to split their patents and prosecute them separately – with all the additional costs that it implies – it is not very likely that a symbolic fee will discourage them from over-disclosing.

If, on the other hand, the disclosure fee is substantial, it might have a discouraging effect for smaller SEP holders (SMEs). Such barrier can, moreover, substantially challenge the openness of the standardisation effort and raise further anticompetitive concerns.[1165]

This measure is not very likely to be supported by all SEP holders, particularly those that have disclosed their patents diligently or those that do not monetise their SEPs by means of SEP licensing. For them, pay-for-disclosure represents an unjustified increase of costs.

Moreover, the payment of these fees to SDOs might raise concerns regarding their independence. If disclosure fees become one of the major funding sources of an SDO, it will make the SDO very dependent from SEP holders' practices.

In conclusion, pay-for-disclose is a well-intentioned rule whose benefits are not certain and that presents certain drawbacks. Thus, its effectiveness and suitability must be analysed on a case-by-case basis. This analysis should take into account aspects such as patent density in the sector, evidences of patent splitting, or governance and funding of the SDO concerned, among others.

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[1164] Pierre Régibeau, Raphael De Connick and Hans Zenger, *Study on Transparency, Predictability and Efficiency of SSO-based Standardization and SEP Licensing* (Charles River Associates on behalf of the European Commission 2016) 62.

[1165] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJC11/1, para 281. See also 'Principles' (*OpenStand*, 2019) <https://open-stand.org/about-us/principles/> accessed 1 November 2022.

# 4. The role of the competition law in improving the SDOs disclosure system

A new IPR Policy that totally or partially implements the system proposed at section 3.1 above should ideally be adopted by and within each SDO. While the proposal is not universally applicable to all SDOs, it addresses most of the concerns in SDOs which create standards in high patent density sectors, whereby the SEP holders monetise their technologies via royalties – usually subject to a FRAND commitment. That is the best way to ensure that its implementation and its duties are aligned with the practices and needs of each SDO. Moreover, the SDO consensus rules applicable to the definition and scope of the disclosure duties can put some extra 'social pressure' on those companies that are tempted to free-ride on the standard by means of over or under-disclosure. Implementation by SDOs can also bring more precision to the 'legitimate expectations' of all stakeholders.

Yet from a competition law perspective it is also important to analyse if, and if so to which extent the Commission might be entitled to force SDO to adopt more demanding disclosure rules on the basis of Article 101 TFEU

As analysed in Chapter 2, SDO-based standardisation presents certain advantages over *de facto* standardisation in terms of innovative performance, stemming from its open standardisation and open innovative effort features. SDO-based standardisation performs better in terms of technology selection, facilitates faster adoption of the standard by markets, which results in earlier realisation of the positive network effects, provides more incentives for standard replacements and contributes to the codification and dissemination of knowledge.

Moreover, as discussed in Chapter 4, the Commission understands that standardisation in the framework of SDOs is a genuine competitive process and therefore promotes and encourages such type of initiatives to the extent that SDOs include rules protecting such competitive process by means of a due process and enhancing access to the standard by FRAND-licensing of the resulting technology.

As a result, an association of competitors that otherwise might arch competition authorities´ eyebrows is tolerated and even encouraged thanks to its pro-innovative and pro-competitive effects. The bottom-line argument is that the Commission is in favour of having less or no competition in the market (competition for a *de facto* standard) in exchange of a high level of dynamic competition during the creation of the technology, which even promises much better results.

This approach, however, should not be understood as a *carte blanche*. Neither the SEP holders[1166] nor SDOs are thereby immunised against competition law intervention. In other words, the safe harbour that the

[1166] As explored in Chapter 4.

Commission establishes in the Guidelines on Horizontal Cooperation is conditional to the fulfilment of the requirements that the Commission establishes for the preservation of the competition for the standard within the given SDO.

Therefore, this Section aims to depict under which circumstances insufficient disclosure rules or the absence of database can frustrate the pro-competitive nature of SDO-based standardisation analysis, if in such cases, the European Commission – *in abstracto* – would be authorised to act against the SDO and what principles and limitations should govern the Commission intervention.

## 4.1 Disclosure rules enabling abuses: an indispensable restriction according to Article 101 TFEU?

Article 101(1) TFEU prohibits 'agreements between undertakings, decisions by associations of undertakings and concerted practices (...) which have as their object or effect the prevention, restriction or distortion of competition'.

It does not pose particular problems to characterise SDO IPR policies – or more broadly SDOs - as agreements between undertakings or decisions by associations of undertakings – even in the case of more or less formal or sophisticated governance models.[1167]

Article 101 TFEU structures the analysis in two steps: first, an agreement's object or effects must restrict competition (Article 101(1) TFEU), and if so, one still need to assess whether pro-competitive effects outweigh the anti-competitive effects pursuant to the requirements of Article 101(3) TFEU.

