



Patent Notice (Failure) in the Era of Patent Monetization

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Abstract The most commonly provided economic rationale underlying the patent system is that it incentivizes inventive effort that may not be carried out in its absence. In addition to this utilitarian rationale, economic and legal scholars frequently refer to a second rationale: the dissemination of technological information to the public. This notice function is thought of as an important mechanism to enable a more efficient investment in innovation by stimulating further (cumulative) innovation, reducing wasteful duplicate innovative efforts, and limiting unnecessary litigation. Courts have placed a great deal of emphasis on the notice function and have described it as the *quid pro quo* of granting patent owners the right to exclude. Whereas the notice function is traditionally confined to the adequate disclosure of inventions, we propose that in light of the recent trend towards rapidly growing markets for patent monetization it should also encompass the adequate disclosure of holders of patent rights. Specifically, we argue that knowing the identity of rightsholders is a fundamental prerequisite for any patent transaction to occur. Based on a comparative analysis of the provisions of six patent offices, we illustrate that even though current provisions warrant an adequate disclosure of the identity of initial patent applicants, they provide the public with only limited opportunities to track subsequent changes of ownership. Whilst most patent authorities require to file notice when patent rights are assigned, strict enforcement mechanisms are absent.

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This allows for a lack of transparency of patent ownership, which may hamper rather than facilitate technology transactions.

Keywords Patent ownership · Patent monetization · Markets for technology · Patent assignments · Patent disclosure

1 Introduction

Legal and economic scholars have described a trend towards patent monetization that is manifested in both the increasing number of patent transactions and the monetary gains generated by them.¹ Whilst the attribution of this trend varies from the institutional commodification and “assetization” of patents to changes in contextual factors that have forced organizations to open up their innovation processes, there is a consensus that patent monetization has been on the rise from the mid-1990s.² This trend coincides with the rise of markets for technology wherein exchanges comprise intermediate technological inputs that are largely disembodied from goods and services.³ Although technology markets have the potential to be engines of economic growth, in the sense that they enable a division of labor between the entities that invent and the entities that manufacture most efficiently, it is widely recognized that they function inefficiently due to information asymmetries between buyers and sellers of technology that arise due to the “public good nature” of inventions.⁴ Patents can, at least in part, provide a remedy to this matter by simultaneously enabling purposive knowledge flows and limiting unintended knowledge spillovers. Specifically, patents may facilitate technology transactions by: (i) protecting buyers and sellers of technology against the expropriation of inventions (the appropriation function), and (ii) by aiding contract negotiations between buyers and sellers via the disclosure of technical details that characterize the invention (the notice function).

In this paper, we argue that for the notice function to be fulfilled and for technology transactions to occur, it is of paramount importance that complete and accurate information regarding the holders of patent rights is available to the public. At the same time, we demonstrate that current regulations do not allow to establish with certainty who owns a particular patent. Specifically, we focus on patent ownership changes and highlight that, whilst patent offices impose strict legal requirements concerning the adequate disclosure of the identity of the initial applicants, their requirements are considerably less strict with respect to the disclosure of ownership once patent rights have been assigned. In other words, the likelihood of identifying the actual owners is significantly reduced following changes in patent ownership. We highlight that this is the result of insufficient requirements for the registration of assignments as currently imposed by patent

¹ Teece and Grindley (1997); Rivette and Kline (2000).

² Dreyfuss and Franke (2015), p. 566; Chesbrough and Bogers (2014), p. 27.

³ Arora et al. (2004), p. 2.

⁴ Arora and Gambardella (2010), p. 787.

offices and the enforcement thereof. We illustrate the universal nature of this issue based on a comparative analysis of legal provisions on the establishment of patent ownership throughout the patent lifecycle of one regional patent office – the European Patent Office (EPO) – and five national patent offices – the United States Patent and Trademark Office (USPTO), the Japan Patent Office (JPO), the United Kingdom Intellectual Property Office (UK IPO), the French National Institute of Industrial Property (INPI), and the German Patent and Trade Mark Office (DPMA).

Our analysis reveals that the patent application stage, at which the initial title in a patent is established, is the only stage during the lifetime of a patent at which the adequate disclosure of the identities of patent rightsholders is strictly enforced. Although all six patent offices require parties to file notice when a patent is assigned, no provisions exist for strictly enforcing the failure to meet this requirement. Despite the clear detrimental implications of a failure to disclose information on the identities of patent owners for the functioning of technology markets, we could only detect one initiative that aims to remedy the flaws of current patent provisions – the USPTO’s Notice on “Changes to Require Identification of Attributable Owner”.⁵ We rely on a discussion of the relevant elements of this Notice as a foundation for proposing a number of “minimum requirements” that future initiatives should impose in order to warrant a more adequate, accurate, and timely disclosure of patent ownership information. In addition, we briefly discuss alternative measures that could be explored to increase the transparency of patent ownership.⁶

The remainder of this article is structured as follows. In Sect. 2, we discuss the notice function of the patent system and highlight its deficiencies. We explain the importance of the notice function and, in particular, the significance of transparent patent ownership information for patent monetization in Sect. 3. In Sect. 4, we examine patent provisions concerning the disclosure of the identity of initial patent applicants, followed by an overview of provisions with respect to the recording of patent ownership changes in Sect. 5. In Sect. 6, we discuss the USPTO’s Notice followed by a proposal of recommendations for future initiatives aimed to improve the transparency of patent ownership in Sect. 7. Finally, we present our concluding remarks in Sect. 8.

2 The Notice Function of the Patent System

2.1 The Relevance of Disclosing Patent Information

The most common justification for the patent system is a utilitarian one that defines the patent system as a property regime that aims to incentivize inventive effort that

⁵ Federal Register 19(16), January 24, 2014, Proposed Rules, USPTO 37 C.F.R. Part 1, Changes to Require Identification of Attributable Owner <https://www.govinfo.gov/content/pkg/FR-2014-01-24/pdf/2014-01195.pdf> (Fed. Reg.).

⁶ Alternative mechanisms to increase transparency of intellectual property ownership are subject to the follow-up paper Gorbatyuk A (2022) Intellectual property registers: how transparent is intellectual property anyway? SSRN https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4020328.

is desirable from a societal viewpoint yet may not be exerted – at least not at socially optimal rates – in its absence.⁷ Because the inventive process often results in outcomes that have the characteristics of a public good that is non-excludable and non-rivalrous, it enables actors other than the original inventor to reap the rewards of their inventions.⁸ If inventions can be imitated at a cost that is lower than the initial cost of creating them, original inventors may not be able to appropriate sufficient *ex post* rents that arise from their invention. As a result, inventors may not have sufficient incentives to invent, which results in lower levels of investment in research and development (R&D) than what is socially desirable.⁹ The primary role of the patent system is to mitigate against this underinvestment problem by granting inventors exclusivity over their inventions, allowing them to capture an adequate *ex post* return. By doing so, the patent system remedies the inefficiency of private markets to effectively stimulate and allocate investment into R&D in the presence of externalities.

However, granting inventors a temporary exclusive right to prevent others from practicing – making, using, importing or selling – their inventions may come at a significant social cost. Patent protection may enable patentees to set a premium price that is well above the market price of their invention, especially for inventions that are difficult to substitute. Such monopoly pricing leads to an underutilization of the invention and disproportionately transfers wealth from consumers to patentees. In order to compensate for this deadweight loss to society, the legislator imposes the requirement on patentees to give public notice of the subject matter for which patent protection is sought. The disclosure of inventions in patent documents – which we refer to as patent notice in the remainder of this article – is typically thought of as being part of a patent bargain as the *quid pro quo* of granting an exclusive right to inventors. The patent bargain metaphor's omnipresence within the patent law community is demonstrated by courts advancing the *quid pro quo* rationale in a number of renowned decisions.¹⁰

Whilst there is considerable disagreement among commentators regarding the role that patent notice should serve in shaping patent policy – with some denoting it as a central function of the patent system and others deeming it to be merely an ancillary objective at best – the potential benefits to society of disclosing inventions in patent documents are universally recognized.¹¹ First, an effective patent notice facilitates subsequent (follow-on) innovation by enabling other inventors to learn about the characteristics and potential applications of inventions. This “teaching function” not only allows others to make, use, and further develop an invention after the patent term lapsed, but also to be inspired by, invent around, and build upon it

⁷ Merges (2011), p. 2; Dam (1994), p. 247; Mazzoleni and Nelson (1998), p. 275.