Standards are, by their nature, agreements that aim to establish a set of technical requirements for products and procedures in order to ensure their interoperability.[1168] Therefore, only in a few cases, the standard object will directly restrict competition. In particular, SDOs and their IPR policies only establish an institutionalised framework for the creation of standards, whose cognizable pro-competitive and pro-innovative effects have been largely discussed within this work (notably in Chapter 2).

On the other hand, under certain circumstances, the standard development process can result in anti-competitive effects that might outweigh the pro-competitive ones, therefore standardisation resulting from agreements among competitors should only be allowed inasmuch

[1167] Contrarily, Lundqvist understands that this will rarely happen. Björn Lundqvist, Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation (Edward Elgar Publishing 2014) 197.

[1168] See European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJC11/1, para 257, stating that standards' primary objective is to define technical or quality requirements.

their conditions result in a net procompetitive/proinnovative effect – as provided for by Article 101(3) TFEU.

Against this backdrop the Commission has drafted special rules on standard setting in its Horizontal Cooperation Guidelines, which explicitly conceive a clear and balanced IPR policy of SDOs the relevant factor to ensure effective access to the standardised technology[1169] and good faith disclosures as a mean to 'enable the industry to make an informed choice of technology and thereby assist in achieving the goal of effective access to the standard'.[1170]

Therefore, standardisation, including SDOs' governance models, are subject to the same scrutiny as any other agreement between undertakings. Notably, standardisation rules that at least result in anti-competitive effects must overcome the analysis established in Article 101(3) TFEU, which basically balances the pro and anticompetitive effects subject to four cumulative requirements as set out in the provision:[1171] 'the agreement must contribute to improve production or distribution of goods or to promote technical or economic progress, i.e., lead to efficiency gains; the restrictions must be indispensable to the attainment of these objectives, i.e., the efficiency gains; the efficiency gains attained by the indispensable restrictions must be sufficiently passed on to consumers; the agreement must not afford the parties the possibility of eliminating competition in respect of a substantial part of the products in question.'[1172]

The question therefore is whether lenient SDO disclosure rules are indispensable to create the efficiency gains associated with standardisation, in particular when they do not deter over and under-disclosure.

As analysed in Chapter 5 under-disclosure can potentially lead to excessive prices of the licence (hold-up), refusal to license scenarios, exclusion of superior technologies, frustration of the pre-market competitive process, artificial increases of information asymmetries, misallocation of royalties and harms to trust in standardisation processes.

Moreover, over-disclosure can contribute to increases of the royalty rates (hold-up), royalty stacking if various companies concur in the same practice of claiming excessive royalties based on over-disclosed patents, misallocation of royalties, creation of artificial information asymmetries and harms to trust in standardisation.

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[1169] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 284.

[1170] ibid para 287.

[1171] See Case T-17/93 *Matra Hachette* v Commission [1994] ECR II-595 = EU:T:1994:89, para 85; Joined Cases T-185/00, T-216/00; T-299/00 and T-300/00 *Métropole Télévision et al v Commission* [2001] ECR II-1057 = EU:T:2002:242, para 86.

[1172] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 49

The analysis of the suitability of disclosure rules could become extremely casuistic. From an under-disclosure perspective, it is paramount that disclosure rules protect the participants against other participants' under-disclosed patents – non-participants may be subject to competition law in other ways.

### 4.1.1 The European Commission intervention in ETSI IPR Policies

Competition law intervention to promote the modification of SDOs IPR Policies is not merely theoretical. The ETSI IPR Policies were in the spotlight at least two times.

In the first of the cases[1173], a quite ambitious ETSI IPR Policy – which included a licence-by-default approach[1174] – was frozen by the absence of negative clearance of the Commission under ex-Article 85(3) EC Treaty[1175] – now Article 101(3) TFEU –, and later the Commission forced ETSI to adopt a different IPR Policy – the so-called 1994 Interim ETSI IPR Policy.

While the case is not specifically on disclosure rules, is relevant for two reasons. First, it supports the intervention of the Commission in SDO IPR Policies – in fact the US Government lobbied in favour of an intervention.[1176] Second, it points to Article 101 TFEU as the appropriate legal ground to intervene.

In 2001, Micro Electronica filed a complaint before the Commission against Sun Microsystem based on the latter's misrepresentation of a series of disclosed patents related to Java which were potentially essential for ETSI's GSM standard. [1177] Specifically, Micro Electronica claimed that Sun Microsystem had disclosed some of their essential patents only when the standard was on a very developed stage (under-disclosure) and wrongly stated that another patent was essential (over-disclosure).

While the complaint was substantially focused on the behaviour of a company, the Commission put the spotlight on ETSI's disclosure rules – as an enabling factor of deviations to disclosure – rather than on the patent holder's conduct. The case, however, was closed before the adoption of a formal decision, and, therefore, it is not possible to assess on which legal grounds the Commission acted.

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[1173] Case No. IV./35.06 – ETSI IPR Policy [1995] O.J. C76/5.

[1174] Dolmans briefly reports the preliminary position of the Commission. The findings of the author in ETSI non-publicly available documents are coherent with this report. Maurits Dolmans, 'Standards for Standards' (2003) 26 Fordham International Law Journal 163, 181.