⁸ Merges (2011), p. 4; Dam (1994), p. 247; Lemley et al. (2016), p. I–14; Stiglitz (1999), p. 308.

⁹ Ordovery (1991), p. 43.

¹⁰ See, e.g. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150–151 (1989); *Pfaff v. Wells Electronics, Inc.*, 525 U.S. 55, 63 (1998); *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124, 142 (2001); *Eldred v. Ashcroft*, 537 U.S. 186, 224 (2003).

¹¹ See Fromer (2009), p. 542 and FTC (2011), pp. 75–80 for arguments in favor of considering patent notice as a central aim of the patent system and Devlin (2010), p. 411 and Roin (2005), p. 2028 for arguments in favor of treating patent notice as an ancillary objective of the patent system.

during the patent term.¹² In addition, signaling the achievements of others helps inventors to avoid investments that would result in duplications of existing inventions.¹³ When the notice function is poorly served, the original inventor may very well be the only person who possesses sufficient knowledge to further build upon her invention. This is not desirable from a societal point of view, given that most inventions are continuations, combinations or re-combinations of the ideas, discoveries and concepts developed by parties other than the original inventor.¹⁴ Commentators refer to Sir Isaac Newton's famous aphorism "if I have been able to see further, it is by standing on the shoulders of giants" and argue that "in the current evolution of high technologies, almost all technical progress builds on a foundation provided by earlier inventors".¹⁵ An effective patent notice enables to stand on the shoulders of giants by levelling the playing field between the original inventor and the public by reducing the information advantage of original inventors.

Second, an effective patent notice serves to clarify the "legal" boundaries of an invention, which is paramount to a more efficient allocation of investment in innovation.¹⁶ Knowing in detail the boundaries that define a claimed invention allows inventors to avoid inadvertent infringement of patent rights of others and thus prevents unnecessary and wasteful litigation. By holding the users of technology liable for infringement regardless of whether it is intentional or not, the patent system assigns the burden of avoiding litigation to these users. Given that infringers face significant consequences upon infringement, it is imperative that technology users are enabled to identify and understand applicable patent rights with reasonable certainty and that such clearance efforts can be undertaken at a reasonable cost.¹⁷ An effective patent notice limits the uncertainty regarding infringement liability by informing the public about the outer bounds of a patentee's right to exclude.¹⁸ The lower this uncertainty, the less time and effort third parties need to spend on resolving conflicts and the more they can focus on the type of activities that the patent system aims to incentivize.¹⁹

¹² Fromer (2009), p. 541.

¹³ Kitch (1977), p. 278 (stating that "once a patent has been issued, other firms can learn of the innovative work of the patent holder and redirect their work so as not to duplicate work already done" and that "under a regime of trade secrecy, the competitive firm might never learn of a competitor's processes and would not learn of the technology incorporated in a new product until it was marketed. During this period, the investments made in a search for technology already invented by others is wasted.").

¹⁴ Arthur (2009) (describing the "combinatorial evolution" of technology, thereby highlighting that new technologies do not come from nowhere but arise as combination of other technologies).

¹⁵ Scotchmer (1991), p. 29.

¹⁶ *Festo Corp. v. Shoketsu Kinzoku Co.*, 535 U.S. 722, 730–31 (2002) ("like any property right, its boundaries should be clear. This clarity is essential to promote progress, because it enables efficient investment in innovation. A patent holder should know what he owns, and the public should know what he does not.").

¹⁷ FTC (2011), p. 74.

¹⁸ *Ibid.*, pp. 75–76.

¹⁹ FTC (2009), p. 122 and 132.

2.2 The Deficiencies of Patent Notice

Although the benefits of an effective patent notice are certainly compelling in theory, empirical research has produced inconclusive results.²⁰ For example, based on a survey of US inventors of patented inventions, Jaffe and his contributors found that less than five percent of the surveyed inventors considered patent documents to have had a significant influence on the development of their inventions.²¹ On the other hand, Cohen and colleagues, based on a survey of the R&D managers of large US enterprises, found that more than half of the respondents considered patent documents to be at least moderately important for their ongoing R&D projects.²² Despite these seemingly mixed empirical results, there is a strong consensus among legal commentators that the potential benefits of disclosing technological information through patent documents are not fully realized in practice.²³ In particular, commentators advance the view that existing legal requirements do not adequately encourage patent applicants to include technological information that is useful to the public. Their arguments mainly center around three properties of the information contained in patents, namely its *uniqueness*, its *completeness* and its *clarity*.

Concerning *uniqueness*, the main argument raised is that the patent system does not encourage the dissemination of information that would otherwise not become publicly available.²⁴ This argument is founded on the conjecture that some inventions are inherently more self-revealing in nature than others and that it is the more self-revealing inventions for which patent protection is most suitable. After all, these inventions can be reverse-engineered with relative ease, whereas inventions that are not self-revealing are less vulnerable to such efforts and can often be protected effectively through secrecy.²⁵ Insofar as the patent system only encourages the disclosure of inventions that readily disclose themselves once they enter the public domain, patent documents do not convey information that third parties could not obtain through other channels. Therefore, patent documents may present the public with little unique information.

Although this argument is certainly compelling, it has been refuted on multiple grounds. First, many patented inventions never become commercially available because patent rights do by no means impose the requirement on patentees to practice their inventions.²⁶ For these “non-practiced” inventions the patent document may very well be the only source of information that is readily available to the public. Second, when inventions do become commercially available, the

²⁰ See Ouellette (2012), pp. 561–565 for a comprehensive overview of existing surveys of the value of patent disclosures.

²¹ Jaffe et al. (2002), pp. 389–390.

²² Cohen et al. (2002), pp. 1362–1364; Ouellette (2012), pp. 561–565.

²³ Ouellette (2012), pp. 561–565.

²⁴ Roin (2005), p. 2015.

²⁵ *Ibid.*; Devlin (2010), p. 418. For more information on the choice between patent and trade secret protection see Gorbatyuk (2019a), p. 171.

²⁶ Fromer (2009), p. 545; Saunders (2002), p. 391 (referring to several empirical studies to support the claim that “approximately forty to ninety percent of issued patent are not used or licensed by the patentee.”).

average time-to-market in most industries is considerably lengthier than the average time between the filing and publication of a patent application.²⁷ Thus, third parties often have access to the information that is enclosed in patent documents long before reverse-engineering efforts can even be thought of. Third, even if an invention is susceptible to successful reverse-engineering, it may be less time-consuming and costly to retrieve information from patent documents.²⁸ Fourth, even though a patent document itself may not contain unique information, its existence may inspire the dissemination of relevant information about the invention through other channels.²⁹ An example of such “peripheral disclosure” is an academic scientist whose employer only allows her to present or publish the results of her research after a patent has been applied for.³⁰ Finally, empirical studies reveal that inventors do not only seek patent protection for inventions that are self-revealing but also for those that are not.³¹ Conjointly these arguments strongly suggest that the patent system does in fact encourage the disclosure of unique information that would otherwise remain secret.

Concerning *completeness* and *clarity*, commentators’ main concern is that existing legal disclosure requirements do not provide sufficient incentives for patentees to adequately disclose their inventions, which may result in the issuance of patents with obscure boundaries or low-quality patents.³² There is an inherent tension between the public interest for information to be disclosed as completely and clearly in patent documents as possible and the private interest of patentees to limit the opportunities of third parties to appropriate rents from their inventions. The rationale underlying this tension is largely axiomatic. The more complete and clear the information conveyed in a patent document, the more it reveals about the inner workings and legal boundaries of an invention, and thus, the lower the costs of potential competitors of a patentee to invent around or build upon her invention. Patentees, therefore, have an incentive to withhold or obfuscate information that is relevant, necessary or even vital to fully understand the inner workings of their inventions and the limits of their rights thereto.³³ This disincentive is the reason why legal disclosure requirements are needed to warrant an adequate disclosure of inventions.³⁴ Given that inventors have little to no incentives to disclose more

²⁷ Roin (2005), p. 2016.

²⁸ *Ibid.*, p. 2017; Fromer (2009), p. 558; Devlin (2010), p. 405.

²⁹ FTC (2009), p. 179.

³⁰ Rantanen (2012), p. 16–37.

³¹ Devlin (2010), p. 432.

³² See Menell and Meurer (2013) for more information on the notice failure and notice externalities, in particular on the comparison between defining boundaries of tangible and intangible property and on how inventors and creators can at times benefit from “obfuscating the scope of rights” as well as “keeping others in the dark about their intellectual property” (Menell and Meurer 2013, p. 1). In particular, Menell and Meurer claim that tangible property is “well-defined and capable of precise measurement” (Menell and Meurer 2013, p. 4), whereas “effective notice is a far greater challenge when the resources in question are intangible.” (Menell and Meurer 2013, p. 2). Anderson (2015), p. 397; Feldman (2014), p. 283.

³³ Scotchmer and Green (1990), p. 132.

³⁴ Devlin (2010), p. 419.

information than strictly required, these requirements determine the amount and nature of the information that will be disclosed. Despite the strong statutory language of these requirements, commentators regularly cite anecdotal evidence to support their claim that only few patents contain written descriptions that allow for the invention to be carried out by a third party. Whilst, some attribute this to an insufficient enforcement of existing requirements, others go as far as suggesting that these requirements allow for, if not, encourage the exclusion of relevant technological information from patent documents.

3 Patent Notice and the Market for Patent Monetization

3.1 Patent Notice as Driver of Technology Transactions

A third and often overlooked benefit of patent notice is that it can facilitate the transfer of technology. Although the utilitarian justification primarily highlights the importance of the patent system for getting inventions developed, increasing activity on “markets for technology” reveals that the patent system may be equally important for getting these inventions put to use. There is an extensive economic scholarship suggesting that in today’s knowledge-based economy the capabilities needed to develop inventions are increasingly removed from the capabilities that are needed for commercializing them.³⁵ Due to the increasing complexity of technologies and the globalization of markets it is often not feasible for a single firm to be the source of all innovative aspects of a product. A firm that initiates the development of an invention is not necessarily the one that is best positioned to bring it to the market. And even if a firm is able to successfully commercialize an invention it may not be able to oversee all of its potentially useful applications. As a result, innovation processes have become more open in the sense that the pathway to innovation often transcends the boundaries of a single entity.³⁶ This trend is manifested in the development and growth of markets for technology where exchanges involve intermediate technological outputs rather than commercial end products.³⁷

Markets for technology have the potential to become important drivers of economic growth and consumer welfare by allowing for a division of labor between the entities that invent and the entities that commercialize most efficiently.³⁸ The entities that do not possess the capabilities and resources that are needed to commercialize inventions can specialize in the development and supply of technology, whilst the entities that do possess these capabilities and resources no longer need to develop all their technologies in-house. By offering a pathway to innovation without commercialization, such specialization increases both the supply of technology and the competition among technologies by lowering the entry

³⁵ Arora et al. (2004), p. 2; Chesbrough and Bogers (2014), p. 27.

³⁶ Chesbrough and Bogers (2014), p. 27.

³⁷ Arora et al. (2004), p. 2.

³⁸ *Ibid.*, p. 9.

barriers for entities that do not have the resources to manufacture, market, and distribute their inventions.³⁹ This is illustrated by the entry of many small and medium-sized enterprises that make a profitable business as specialist suppliers of technology to larger manufacturing firms since the beginning of the 1990s. A greater supply of and competition among technologies not only leads to the development of qualitatively better and cheaper technologies but also to technologies that can be applied more widely and can be distributed to consumers faster.⁴⁰ In essence, a division of innovative labor allows for gains to be made from trading technologies, and the magnitude of these gains are dependent on the efficiency of markets for technology.

An effective patent notice can positively affect the functioning of markets for technology in two primary ways. First, by disclosing the subject matter of claimed inventions, patents signal the availability of technologies to potential buyers, licensees, investors and collaborators and bring these parties together with the owners of technologies. Second, patents define rights on intangible assets making it easier for parties to negotiate and form contractual agreements. An effective patent notice helps to overcome what economists refer to as Arrow's information paradox.⁴¹ Named after economist Kenneth Arrow, this paradox describes the inherent information asymmetry that exists between an entity expressing interest in a given technology and the proprietor of this technology. Whereas the former cannot assess the authenticity of the technology without having sufficiently detailed information about it, the latter has an incentive to disclose as little information as possible. Due to the non-excludable and non-rivalrous nature of public goods, the disclosure of too much information may reduce the interested party's willingness to pay and may erode the bargaining position of the proprietor. On the other hand, the disclosure of too little information may devalue the technology to a price level that the proprietor is not willing to accept because the interested party cannot determine whether the technology is genuine or not. As a result, both parties lose in this game and transactions that rationally should happen – those that would benefit both the proprietor and the interested party – may not materialize.

Patents can remedy this situation by offering protection from misappropriation by third parties and encouraging inventors to disclose relevant information that they would otherwise have kept secret. Although patents do not necessarily simplify the valuation of inventions, they do at least provide a starting point for negotiations between technology owners and interested third parties. As a result, patents are often an integral part of technology exchanges and have as such become transactable pieces themselves.

³⁹ FTC (2009), p. 33.

⁴⁰ *Ibid.*

⁴¹ Arrow (1962), p. 609.

3.2 The Significance of Transparent Patent Ownership Information

The adequate disclosure of an invention for which patent protection is sought is one of the patentability requirements commonly imposed by patent offices.⁴² Although there are differences between the procedural requirements that patent offices impose, they generally require that an acclaimed invention is described in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.⁴³ A patent document should at least contain one or more claims that define the critical elements of an invention, such that the patent examiner can assess whether it meets the other patentability requirements of novelty, inventive step/non-obviousness and industrial applicability/usefulness.⁴⁴ The requirement to codify inventions conform the standards of patent offices is a strict one in the sense that a failure to do so has serious implications for the parties having an ownership interest in a (prospective) patent. It can provide grounds both for the refusal of a patent application during the pre-grant stage as well as for the revocation of a patent during the post-grant stage. The requirement for an adequate disclosure of inventions is therefore a powerful instrument for reducing the uncertainty about the function and characteristics of patent-protected technologies. Reducing this uncertainty lowers the aforementioned information asymmetry that characterizes markets for technology.

For a technology transfer to occur though, the detailed information describing an invention must be complemented with information concerning the ownership interest in this invention. Hence, purposive technology transactions are generally established by a formal agreement of some sort with the actual owners of technologies. Therefore, even the most detailed information regarding the functions and characteristics of a technology is of little use to interested buyers or licensees, unless the owners of those technologies are known to them. This by default demands that potential buyers or licensees can identify the owners of inventions *ex ante* the transaction. Transparent ownership information is generally thought of as being part of the “social contract” between a patentee and society and providing accurate patent ownership information is therefore an obligation and not a matter of choice.⁴⁵ Patent authorities generally require patent applicants to disclose the relevant information about themselves when filing the application. The original applicants are presumed to be the owners of a patent that may be issued therefrom unless they assign their ownership rights to another entity. The applicants can exercise this right either pre-grant or post-grant and there is in principle no limit to the number of times that the ownership of a patent can change.

However, commentators have raised concerns suggesting that the requirements for the registration of assignments as currently imposed by patent authorities and the

⁴² Kur et al. (2019), p. 165; Merges and Duffy (2017), p. 247; WIPO (2004), p. 21.

⁴³ Art. 83 of the Convention on the Grant of European Patents (European Patent Convention) of 5 October 1973, Munich (EPC); Art. 112 of the United States Code Title 15 (15 U.S.C. 112); Singer and Stauder (2003), p. 355; Halpern et al. (2015), p. 197.

⁴⁴ Art. 15 of the Agreement on Trade-Related Intellectual Property Rights 1994 (TRIPS); Art. 52(1) EPC; 35 U.S.C. 101–103; WIPO (2004), p. 17–21; Cottier and Véron (2015), p. 92; Singer and Stauder (2003), p. 64; Halpern et al. (2015), p. 196.