[1175] Björn Lundqvist, Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation (Edward Elgar Publishing 2014) 197.

[1176] ibid

[1177] European Commission (Case COMP/C-3/37926) - ETSI/Sun Microsystems. Summaries of the case can be found at Carter Eltzroth, 'IPR Policy of the DVB Project: Negative Disclosure, FR&ND Arbitration Unless Pool Rules OK Part 1' (2008) 6 International Journal of IT Standards and Standardization Research 21, 27, Gil Ohana and C Bradford Biddle, 'The Disclosure of Patents and Licensing Terms in Standards Development' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, vol 1 (Cambridge University Press 2017) 247.

Micro Electronica's complaint boosted an exchange of numerous letters between the European Commission DG Competition, the Directorate General for Enterprises (DG Enterprise) and ETSI.[1178] As a result of this exchange, ETSI proceeded to remove Sun Microsystem declarations and issued a new Guide on Intellectual Property Rights (Guide on IPRs).[1179] However, the Commission kept on pushing[1180] for an amendment of the ETSI IPR Policy.[1181]

The Commission's efforts have resulted in the deletion of the wording 'becomes aware of', which was considered risky from a 'patent ambush' perspective[1182], and maintaining of the requirement of doing the disclosure in a 'timely fashion'[1183] with the following result:

> Article 4.1 ETSI IPR policy **Subject to Clause 4.2 below**, ~~E~~ **e**ach MEMBER shall use its reasonable endeavours, **in particular during the development of a STANDARD or TECHNICAL SPECIFICATION where it participates**, ~~in particular~~ to ~~timely~~ inform ETSI of ESSENTIAL IPRs **in a timely fashion** ~~it becomes aware of~~. In particular, a MEMBER submitting a technical proposal for a STANDARD or TECHNICAL SPECIFICATION shall, on a bona fide basis, draw the attention of ETSI to any of that MEMBER's IPR which might be ESSENTIAL if that proposal is adopted.

The new wording, which the Commission explicitly welcomed[1184], has introduced a more demanding threshold for disclosures as it requires SEP holders to take a more proactive stance and not only to disclose those patents that come to their knowledge.

Hence, in the Sun/ETSI case the Commission addressed an abuse of dominance case by promoting an amendment of the SDO rules that, to its understanding, facilitated the patent holder's behaviour. Once again, it conveyed a straightforward message: it is the role and responsibility of the SDOs to design their rules in a way that they prevent or reduce

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[1178] Some of such letters are (not publicly) available as Annexes to documents pertaining to the 44th, 45th and 46th ETSI's General Assemblies. However, the most relevant parts from the Commission letters are extracted in the ETSI IPR Guide, 'Guide on Intellectual Property Rights (IPRs)' (as of 19 September 2013) <https://www.etsi.org/images/files/IPR/etsi-guide-on-ipr.pdf> accessed 1 November 2022.

[1179] Published by September 2004, the current version of the Guide on IPRs can be accessed at https://www.etsi.org/images/files/IPR/etsi-guide-on-ipr.pdf.

[1180] See ETSI, *Latest correspondence from EC DG COMPETITION ETSI/GA#44(04)41* (2004), which includes a letter from Mr Mensching (DG Competition) to Mr Rosenbrock (ETSI's Director General at that time) requesting further changes in ETSI IPR Policy.

[1181] Approved by the 46th ETSI General Assembly in November 2005.

[1182] See European Commission, 'Competition: Commission welcomes changes in ETSI IPR rules to prevent "patent ambush"', Press release IP/05/1565 (2005) 68 fn 3 <http://europa.eu/rapid/press-release_IP-05-1565_en.htm?locale=en> accessed 1 November 2022; and ETSI, 'Guide on Intellectual Property Rights (IPRs)' (19 September 2013) <https://www.etsi.org/images/files/IPR/etsi-guide-on-ipr.pdf> accessed 1 November 2022.

[1183] Such wording still survives in current Art 4.1 of ETSI IPR Policy.

[1184] European Commission, 'Competition: Commission welcomes changes in ETSI IPR rules to prevent "patent ambush"', Press release IP/05/1565 (2005) <http://europa.eu/rapid/press-release_IP-05-1565_en.htm?locale=en> accessed 1 November 2022.

competition related risks.[1185] However, the case provides no guidance on the legal grounds of intervention.

### 4.1.2 Article 101 TFEU: legal approaches

The outcome of the Sun Microsystem points to an actual limitation of Article 101 TFEU to address potential anticompetitive behaviours in the framework of SDOs.[1186] This absence of guidance on the legal grounds for intervention leaves the question open whether it is possible to tackle disclosure rules (or its absence) when they enable harmful under or over-disclosure, and if so, how and when.

The answer to the first question should be in affirmative, for the reasons argued all along this study: disclosure rules shape the framework for pre-market competition, which has been artificially subtracted from the market. A deficient design of SDO rules – including its absence – may negatively affect the outcome of such competitive process.