⁴⁵ Chien (2012), p. 1.

enforcement thereof are ineffective to an extent that they are detrimental to the transparency of patent ownership.⁴⁶ It has even been suggested that this lack of transparency has become a competitive tool for entities that are commonly associated with abusing the patent system for financial gain.⁴⁷ These entities are often labelled as “non-practicing entities” (NPEs), “patent assertion entities” (PAEs) or “patent trolls” and are associated with the practice of aggressively asserting patents, obtained through strategic patent acquisitions, with the sole purpose of generating economic rents, usually in the form of licensing revenues.⁴⁸ These practices have mostly been documented in the ICT sector, where the magnitude of overlapping patent rights is significant and occasionally results in so-called “patent thickets”.⁴⁹ Although the agglomeration of patents and aggressive litigation strategies may in principle be permitted, they may not be desirable from a societal perspective. The ability of NPEs to extract economic rents relies to a great extent on their ability to hide their ownership of patents and current regulations provide them with many opportunities to do so.⁵⁰ For example, based on a thorough analysis of the activities of Intellectual Ventures – often described as an NPE by legal commentators – Ewing and Feldman describe a case in which Intellectual Ventures recorded a change of patent ownership only 2,506 days after the date that the agreement had been executed. This effectively means that Intellectual Ventures could not be identified as the owner of a patent that had been assigned to it for a period of almost seven years.⁵¹ Although this case may seem extreme, in a detailed description of assignments recorded with the USPTO, Marco and contributors show that relatively long time lags between the execution and recording of patent ownership changes are certainly not an exception.⁵² They note that while a timely recording with the USPTO should, in principle, occur at the latest three months after the date of execution, the average time lag between execution and recording amounts to 182 days and is increasing since 2005.

Although these findings strongly suggest that not all assignments are recorded in a timely fashion, they are likely to capture only a share of the lack of transparency of patent ownership in technology markets. To the extent that current patent

⁴⁶ FTC (2011), pp 129–131.

⁴⁷ Sterzi (2021), p. 979; Menell and Meurer (2013), p. 15; Anderson (2015), p. 395.

⁴⁸ Morton and Shapiro (2013), p. 464.; Feldman and Lemley (2018), p. 1794; Chien (2009), p. 1575.

⁴⁹ Sterzi et al. (2021), p. 5; FTC (2016); Yeh (2013); Shapiro (2000), p. 120; Bessen JE (2003) Patent thickets: Strategic patenting of complex technologies <https://ssrn.com/abstract=327760>, p. 1.

⁵⁰ Ewing and Feldman (2012), p. 37. For instance, Kappos explains that some assignees “registering the patents or listing as the assignees, essentially fictitious or shell companies, typically with fanciful names” make it “as difficult as possible [...] to trace back to the true assignee of the patent” [...] “so, you don’t know who you need to go to in order to find out if you need to get a license and under what terms you can get one” (FTC hearing 19/03/2009 https://www.ftc.gov/sites/default/files/documents/public_events/evolving-ip-marketplace/090319transcript.pdf, p. 265).

⁵¹ It should be noted that not recording ownership changes is not the only practice identified by Ewing and Feldman that has allowed Intellectual Ventures to hide its ownership of patents. They have also identified “more than a thousand shell companies that Intellectual Ventures has used to conduct its intellectual property acquisitions” and note that “it has taken considerable effort to identify these” (Ewing and Feldman (2012), p. 3).

⁵² Marco et al. (2015).

provisions are indeed ineffective for monitoring ownership changes and provide opportunities for entities that want to hide their ownership, these entities might opt not to report an ownership change at all.⁵³ In other words, the total number of patent ownership changes may be unobservable and the ownership changes that can be observed may have different characteristics than the ones that are hidden. The notion that ownership changes may be reported relatively late after their execution date or may not be reported at all implies that the likelihood of identifying the actual owners of a patent is considerably lower if the ownership of this patent has been changed during its lifetime.⁵⁴ Given that patent authorities are the ones responsible for regulating and monitoring the registration of patent ownership changes, this observation warrants a thorough examination of their legal provisions concerning the registration of patent ownership changes and the enforcement thereof. Therefore, in the two subsequent Sections we present a legal comparative analysis of the requirements that six patent authorities impose concerning the disclosure and recording of information on initial patent applicants and owners (Sect. 4) and patent ownership changes (Sect. 5).

4 The Establishment of Initial Applicants

4.1 Determining the Identity of the Initial Patent Applicants

In the previous Section we highlighted the importance of high level of transparency of patent ownership to ensure an efficient functioning of the patent system and markets for technologies. In this Section we review whether the information that the studied patent offices request applicants to provide is sufficient for them to be

⁵³ The USPTO itself acknowledges this issue, by courtesy of the following disclaimer on the website of its online repository of assignment documents: “When the USPTO receives relevant information for its assignment database, the USPTO puts the information in the public record and does not verify the validity of the information. Recording is a ministerial function – the USPTO neither makes a determination of the legality of the transaction nor the right of the submitting party to take the action”. See <http://assignment.uspto.gov>.

⁵⁴ Multiple patent experts and scholars, including the ones cited in this paper, have voiced this problem. In particular, the lack of transparency of patent ownership was one of the core discussions in the framework of the FTC hearings on “The Evolving IP Marketplace” <https://www.ftc.gov/news-events/events-calendar/2009/03/evolving-ip-marketplace>, that resulted in the publication of FTC (2011) report. In particular, during the hearings commentators shared their observations on the current status of the transparency of patent ownership and related consequences. For example, Graham suggested that “patent reassignment data [...] is notoriously just not good” (FTC hearing 17/04/2009 https://www.ftc.gov/sites/default/files/default/files/documents/public_events/evolving-ip-marketplace/transcript-3.pdf, p. 236). Wagner highlighted that “people don’t file their assignments [...] there is no enforcement [...] they’re supposed to keep their assignment and keep the PTO up to date, but [...] the vast majority of people just don’t [do] it or it’s late” (*Ibid.*). McNelis stressed that “the assignments are not always in order [...] some companies like to play games with the assignments” (FTC hearing 5/5/2009 https://www.ftc.gov/sites/default/files/documents/public_events/evolving-ip-marketplace/090505transcript.pdf, p. 27). Rai claims that “you’re supposed to report that information if you assign the patent, but that doesn’t happen very often” (FTC hearing 19/03/2009 https://www.ftc.gov/sites/default/files/documents/public_events/evolving-ip-marketplace/090319transcript.pdf, p. 263). For the summary of the discussed matters see FTC (2011), pp 129–131.

identified by interested parties. There are two main occasions in which applicants are asked to provide information about themselves, namely the accordance of the filing date (Sect. 4.1.1) and the initiation of a formal examination of a patent application (Sect. 4.1.2).

4.1.1 Information Requirements to Accord a Filing Date

A review of the procedures to accord a filing date reveals that in all six patent offices applicants do not have to provide detailed information about their identity at the initial patent application stage. In essence, applicants are requested to provide the necessary information that allows for them to be contacted. The very limited amount of information (e.g. an email address) may suffice to initiate the patent application process.

In particular, the EPO explicitly requests to provide the “information identifying the applicant or allowing the applicant to be contacted”⁵⁵ and specifies that “any kind of information which allows the applicant to be contacted will be considered to fulfill requirement”⁵⁶.

The similar amount of information is requested by the INPI⁵⁷ and the UK IPO.⁵⁸ The UK IPO carefully specifies in its Formalities Manual which parts of the provided form “Request for grant of a patent” (Form 1)⁵⁹ need to be filled in to provide sufficient information to “identify the person applying for a patent” and “enable that person to be contacted by the patent office”.^{60,61} In practice, however, the UK IPO may accord a filing date even if not all the aforementioned requirements are fulfilled at the time of filing.⁶² The DPMA also prescribes to provide the name of the applicant and file a request for the grant of a patent, in which additional information about the identity of a patent applicant must be provided.⁶³

Whereas no specific requirement to provide information regarding the identity of a patent applicant to accord a filing date is advanced by the USPTO, it is indicated in the regulations that “when filing an application, a correspondence address must

⁵⁵ Rule 40(1)(b) Implementing Regulations to the Convention on the Grant of European Patents (EPC Regulations).

⁵⁶ Guidelines for Examination in the European Patent Office, A-II, 4.1.2 (EPO Guidelines for Examination). Moreover, in case there are multiple applicants, it will be considered sufficient if information concerning only one of the applicants is provided.

⁵⁷ L612-2 French Intellectual Property Code (CPI); Pollaud-Dulian (2011), p. 242.

⁵⁸ Sec. 15(1) United Kingdom Patents Act (UK PA); Torremans (2008), p. 48.