Nevertheless, it is not possible to evaluate whether disclosure rules may enable anticompetitive outcomes without taking into account the rest of dimensions of standardisation, including whether the competition is articulated on technical or commercial basis, royalties, or participation rules, among others. For example, royalty-free standards only need blanket declarations – because they are not affected by over-disclosure.[1187]

The corollary would be hence that only indispensable disclosure rules can be exempted from Article 101 TFEU intervention – which is in line with the approach of Horizontal Cooperation Guidelines. The practicalities of such conclusion remain open.

Indispensability in this case should be understood as (1) the disclosure rules, as they are, are needed to attain the procompetitive effects of standardisation; (2) disclosure rules, as they are, do not produce additional anticompetitive effects which are not required to achieve such effects.[1188]

This approach also allows to tackle the cases of absence of disclosure rules – one might think that plain absence of disclosure rules brings the

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[1185] Ruben Schellingerhout, 'Standard-setting from a competition law perspective' (2011) Competition Policy Newsletter 3, 5.

[1186] Interestingly enough, it seems that Section 1 Sherman Act was never been considered to deal with the rules of standard setting processes by SDO members. These rules were only addressed under Section 2. Björn Lundqvist, Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation (Edward Elgar Publishing 2014) 158ff.

[1187] This is something that the Commission took already into account in the Horizontal Cooperation Guidelines 'since the risks with regard to effective access are not the same in the case of a standard-setting organisation with a royalty-free standards policy, IPR disclosure would not be relevant in that context.' European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1, para 286.

[1188] This interpretation was inherent in decisions predating the Guidelines such as in ETSI IPR Policy (Case No. IV/35006) Commission Notice of 28 of March [1995] OJ C76/5. See also Asahi/St Gobain where the Commission considered that a 30 years duration of a R&D joint venture was a not indispensable restriction, but exempted the agreement after the parties reduced the duration. *Asahi/Saint-Gobain* (Case IV/33.863) Commission Decision of 16 December 1994 OJ L 354/87, paras 30-31.

standardisation agreement out of the 'safe harbour' designed by the Horizontal Cooperation Guidelines.[1189]

### 4.1.3 When should the Commission intervene?

There are three scenarios where insufficient disclosure rules might cause inefficiencies – and therefore can be deemed to be non-indispensable restrictions: prevention of competition, potential alteration of competition and non-adequacy.

In the first scenario – prevention of competition – the disclosure rules prevent pre-market competition to take place within the SDO. This might be the case of plain absence of disclosure rules but also if the disclosure rules do not refer to essential parameters for the SDO competitive process – eg decisions in technical committees are taken on the basis of the trade-off between technological performance and costs, but the SDO does not require to disclose royalty terms.

The second scenario – potential alteration of competition – takes place when the IPR policies are lenient and/or obscure to a point where it is not clear who, what, when and/or how should disclose the patents. In these cases, it is possible that companies engage in over or under-disclosure even in compliance with the SDO disclosure rules.

The third, and last, scenario (of non-adequacy) – consists in that clear disclosure rules are in place but the type of rules are not suitable according to the type and/or the dynamics of standardisation. For example, the SDO provides for early disclosure while it would be more appropriate, according to the circumstances, to require late disclosure for a better achievement of disclosure goals, or vice versa.

The extreme casuistic nature of the matter argues against a 'golden rule' for the application of Article 101 TFEU to SDO's insufficient disclosure rules. However, it is possible to define in which cases intervention might be more needed or advisable according to the above-defined scenarios.

In principle, intervention might be justified in almost every single case that falls within the prevention of competition scenario. This scenario represents a flagrant case of failure to meet any of the disclosure goals and puts at stake the capability of the SDO of even implementing a pre-market competitive process. In other words, insufficient disclosure rules operate in this scenario as truly 'non-indispensable restrictions' – ie the rules as they are, are not needed to reap the pro-competitive effects of the standardisation and enable anticompetitive behaviours.

The Commission should abstain from intervening in the cases pertaining to the second scenario – potential alteration of competition – except when they allowed for actual cases of anti-competitive under or over-disclosure – whereby the lack of clarity of disclosure rules have contributed and/or have given coverage to anticompetitive behaviours, as

[1189] European Commission, 'Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' [2011] OJ C11/1 para 286.

it happened in the ETSI/Sun Microsystems case.[1190] Absent actual over and under-disclosure cases it is very likely that the SDO is able to somehow 'compensate' the lack of clarity by means of certain principles (eg good faith), non-binding instruments (eg guidelines) or practices (calls for disclosure within technical committees) which overall discourage opportunistic behaviours. Hence, the evaluation of the suitability of disclosure rules must take into account not only the wording of the IPR Policy, but also other aspects such as the declaration/disclosure forms, practices or principles.

The third scenario – non-adequacy – would rarely justify the Commission intervention. Inasmuch the competitive process within the SDO does not result in additional anticompetitive effects than those which are accepted by the Guidelines on Horizontal Cooperation, the decisions on how to articulate the SDO pre-market competitive process pertains to the SDO and its members.