⁵⁹ Patents Form 1 “Request for grant of a patent” https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/976929/PF1.pdf.

⁶⁰ Sec. 15(1)(b) UK PA.

⁶¹ See UK IPO Formalities Manual, 2.05 for the scope of information which is considered sufficient. Sec. 4 Act on Patent Procedures before the German Patent and Trade Mark Office (PatV).

⁶² The UK IPO Manual of Patent Practice, Secs. 15.02 and 15.03. Moreover, if the application is submitted without a name and address of an applicant or an agent but a contact phone number, e-mail address or other contact details were indicated, the UK IPO will try to contact the applicant in order to grant a filing date (UK IPO Formalities Manual, 2.06).

⁶³ Sec. 35(1) German Patent Law (PatG); Haedicke and Timmann (2014), pp. 464, 476.

be set forth in either an application data sheet, or elsewhere, in a clearly identifiable manner, in any paper submitted with an application filing”.⁶⁴ If the applicant does not provide a correspondence address, the USPTO “may treat the mailing address of the first named inventor as the correspondence address”.⁶⁵

4.1.2 Information Requirements to Initiate the Formal Examination of Patent Applications

At the stage of formal examination patent examiners require more detailed information about the identity of applicants. Generally, the document that applicants need to provide to examiners is referred to as a request⁶⁶ or an application data sheet, the term used by the USPTO.⁶⁷ An important part of the content of the request/ data sheet is the identification of an applicant.⁶⁸

The EPO, JPO, INPI, DPMA and UK IPO provide clear instructions concerning the information about the identity of an applicant that has to be provided in the request. These offices provide applicants with a special “request form” that they need to fill in, in order to facilitate the application process and make sure that the information provided by every applicant is similar.⁶⁹ This request form has to be sent regardless of whether the application is initiated by an inventor herself or not.⁷⁰ Generally, patent applicants need to provide their names, addresses and nationality, residence or principle place of business.⁷¹ When it comes to the identity of an applicant, nearly all patent offices distinguish between information that a natural person and a legal person need to provide.⁷² Ultimately, at the stage of formal examination every patent office under study requests to provide sufficient detailed

⁶⁴ Art. 1.33(a) United States Code of Federal Regulations Title 37 (37 C.F.R. 1.33(a)).

⁶⁵ *Ibid.*

⁶⁶ Art. 78(1)(a) EPC; Rule 57(b) EPC Regulations; Art. 36(1) Japanese Patent Act (JPA); R612-3 CPI; Sec. 34(3) PatG; Sec. 14(2) UK PA. The components of the request may vary depending on the patent office (Art. 4(1) Patent Cooperation Treaty (PCT); Art. 4 Regulations under the Patent Cooperation Treaty (PCT Regulations); Rule 41(1) EPC Regulations; 37 C.F.R. 1.76; Art. 36(1) JPA; R612-10 CPI; Sec. 4 PatV; Sec. 12(1) UK Patent Regulations (UK PRs)). See also Haedicke and Timmann (2014), p. 372, 468; Doi (2007), p. 105; Kawaguchi (2007), p. 173; Pollaud-Dulian (2011), p. 246.

⁶⁷ The similarity in the requirements in different patent offices can again be explained by the fact that the Patent Law Treaty 2000 (PLT) harmonized the maximum number of formal requirements by making a reference to the ones applicable to the international applications under the PCT (Art. 6(1) PLT). The logic cannot be applicable to Germany since they signed but did not ratify the PLT but it is visible that the DPMA was still influenced by the PCT standard.

⁶⁸ Rule 41(2)EPC Regulations; 37 C.F.R. 1.76; Art. 36(1) JPA; R612-10 CPI; Sec. 4 PatV; Sec. 12(1) UK PRs.

⁶⁹ EPO Request for grant of a European patent Form 1001; INPI *La requête en délivrance*; DPMA *Antrag auf Erteilung eines Patents*; UK IPO Request for grant of a patent Form 1.

⁷⁰ Contrary to the USPTO, see the following paragraph.

⁷¹ Rule 41(2)(c) EPC Regulations; Art. 36(1) JPA; R612-10(4) CPI; Sec. 4 PatV; Sec. 12(1) UK PRs.

⁷² Natural persons must indicate their family name and a given name, whereas legal persons must indicate their full official designations. The address must include all the relevant administrative units, including the house number, and postal code. The EPO additionally asks for the correspondence address. The applicants are also asked to provide their phone number, email and fax. Rule 41(2)(c) EPC Regulations; Sec. 4 (1)(a) PatV. See also the request forms.

information that allows to identify and contact the initial patent applicant. Moreover, most patent offices require to disclose information concerning the representatives/agents of the initial applicant as well.⁷³

The procedure differs, however, at the USPTO, since the office makes a distinction, on the one hand, between the type of application filed (provisional or nonprovisional) and, on the other hand, whether the application is made by the inventor herself or by a successor. In particular, the application data sheet⁷⁴ should be provided when an application is filed by the person other than an inventor, regardless of whether it is a provisional or nonprovisional application, and contains information about the applicant.⁷⁵ However, if a nonprovisional application is submitted by an inventor, it suffices to only file an inventor's oath or declaration, which focuses on disclosing the name and contact details of the inventor.⁷⁶ For a provisional patent application, instead of the inventor's oath or declaration, the applicant is obliged to include a cover sheet⁷⁷ or a cover letter which specifies that the application is a provisional application.⁷⁸ If those documents are not provided, the application will be treated as a nonprovisional one.⁷⁹ Both documents require to identify an inventor.

4.2 The Failure to Establish Initial Patent Applicants

In case there are any deficiencies in the submitted documents, either during the preliminary examination to accord a filing date or during the examination of formal requirements, patent applicants are generally allowed to correct these deficiencies within a specified time frame.⁸⁰ The accordance of a filing date is considered as the first step of the examination process, and, therefore, patent offices will not proceed with the examination before a filing date is accorded. For instance, the EPO will notify a patent applicant about the need to provide the required information in case some information is missing and request the patent applicant to provide this information within two months.⁸¹ Identical procedures are established at the USPTO, the INPI, the UK IPO and the DPMA.⁸² However, the time period within

⁷³ For instance, identified request forms, Rule 41(2)(d) EPC Regulations.

⁷⁴ 37 C.F.R. 1.76.

⁷⁵ 37 C.F.R. 1.76(b). To facilitate the application process, the UPSTO provides an applicant with an application data sheet form <http://www.uspto.gov/sites/default/files/documents/aia0014.pdf>.

⁷⁶ 35 U.S.C. 111(a)(2)(c); 35 U.S.C. 115; 37 C.F.R. 1.63.

⁷⁷ 37 C.F.R. 1.51(c). Similar to an application data sheet the USPTO provides a cover sheet form <https://www.uspto.gov/sites/default/files/documents/sb0016.pdf>.

⁷⁸ 37 C.F.R. 1.53(c)(1).

⁷⁹ *Ibid.*

⁸⁰ 37 C.F.R. 1.53(b); 37 C.F.R. 1.53(c); Art. 90 (4) EPC; Rules 55, 58 EPC Regulations; R612-8, R612-45 CPI; Secs. 35 (2)(3), 42 PatG; Secs. 15(3), 15A(6) UK PA; Secs. 12(2)(3)(9), 18 UK PRs; WIPO (2004), p. 25.

⁸¹ Art. 90(4) EPC; Rule 55 EPC Regulations.

⁸² 37 C.F.R. 1.53(e)(1); 37 C.F.R. 1.181(f); R612-8 CPI; Sec. 35(2)(3) PatG; Sec. 15(3) UK PA; Haedicke and Timmann (2014), pp. 404, 476; Pollaud-Dulian (2011), p. 242. The JPO does not have a separate procedure of establishing a filing date.

which an applicant needs to provide required information varies, ranging from one to two months.⁸³ Unless the necessary documents are provided within this time period, the patent application will be withdrawn.⁸⁴

It is noteworthy that, despite the existing mechanism of correcting deficiencies, the issue of the identification of an applicant is unlikely to be subject of the correction at this stage of the examination process. In particular, as aforementioned, the USPTO does not even denote the document identifying an applicant as one that needs to be filed to accord a filing date. The EPO specifically excludes the failure to provide information identifying the applicant or allowing the applicant to be contacted from the ones that are subject to notification.⁸⁵ Similar to the EPO, the DPMA only refers to missing parts in the description and drawings.⁸⁶ Arguably the lack of attention to the identification of an applicant can be explained by the fact that in case the basic contact information is not provided then it is evident that it is not possible to continue the examination since no information can be transmitted to the patent applicant by the patent office. Thus, it is in the interest of the applicant to provide sufficient information enabling her to be contacted.

Complete information is requested at the latter stage of examination. In particular, in order to successfully complete the formal examination of a patent application, a patent applicant has to satisfy all patent application requirements. If some requirements are missing or incomplete, patent offices generally notify applicants and give them the opportunity to correct the defects within specified time limits.⁸⁷ In particular, the EPO and the UK IPO request applicants to correct any deficiencies within the time limit of two months.⁸⁸ The non-compliance with the request will lead to a refusal of the application.⁸⁹ Since the identification of a patent applicant is part of the patent application requirements, the non-sufficient communication of this information may lead to such refusal. Thus, applicants are incentivized to timely submit the required information to avoid these negative consequences. This strict approach ensures that patent offices collect sufficient information about patent applicants.

⁸³ 37 C.F.R. 1.53(e)(1); R612-8 CPI; Sec. 35(2)(3) PatG; Sec.12(3,9) UK PRs.

⁸⁴ Art. 90(2) EPC; 37 C.F.R. 1.53(e)(3); R612-8 CPI; Sec. 12(3) UK PRs.

⁸⁵ Rule 55 EPC Regulations.

⁸⁶ Sec. 35(2)(3) PatG.

⁸⁷ Art. 90(5) EPC; Sec. 45(1) PatG; Secs. 15A, 12(2) UK PA (the UK IPO specifically focuses on the identification of a patent applicant); 37 C.F.R. 1.53(f)(1); 37 C.F.R. 1.53(g)(1); Haedicke and Timmann (2014), p. 373, 469.

⁸⁸ Rule 58 EPC Regulations; Art. 90(3)(4)(5) EPC; Sec. 12(3) UK PA. The USPTO indicates that the applicant will be given a period of time, but the exact time is not specified in the provisions. The PatG also relying on the same wording, *see* Sec. 45(1) PatG. However, according to Sec.18(1) of the Act on the German Patent and Trade Mark Office (DPMAV), the time limit of at least one month is to be provided.

⁸⁹ Art. 90(5) EPC; 37 C.F.R. 1.53(f)(1); 37 C.F.R. 1.53(g)(1); L612-12 CPI; Sec. 48 PatG; Sec. 12(3) UK PA.

4.3 The Disclosure of the Identity of Initial Applications to the Public

Patent offices do not only collect information about the identity of patent applicants but also disclose it to the public. The disclosure takes place twice: at the date of the publication of the patent application (generally after 18 months from the filing date^{90,91}) and at the date of publication of the granted patent.⁹² The scope of the published documents generally equals to the amount of information which was provided to patent offices during the prior stages. Thus, the information with regard to the identity of patent applicants is made publicly available and can be found in the registers of patent offices.

After the successful completion of both the formal and substantive examinations, patent offices issue a patent to the initial patent applicant (unless the office has been notified about the transfer) and the mention of the grant is generally published in the official patent office gazette and the specifications are also published soon after.⁹³ Each patent office also maintains a register, in which specific matters have to be registered and maintained.⁹⁴ Registers contain information about patent owners (e.g. names, addresses, nationality or residence or place of business)⁹⁵ and representatives/agents, where applicable.⁹⁶ Consequently, the public can access all necessary information concerning the initial patent owners.

It can be concluded that all studied patent offices have similar legal provisions governing the identification of patent applicants. They provide patent applicants with clear requirements concerning the scope of information that needs to be provided in order to sufficiently identify themselves. Moreover, non-compliance with those requirements may lead to negative consequences, such as refusal of a patent. Such a strict remedy should presumably motivate applicants to provide the requested information to patent offices in due time. In our view, since patent offices may refuse to grant a patent unless a patent applicant sufficiently discloses her identity, it demonstrates they value this information and acknowledge its importance. In addition, they timely disclose the collected information to the public, acknowledging its relevance not only for patent offices but also for third parties.

⁹⁰ One may debate whether the term of 18 months may hinder transparency and negatively affect the freedom to operate and the general innovation process, especially in such fast-moving industries as ICT, where a high number of parallel R&D processes take place (Menell and Meurer (2013), p. 31).

⁹¹ Art. 93 EPC; Rule 68 EPC Regulations; 35 U.S.C. 122(b); 37 C.F.R. 1.211.; Art. 64 JPA; L612-21(1), R612-39 CPI; Secs. 32(1)(2), 31(2), PatG; Sec. 16 UK PA; Secs. 26(1), 44(1) UK PRs.

⁹² Rule 74 EPC Regulations; Arts. 97(3), 98 EPC; 35 U.S.C. 151-154; Arts. 28(1), 66(3) JPA; R612-71, L612-21, R612-74 CPI; Secs. 58(1), 32 PatG; Sec. 24 UK PA. It has to be noted that the registration of unitary patents at the EPO is foreseen in the separate part of the European Patent Register (Rule 16 I. 3 Draft Rules 1-24 relating to unitary patent protection, consolidated version 2014 (Draft Rules on UPP).

⁹³ Arts. 97(3) and 98 EPC; Art. 66(3) JPA; L612-21, R612-74, R612-75 CPI; Secs. 58(1), 32(1)(3) and 32(5) PatG; Sec. 24 UK PA; 35 U.S.C. 10(a)(1); 35 U.S.C. 154; 35 U.S.C. 10(a)(1); 37 C.F.R. 1.11(a).

⁹⁴ Rule 143 EPC Regulations; Art. 27(1)(ii) JPA; L612-21 CPI; Sec. 30(1) PatG; Sec. 44(4) UK PRs. All patent offices provide electronic access to those registers.

⁹⁵ Rule 143(1)(c) EPC Regulations; Art. 66(3)(i) JPA; Sec. 30(1) PatG; Sec. 44(4)(b) UK PRs.

⁹⁶ Rule 143(1)(h) EPC Regulations; Sec. 30(1) PatG.

5 The Recording of Patent Ownership Changes

We contend that in order to establish transparency of patent ownership it is insufficient to ensure that the information concerning initial applicants and owners is efficiently collected and disclosed to the public, given that patent applications and granted patents are often subject to ownership changes that are initiated by transactions (e.g. assignments), operations of law (successions, insolvency proceedings) or court decisions. Unless the changes of applicants during the pre-grant stage or of owners during the post-grant stage are notified to the patent office in question, the information concerning the “current” patent owner that is available to the public will be incorrect. It is therefore important to examine whether and to what extent the patent offices under study employ mechanisms that (i) allow initial or subsequent patent applicants or owners to notify them about ownership changes;⁹⁷ (ii) foresee effective remedies stimulating patent applicants or owners to request the recording of the changes; and (iii) monitor ownership information and transmit ownership changes to the public in a timely fashion.

5.1 The System for Recording Changes of Patent Applicants and Owners

The possibility to record a change of applicant or owner is implemented in all studied patent offices.⁹⁸ However, the requirements concerning the recording do vary across jurisdictions. Specifically, differences can be observed with respect to the following aspects: (i) forms and documentation required; (ii) parties that can file the request; (iii) timing of recording; and (iv) fees associated with the recording.

5.1.1 Forms and Required Documentation

All patent offices under study advance that in order to register the change of ownership the request for such recording has to be filed.⁹⁹ To simplify the process, the EPO, the USPTO, the INPI, the DPMA, and the UK IPO provide a specific

⁹⁷ We only focus on the changes of ownership that occur during the prosecution of an application and after the grant, leaving aside issues pertaining to the assignment of rights to apply for a patent from an inventor to a third person. Moreover, we focus only on transfers of rights initiated by transactions, in particular transfers of ownership that are part of an assignment agreement, leaving aside transfers of ownership rights initiated by operation of law or court decisions.

⁹⁸ Rules 22, 85 EPC Regulations; 35 U.S.C. 261; 37 C.F.R. 3.11(a); Art. 27(1)(i) JPA; L613-9, L613-55 CPI; Sec. 30(3) PatG; Secs. 30, 32(2)(b) UK PA. Singer and Stauder (2003), p. 262; USPTO, Manual of Patent Examining Procedure (MPEP), 301; Doi (2007), p. 113; Birss et al. (2006), pp. 10–12. The need for this mechanism is also acknowledged in the PLT (Rule 16 Regulations under the Patent Law Treaty (PLT Regulations)). The PLT does not suggest that the recording should be obligatory; it only indicates that the recording of such changes should be possible.