This scenario corresponds to a suboptimal selection of disclosure rule vis-à-vis its intended effect. However, the role of competition law is to protect competition and not to impose an ideal model of competition. Punctual deviations from the duty to disclosure must be addressed by Article 102 TFEU. Still, there might be margin for Article 101 TFEU intervention in cases where the inadequacy of disclosure rules results in or contributes to create a systemic problem that results in anticompetitive effects eg widespread harmful over-disclosure.

## 4.2 Principles for the Commission action and its limitations

Where Commission intervention on the basis of Article 101 TFEU is justified, it is paramount that such intervention 'solves' the problem and do no contribute to create others. The preceding parts of this study demonstrate the inherent complexities of SDO-based standardisation and explain the rationales behind such complexities. In complex systems, it is not very likely that any intervention – whatever its nature is – does not affect aspects of the system other than the initially targeted one.

The Commission must bear this in mind when evaluating (1) whether to intervene, (2) how to intervene and (3) what the suitable remedies are.

Chapter 5 illustrates under which circumstances application of Article 102 TFEU is justified to tackle under and over-disclosure, whereas the situations where Article 101 TFEU might be appropriate to prevent SDO IPR policies from promoting or allowing under and over-disclosure have been sketched in the prior subsection. Yet there is a bottom-line, which – despite being obvious and repetitive – cannot be ignored: competition law protects competition and therefore cannot and should not be used in cases where there are no anticompetitive effects.

[1190] Commission, *ETSI/Sun Microsystems* (Case COMP/C-3/37926) Commission Communication [2001]

A corollary of this principle, which is of high relevance in SEP-related cases, is that the intervention of the Commission can only and ultimate aim to protect competition and should not, in any event, be used to push the Commission agenda in aspects that fall within the industrial policy area.[1191]

Article 101 TFEU presents relevant limitations when addressing SDOs, and more specifically their IPR Policies. It is quite clear that the Commission has intervened in the past on the grounds of Article 101 TFEU, but the outcomes of those interventions have not been concluded with SDO commitments and a commitment decision but with a conclusion of proceedings after amendments of the IPR Policy.[1192]

The issue here is that, shall the SDO refuse to make any modification, bringing the case till the last consequences – ie declaring the disclosure rules not exempted – would automatically render the IPR policy, or at least the disclosure rules to be void, pursuant Article 101(2) TFEU.[1193]

If this happened, the standardisation process would stop, losing all the procompetitive effects discussed along this work and notably in Chapter 2. Therefore, in running standardisation efforts taking place in sectors governed by network effects, ex post intervention would leave the market at best with de facto standardisation.

The question remains whether it is legitimate that the Commission opens proceedings against SDOs knowing that a final sanction would be openly anticompetitive, hoping that a tacit or explicit commitment (really a compromise) would be reach in the meantime.

Therefore, one can only imagine a few cases – pertaining to the first scenario – where intervention may be less anticompetitive than its absence: those of absence of disclosure rules or evident failure to articulate SDO standardisation as a truly competitive process.

Paradoxically, this aspect was not an issue at the times the Case No IV/35006 – ETSI IPR Policy, because the clearance was required before the ETSI IPR Policies entered into force. Hence, the rules of the game were defined ex ante. For good or for bad, network effects cannot be addressed ex post.

As a conclusion, nothing has changed much since Lundqvist wrote that '[i]t seems that the EU Commission in light of rather scant case law and the Horizontal Guidelines is still carving out a test for standard-setting procedure'.[1194] The ex post application of Article 101 TFEU is fails to address insufficient or inappropriate disclosure rules – in the same fashion the monopolization gap is a loophole for Article 102 TFEU.

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[1191] Similarly, Nazzini argues that side effects of competition, which are interesting from a social or political perspective, cannot be considered part of the objectives of competition law when applying competition rules. Renato Nazzini, *The foundations of European Union competition law: The objective and principles of Article 102* (Oxford University Press 2011) 107.

[1192] See Sun Microsystems in sub section 4.1.1 above.

[1193] This point was accurately made by Prof. Drexl on his comments to the draft version.

[1194] Björn Lundqvist, Standardization under EU competition rules and US antitrust laws: The rise and limits of self-regulation (Edward Elgar Publishing 2014) 212.

The most obvious solution would be to go back to an ex ante individual exemption system for SDO policies. The US provides clearance of IPR policies by means of FTC Business Review Letters. Nevertheless, such a change would likely open a pandora box in EU competition law and affect many other types of horizontal cooperation. Therefore this highly unlikely solution must be evaluated globally and not only from the angle of SDO IPR Policies.

A second best solution would be the suggested Standardisation Guidelines[1195], which as an ex ante tool can provide further guidance on how to shape such policies and identify cases which are particularly troublesome.

Until the moment any of these modifications arrive, the Commission should be consistent with the aims of the disclosure system that have been analysed in Chapter 4: the primary function of disclosure rules is to prevent the blockage of technologies and ensure access to the technology – ie to prevent under-disclosure – and the secondary function is to bridge information asymmetries and prevent artificial creation additional information asymmetries for licensing purposes – ie to prevent over-disclosure and its negative effects.