⁹⁹ Rule 22(1) EPC Regulations; 37 C.F.R. 3.28; <https://www.jpo.go.jp/faq/yokuaru/procedures.html#anchor2-4>; R613-55 CPI; Sec. 28 DPMAV; Sec. 47(1) UK PRs. The similarities in the format can again be partly explained by the fact that PLT Regulations harmonized the procedure for the Member States, see Rule 16(1)(a) PLT Regulations.

application form¹⁰⁰ that needs to be submitted. Patent offices may also request to provide additional evidence documents, e.g. any document proving the change of ownership (for instance, an assignment agreement or a declaration signed by the parties).¹⁰¹ For example, the USPTO establishes that in order to record a change of ownership the “document” has to be submitted to the patent office.¹⁰² However, the exact content of the document is not specified. Presumably, the submission of an assignment agreement is intended, however, there is no straightforward obligation to submit the agreement itself.¹⁰³ Thus, in principle the submission may relate to any document suggesting that a transaction took place.¹⁰⁴ The EPO is also rather flexible about the content of the evidence document.¹⁰⁵ The JPO, however, has a stricter policy and requests the parties to submit the original assignment document or its notarized copy.¹⁰⁶

¹⁰⁰ The EPO form “Request for registration in the European Patent Register of the transfer of one or more European patent applications/patents (Rules 22 and 85 EPC Regulations)”; the USPTO “Recordation form cover sheet”; the INPI form “Demand d’inscription au register national d’un acte affectant la propriété ou la jouissance d’un depot”; the UK IPO Form 21; the DPMA “Antrag auf Eintragung” (Sec. 28(2) DPM AV).

¹⁰¹ Rule 22(1) EPC Regulations; European Patent Guide, 5.11.004; R613-56 CPI; Sec. 28(3)(2) DPM AV; Sec. 47(2) UK PRs.

¹⁰² 37 C.F.R. 3.28.

¹⁰³ “The rules permit submission of true copies of assignment-related documents; original documents are not required nor desired, as they will not be returned.” (https://www.uspto.gov/learning-and-resources/transferring-ownership-assignments-faqs#type-browse-faqs_160518). It is also surprising that the content of submitted documents is not verified by the USPTO, the office only relies on the data provided in the cover sheet to register the transfer (https://www.uspto.gov/learning-and-resources/transferring-ownership-assignments-faqs#type-browse-faqs_160524).

¹⁰⁴ It must be noted that if the standing of the plaintiff (or defendant, depending on the circumstances) is questioned by the opposite party during the court proceedings, based on the assumptions that the plaintiff does not own a patent, the court will verify the rights possessed by the plaintiff. In *Gaia Technologies Inc. v. Reconversion Technologies, Inc.*, 93 F. 3d 774 (Fed. Cir. 1996), the US Court of Appeals concluded that the appellant lacked standing based on the fact that she could not provide sufficient evidence demonstrating that she was an owner of a patent at stake. The appellant based her right on the minutes of the meeting of the shareholders. The evidence was not sufficient since “the relevant status requires an assignment of patents. . . to be in writing”. The judge based his analysis on the *Arachnid Inc. v. Merit Industries Inc.* 939 F. 2d 1574, 19 USPQ2d 1513 (Fed. Cir. 1991) where a similar problem was discussed. In *Arachnid Inc. v. Merit Industries Inc.*, Arachnid tried to claim her rights by providing a consulting agreement as an evidence document. The court has decided that a consulting agreement, was considered not sufficient, since it “was an agreement to assign, not an assignment” and it “does not rise to the level of a present assignment of an existing invention” (at 1580, 19 USPQ2d).

¹⁰⁵ The EPO, for instance, specifies that “any kind of written evidence suitable for proving the transfer is admissible. This includes formal documentary proof such as the instrument of transfer itself (the original or a copy thereof) or other official documents or extracts from them, provided that they immediately verify the transfer.” (European Patent Guide, 5.11.004).

¹⁰⁶ <https://www.jpo.go.jp/e/faq/yokuaru/procedures.html#anchor2-4>.

Those evidence documents are either an obligatory part of a recording, as in case for the EPO,¹⁰⁷ the JPO and the UK IPO,¹⁰⁸ or may be requested in particular situations. For instance, the DPMA does not require to provide any evidence documents if the request is signed by both an initial patent applicant/owner and a subsequent applicant/owner or their representatives.¹⁰⁹ However, if the request is signed only by a subsequent applicant/owner, she needs to either attach a declaration signed by the registered applicant/owner or provide other evidence documents, such as an assignment agreement, proving that the assignment took place.¹¹⁰

For the simplification of the process of recording, the USPTO developed an online system for recording assignments – the Electronic Patent Assignment System (EPAS).¹¹¹ To the best of our knowledge, such a system currently only exists at the USPTO.

5.1.2 The Right to Apply for the Recording

The USPTO does not explicitly specify who has the right to apply for the recording of ownership changes. It seems that any party could file a cover sheet, for instance, through the EPAS. Based on the provided information the change of ownership will be recorded. It is even more surprising that the provided information is not verified by the USPTO which is explicitly mentioned on the EPAS web page.¹¹² In our view, such a practice can lead to inconsistencies and incorrect recordings, considering that a person applying for the recording may not be obliged to provide any evidence documents.

The EPO allows “any interested party” to request a recording.¹¹³ However, in comparison to the USPTO, the EPO does oblige such a party to provide evidence documents with every application, as explained in the previous sub-section. The other patent offices seem to be less flexible and specify that the recording has to be

¹⁰⁷ The EPO suggests that an interested party needs to provide “clear-cut evidence of a transfer” (Decision of the Legal Board of Appeal of 13 October 1998 (EPO J 26/95), point 2). In particular, the documents which “only created the obligation to assign rights” are not admissible since they “did not constitute the assignment itself” (Decision of Technical Board of Appeal 3.3.02 of 26 April 2012 (EPO T 1751/07), point 2). For example, in the Decision of the Legal Board of Appeal 3.1.1 of 24 January 2002 (EPO J 0012/00), it has been decided that the provided Employee Confidentiality and Inventions Agreement and the Proprietary Information and Inventions Agreement were not admissible since “they both not equivalent to an assignment agreement” (point 7) and “they did not show clearly that an assignment [...] had really been carried out” (point V). The EPO Legal Board of Appeal has also established that it is sufficient to provide extracts from the assignment agreements as evidence and not a full agreement (Decision of the Legal Board of Appeal 3.1.01 of 15 June 2015 (EPO J 0016-14), point 2.2.2).

¹⁰⁸ Rule 22(1) EPC Regulations; Sec. 47 UK PRs.

¹⁰⁹ Sec. 28(3) DPMAV.

¹¹⁰ *Ibid.*

¹¹¹ <http://epas.uspto.gov>.

¹¹² <https://epas.uspto.gov>: “Assignment information provided by the user will be recorded as provided and will not be verified or modified by the USPTO.”

¹¹³ Rule 22 EPC Regulations.

requested at least by one of the parties to an assignment (or on their behalf).¹¹⁴ If the recording is initiated by only one party, some patent offices may request to provide a written consent of the other party or an evidence of the assignment.¹¹⁵

5.1.3 The Timing of the Recording

The USPTO advises to record a change of ownership within three months from the date of an assignment to avoid potential negative consequences for the subsequent applicant/owner.¹¹⁶ The UK IPO provides a time frame of six months.¹¹⁷ However, in general, the change of an applicant or an owner in all patent offices under study, apart from the EPO, can be registered at any time during the lifecycle of a patent. A transfer is only acknowledged from the date when the office receives all the required documents and the fees are paid.¹¹⁸

A noteworthy observation in the European contexts is that the change of ownership of a European patent can only be recorded by the EPO during the opposition period or during opposition proceedings.¹¹⁹ The registration of transfers made afterwards falls within the responsibility of national patent offices.¹²⁰ It must be noted that, overall, Rule 22 of the EPC Regulations governs both a change of ownership in European patents and unitary patents¹²¹ and the procedure of recording a change of ownership does not differ. However, when it comes to the timing of recording, it can be presumed that the EPO will record changes of ownership of unitary patents throughout their lifecycle since the EPO is under obligation to administer the Register for unitary patent protection.¹²² Moreover, a unitary patent could only be transferred for all participating Member States simultaneously,¹²³ which, in comparison to the current European patent, significantly simplifies the search of actual owners since owners of unitary patents cannot differ depending on the territory.