This characterisation is consistent with the evolution of the Commission' reasoning – both as a policymaker and as an enforcer – and is plainly justified by the harmful effects associated with each type of behaviour. The potential anti-competitive effects of under-disclosure are more acute than those from over-disclosure since they affect the core of SDO standardisation – ie the pre-market competitive process – and the licencing of the standard. Over-disclosure essentially affects the licensing level alone. For this reason, harmful effects of under-disclosure are more difficult to remedy *ex post* than those of over-disclosure.[1196]

In addition, the Commission needs to be particularly aware of the impact that measures that impose additional burdens or costs – or alternatively limit certain rights – can have in the delicate equilibrium of incentives between all participants in SDO standardisation. The CJEU, despite the eventual criticisms discussed in Chapter 4, was particularly sharp in Huawei v ZTE: it is very likely that forbidding the possibility of injunctions would have led to a substantial increase of hold-out behaviours whereas the absence of limits to injunctions would have resulted in more hold-up. This need for balance should not only inspire decisions regarding the relationship between SEP holders and implementers, but also the regulation of SDOs.

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[1195] Josef Drexl *et al*, *Comments of the Max Planck Institute for Intellectual Property, Competition and Tax Law on the Draft Commission Block Exemption Regulation on Research and Development Agreements and the Draft Guidelines on Horizontal Cooperation Agreements* (2010) Max Planck Institute for Intellectual Property, Competition & Tax Law Research Paper Series No 10-12, 15 ff.

[1196] Eg when a superior technology is excluded and the market gets locked into an inferior technology. See the discussions on remedies at sub sections 3.3.1.3 (under-disclosure) and 4.2.3.1 (over-disclosure)

Another practical limitation is linked to international law and the comity principle.[1197] Decisions regarding SDOs must be consistent and not discriminatory, which requires that any action against an SDO remedy identifiable anti-competitive harm and must be taken also against any other SDO in the same situation and regardless of where the SDO is located. If the anti-competitive effects in the European Union are the same, it is not acceptable to apply a higher standard to European SDOs than to SDOs located in other parts of the world. The comparison between the Rambus case, where the Commission only opened proceedings against the company and the ETSI/Sun case, where the Commission acted mostly against the SDO is not a good precedent, notably when, at that time, the ETSI disclosure rules were far clearer than JEDEC's ones. This situation argues for coordinated intervention of different competition authorities beyond the EU and, in its absence, for limited interventionism by the Commission.

SDOs compete against each other to achieve the technological leadership and to attract the most innovative companies – as explained in Chapter 3 – and forcing (only) EU SDOs to adopt more burdensome measures is the right way to harm international competition among SDOs. In such cases, some EU SDOs might be tempted to vote with their feet and move to jurisdictions that are more favourable to their interests – UK, Switzerland, the US – and those which stay in Europe would likely have a mere testimonial role. Therefore, when enforcing competition law, the Commission must be ready to answer the following question in the affirmative: would I impose *mutatis mutandis* the same sanction and/or remedy to a US-based or a China- based SDO?

[1197] This aspect is particularly troublesome in cases whereby the DoJ has approved an IPR Policy by means of a Business Letter Review.

# 5. Conclusion

SDO IPR Policies can play an important role in improving disclosure practices, yet they need to be improved in coherence with the goals they aim to achieve. Overall, a more structured disclosure process and clearer rules concerning the scope and timing of disclosure can contribute to a better achievement of such goals and to prevent, or at least discourage, under and over-disclosure.

A combination of an early blanket declaration with a later specific disclosure is very likely to achieve simultaneously the goals of preventing the blockage of the standard and providing more information for licensing purposes.

Additional measures such as limiting specific disclosures to those SEP holders which monetise their portfolio or the possibility of doing provisional specific disclosure can also be considered if they fit the purposes of the SDO and/or the dynamics of the industry.

Such a system might substantially improve disclosure – and standardisation – in standards where higher patent density, royalty extraction business models and FRAND commitments coexist.

Other measures, such as obligations to update, pay for disclose or mandatory essentiality checks present little advantages if compared with their costs and therefore should only be promoted in very specific cases.

Although the decision of implementing more demanding disclosure rules depends primarily on SDOs and their members, the Commission, on the basis of Article 101 TFEU, is entitled to intervene whenever insufficient disclosure rules operate as a non-indispensable restriction. As a general rule, however, the intervention of the Commission to push for more demanding disclosure rules would only be justified if lenient disclosure rules prevent competition in the framework of SDO standardisation. In any event, the Commission intervention should be limited to the reinstatement of pre-market competition and must not be used as a tool for industrial policy.

# Chapter 7: Conclusion

The research question tackled along this thesis is whether competition law should and can address the effects derived from deviations to the duty of disclosing SEPs. The answer is a partial yes in both cases.

The findings in Chapter 3 illustrate that there are explanations beyond mere opportunistic behaviours that explain why over and under-disclosures occur. First, essentiality is a dynamic reality that depends on whether the scope of the patent claims and the scope of the standard specification overlap, and therefore it is frequent that such overlaps are only temporary. Until the patent is granted and the standard is released, the scope of both the patent claims and the specification may still change.

In addition, the traditional understanding of what essentiality is, it is, at least, outdated, if not historically wrong. Nowadays, essentiality is split into two elements: standard essentiality or specification essentiality (patent claim = standard specification) and market or specific implementation essentiality (standard specification = technical solution implemented by the standard-compliant product). In other words, speaking of a truly essential patent requires a triple identity: patent claim = standard specification = technical solution.

The causes of this change can be found, on the one hand, on the breach of the paradigm one standard – one product. Especially nowadays standards are implemented in products of a very different nature and the technical specifications required by a smartwatch and a car to achieve the same goal (connectivity) are likely to differ substantially.

On the other hand, the technological evolution at market level can render some of the functionalities non-essential due to their obsolescence or to the creation of new technologies that allow to circumvent certain SEPs at a lower cost or with a higher performance. Technical committees are not necessarily aware of these changes – particularly those that take place at product level – neither take account of such changes in the context of standard updates.

As a consequence, SEP holders still have better knowledge of standard essentiality, while implementers have a deeper understanding of market essentiality. This has important practical implications for the disclosure, licensing and litigation levels. At the disclosure level, this implies that the obligation of patent holders to disclosure cannot be extended beyond assessing whether their patents read on the standard specification.

A second aspect that is relevant to explain why over and under-disclosure occur, is that disclosure practices depend substantially on the

rules defined by SDOs in their IPR Policies. Such rules differ substantially as regards the scope, timing for disclosure or level of diligence required. Moreover, such rules tend to be rather vague and allow for different disclosure practices even inside the same SDO, which does not contribute to increase clarity.

Third, and finally, the complexity of the standardisation process makes the identification and disclosure of SEPs particularly challenging, even for highly sophisticated SEP holders. The reasons are that essentiality is a multifaceted reality, with legal, technical and economic features and implications, which depends on a number of activities that are not necessarily connected and that sometimes take place simultaneously. As a result, information governance should become a key feature of standardisation, no less because perfect information is a structural element of competitive markets. On a principled note, it can be argued that the pre-market competitive process in SDO must mirror such structural element – or at least aim at it.

Chapter 4 looks at SEP-related issues from the broader perspective of the intersection of intellectual property law and competition law, taking note in particular of refusal-to-license cases. The analysis shows that competition law intervenes in scenarios where there is a blockage of competition by imitation and competition by substitution. In such cases, the virtuous circle between the IP law and competition which is expected to incentivise innovation and its dissemination can potentially be affected.

Yet there is a substantial difference between disclosure-related cases and the prior case-law: in SDO-based standardisation foreclosure of competition by substitution is not a result of the market success of a given product, but the result of a pre-market dynamic competition organised by SDOs and within SDOs. Not surprisingly, the priority of the Commission in SDO-based standardisation has substantially been focused in devising the standardisation process as a truly pre-market competitive process.

The FRAND commitment, the need for unrestricted access or the duty to disclose are some of the safeguards put in place to protect this form of pre-market competition. Consequently, failure to fulfil such requirements should be evaluated not only against the harm that the behaviour might cause in subsequent markets, but also taking into account the impact on the competitive process which may lead to a foreclosure of competition by substitution.

Chapter 5 analyses these specific effects resulting from under and over-disclosure in the light of Article 102 TFEU. Although under-disclosure does not always give rise to anti-competitive effects, there are certain cases that justify competition law intervention. Patent ambushes and the

exclusion of superior technologies by means of under-disclosure are the most harmful under-disclosure cases.

On the one hand, the effects of patent ambush are not limited to those resulting from mere claiming excessive royalties, since such claiming only becomes possible because of the previous manipulation of the pre-market competitive process. Hence, the anti-competitive effects go beyond mere excessive pricing, including harm to follow-on innovation (notably if the ambushing company holds-up the entire industry), misallocation of royalties in favour of the ambushing company, undue exclusion of other competing technologies in competition for the standard and harms to the trust in standardisation. All these harms were, to a certain extent, analysed by the Commission in Rambus and partially echoed by the CJEU in Huawei. As a consequence, patent ambushes cannot be deemed to be a mere exploitative pricing case, nor should the remedies be those typically applied for in cases of excessive pricing.

On the other hand, the exclusion of a superior technology as a result of under-disclosure can also provoke severe harms to competition, which moreover, are difficult to remedy once the industry is locked into the standard. The frustration of the SDO pre-market competitive process, the lock-in of the entire industry into an inferior standard, the misallocation of royalties – under rewarding other companies' innovative efforts and the harm to confidence in standardisation are some of them. The problem in these cases is that in most cases, the company is not dominant at the time of engaging in the under-disclosure nor is there any subsequent abusive behaviour, as is the case in patent ambush scenarios, that follows the acquisition of market dominance of the under-disclosing patent holder. In both cases, moreover, it is sometimes difficult to obtain evidence of the anticompetitive behaviour and its harmful effects.

Over-disclosure, on the other hand, presents also potential anticompetitive harms beyond prototypical excessive pricing cases. Over-disclosure does not primarily affect the SDO-based pre-market competition – ie the selection of the technologies that compose the standard - and its effects are mostly constrained to the licensing level. This, however, does not rule out that over-disclosure can discourage other SEP holders from participating in future standardisation efforts, negatively affecting their innovative performance in the long run, for example in cases of systemic royalty stacking caused by concurring over-disclosures.

In addition, over-disclosure has a viral effect – over-disclosure by one patent holder incentivises other patent holders to engage in over-disclosure and thereby contributes to royalty stacking. Moreover, the fact that over-disclosure affects more severely those companies that are exposed to information asymmetries – remaining neutral for implementers and SEP holders which have a better knowledge of the

technological relevance of portfolios – argues in favour of closer scrutiny under competition law.

Nevertheless, it is very difficult to address over-disclosure under Article 101 or 102 TFEU apart from the most flagrant ones since – in practice - is difficult to characterise any disclosure which is done in accordance to current disclosure rules as an over-disclosure. Moreover, it is also challenging to prove that over-disclosure has resulted in a price increase. In particular, Article 102 TFEU's scope is very limited to face the challenges of deviations from disclosure rules, and notably under-disclosure, and therefore it is appropriate to consider amendments to the wording of Article 102 TFEU to capture cases where the patent holder acquires market power for reasons other than competition on the merits – in the same fashion Section 2 of Sherman Act does.

Yet one also has to be aware that such amendment has deeper implications beyond the SEP world, and moreover, it implies changing EU competition law on a philosophical level which transcends the object of this thesis. However, the new typologies of cases that the EU is facing and will face – notably those related to multisided platforms and closely dependent markets –also point to that direction.

In addition, as discussed in Chapter 6, current SDO disclosure can be improved to better fulfil the goals they aim to achieve: primarily, to prevent the blockage of the standardised technology and ensuring access to it, and secondarily, to contribute to improve the transparency in licensing by, on the one hand, contributing to bridge the asymmetries of information and, on the other, preventing the artificial creation of such asymmetries.

Overall, the system might be improved without a substantial increase of costs. In this regard, it is worthwhile to step away from the mainstream discourses, which are substantially influenced by the agenda of vested interests, and rather pay due attention to the incentives for the stakeholders involved and try to address the real obstacles that disclosure rules face in view of achieve the abovementioned goals.

In this regard, the thesis proposes a system consisting of an early blanket disclosure – to prevent eventual ambushes – which is complemented by a mandatory specific disclosure once the standard has been released and the patent has been granted – to ensure that the transfer of information from the SEP holders to the market takes place in the moment where the former have a higher level of knowledge of their portfolio's relevance.

This system can be improved, depending on the circumstances, for instance, by providing for the possibility of doing a negative disclosure right after the blanket declaration to exclude those key patents that the SEP holder wants to subtract from the FRAND commitment, exempting companies that do not monetise their portfolios by charging royalties from the specific disclosure requirement; and allowing for provisional disclosures in the interest of some SEP holders that want to signal their portfolio's technological strength.

This system would have the effect of reducing the number of disclosures, which at the same time will be more accurate, overall giving more certainty to all parties without imposing excessive burdens on them. Moreover, it will provide judges and competition agencies with a better-defined framework to evaluate whether a company has engaged in under or over-disclosure. Nevertheless, this proposal cannot be deemed to provide a universal solution, and while it might be too demanding for certain SDOs, it can also be insufficient for others. Therefore, its suitability must be assessed in the light of the business and technological dynamics surrounding each sector and SDO, which is something for which both the SDOs and competition agencies are well positioned.

While modifications of SDO disclosure rules are primarily a matter for the SDOs themselves, under certain circumstances, the Commission might intervene on the basis of Article 101 TFEU and impose or push for the adoption of more suitable disclosure rules. Here a distinction between three scenarios depending on whether the SDO disclosure rules allow or promote the prevention of competition can be made. Disclosure rules can, on the one hand, potentially result in a restriction of competition without benefits in terms of innovation or, on the other hand, rather lenient (vague) or inadequate (but concrete) disclosure rules. While in the first of the cases intervention would be justified, intervention in the other two situation should remain the exception.

However, the *ex post* intervention of the Commission is particularly problematic in technologies governed by network effects. An *ex ante* clearance is better suited and prevents many anti-competitive effects of *ex post* intervention. The approval of Standardisation Guidelines can provide further guidance and clarifications.

In any event, it is essential that Commission's intervention is limited to the extent needed to protect competition. It should seek to pursue other, yet legitimate goals that would need be addressed by other instruments. In addition any intervention must be consistent and not discriminatory, in particular by not applying a more demanding threshold to EU-based SDOs as compared to non-EU-based SDOs.

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