¹¹⁴ <https://www.jpo.go.jp/e/faq/yokuaru/procedures.html#anchor2-4>; R613-55 CPI; Sec. 28(3) DPMVA; 32.09 Manual of Patent Practice.

¹¹⁵ <https://www.jpo.go.jp/e/faq/yokuaru/procedures.html#anchor2-4>; Sec. 28(3) DPMVA.

¹¹⁶ 35 U.S.C. 261.

¹¹⁷ Sec. 33(1) UK PA. *See* more on negative consequences in Sect. 5.2.

¹¹⁸ For instance, the Decision of the Technical Board of Appeal 3.4.01 of December 2010 (EPO T 0128/10): “These requirements [to record the transfer] do not need to be fulfilled at the same time. If they are met on different dates, the transfer shall only have effect vis-à-vis the EPO at the date on which all the requirements mentioned above are fulfilled”, point 3.5.

¹¹⁹ Rule 85 EPC Regulations.

¹²⁰ National law relating to the EPC, IX.

¹²¹ The start of the unitary patent system is “currently expected for the second half of 2022”, EPO website <https://www.epo.org/law-practice/unitary/unitary-patent/start.html> (accessed on 31/01/2022).

¹²² Art. 9(1)(b) Regulation (EU) No 1257/2012 of the European Parliament and of the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection (UPR).

¹²³ Art. 3(2) UPR.

5.1.4 Fees

Only the USPTO and the DPMA do not impose the payment of any fees in order to record a change of applicant/owner.¹²⁴ However, recording with the USPTO is only free-of-charge when the request is submitted through an online assignment system. If the request is not submitted electronically, the fee amounts to USD 40.00.¹²⁵ The EPO requires the payment of EUR 105.00;¹²⁶ the INPI requires EUR 27.00 per recording but limits the maximal payment to EUR 270.00 if multiple recordings are requested;¹²⁷ the UK IPO requires GBP 50.00;¹²⁸ the JPO requires JPY 4,200.00 (around EUR 32.00) for a change of an applicant and JPY 15,000.00 (around EUR 115.00) for a change of an owner.¹²⁹

Overall, the fees for recording a single change of ownership with most patent offices are relatively low. However, considering that entire bundles of patents can change ownership at the same time and that patent protection is territorial in nature, the fees can add up to a significant amount quickly. Especially when an ownership change relates to inventions for which patent protection is sought in multiple jurisdictions, the fees associated with the recording of ownership changes might discourage parties to record such changes. In the European context, this problem may be partially mitigated by the unitary patent system since under this system the change of ownership is to be recorded for all participating Member States simultaneously.¹³⁰

5.2 The Failure to Record Changes of Patent Applicants and Owners

The USPTO specifies that a non-recorded assignment may be void “against any subsequent purchaser or mortgagee [...] unless it is recorded in the USPTO within three months from its date or prior to the date of such subsequent purchase or mortgage”.¹³¹ This means that a subsequent transaction will prevail over the previous and the former will lose the rights to the patent. Nevertheless, the remedy may not be effective when the assignment of rights is initiated by an operation of law (succession, insolvency), since the registered patent owner ceased to exist and there is no risk that a patent will be subsequently assigned. On the other hand, according to the EPO the rules regulating the recording of the change of ownership are not applicable in the context of universal succession in law (e.g. inheritance and

¹²⁴ 37 C.F.R. 3.41; Information of Costs, Fees and Expenses (A9510.1) of the German Patent and Trade Mark Office and of the Federal Patent Court 2014 do not specify any fees.

¹²⁵ 37 C.F.R. 3.41; 37 CFR 1.21.

¹²⁶ Fee code 022 <https://my.epoline.org/epoline-portal/classic/epoline.Scheduleoffees?language=en>.

¹²⁷ Law of 24 April 2008 relating to procedural fees collected by the National Institute of Industrial Property, Annex: Procedural fees.

¹²⁸ Rule 6 Schedule 1 PRs.

¹²⁹ <https://www.jpo.go.jp/e/system/process/tesuryo/hyou.html>.

¹³⁰ Art. 3(2) UPR.

¹³¹ 35 U.S.C. 261; AIPPI US (2006) Q190 Contracts regarding Intellectual Property rights (assignments and licenses) and third parties, p. 2.

merger).¹³² Thus, the universal succession may in general be treated as an exceptional case and may not be a good example to question effectiveness of established remedies. The effectiveness of the remedy established by the USPTO can also be questioned when there is a close relationship between an assignee and an assignor and/or a high level of trust is established between the two. Under these circumstances it is unlikely that any subsequent purchase will occur and, therefore, a non-registered subsequent owner will not bear any negative consequences of not recording the change of ownership. Since in the U.S.C. a remedy of non-enforceability is not foreseen, it can be assumed that the non-recording of a change of ownership cannot prevent the subsequent owner from defending her rights in court.¹³³ However, the opposite party can in principle question the ownership status that will be subsequently verified by the court.¹³⁴

A “USPTO-type remedy” is also established by the UK IPO¹³⁵ which in addition indicates that if the recording is not done within six months from the transaction, the court or comptroller shall not award the actual owner costs or expenses.¹³⁶ The latter financial disadvantage of non-recording the change of patent ownership is, thus, only exercised in case of a dispute or litigation.

The INPI and the DPMA induce a broader effect of non-recording a change of applicant or owner: non-enforceability of patent rights against third parties until the recording is made.¹³⁷ This effectively means that the registered owner remains subject to rights and obligations, including the enforceability of patent rights, until the change of ownership is recorded. As aforementioned, most patent offices do not impose a strict time limit for the recording and subsequent patent owners may potentially record the change at any time, for instance, prior to initiating a lawsuit.

Despite the fact that the EPC does not specify any remedy for the non-recording of a change of applicant or owner, the EPO case law reveals that the patent office

¹³² Decision of Technical Board of Appeal 3.3.04 of 17 June 2004 (T 15/01), point 11. In this case, the Technical Board of Appeal concluded that “when an applicant or patentee ceases to exist, his universal successor in law [in this case the subject was a merger] immediately and automatically acquires the party status in proceedings pending before the EPO”. In addition, the EPO established that the “change of name does not alter the identity of the legal person” (Decision of the Legal Board of Appeal 3.1.01 of 27 July 2006 (EPO J 0016/05 3.1.01), 12).

¹³³ In *Gaia Technologies Inc. v. Reconversion Technologies, Inc.* it is stated that “the recording of an assignment is necessary only to protect the assignee from subsequent bona fide purchasers without notice”.

¹³⁴ In *Gaia Technologies Inc. v. Reconversion Technologies, Inc.* the appellant could not prove she was the owner of a patent, since she could not provide sufficient evidence documents and, thus, lacked standing. However, if the appellant proved she was a legitimate owner of a patent by providing sufficient evidence (an assignment agreement), she would be allowed to defend her rights in court and the proceedings would continue. It must be noted that in general the U.S.C. does not connect the enforceability of patent rights and the need to record change of ownership. The proof of rights, when questioned during the court proceedings, is sufficient to have standing.

¹³⁵ Sec. 33(1) UK PA; AIPPI UK (2006) Q190 Contracts regarding Intellectual Property rights (assignments and licenses) and third parties, p. 1.

¹³⁶ Sec. 68 UK PA; AIPPI UK, *supra* note 127, p. 1; Birss et al. (2006), pp. 10–21.

¹³⁷ Sec. 30(3) PatG; R613-55 CPI; AIPPI Germany (2006) Q190 Contracts regarding Intellectual Property rights (assignments and licenses) and third parties, p. 4; AIPPI France (2006) Q190 Contracts regarding Intellectual Property rights (assignments and licenses) and third parties, p. 2.

follows the similar logic as the INPI and the DPMA. In particular, the non-recorded subsequent patent owner cannot defend its rights during proceedings at the EPO and the registered owner will be considered the legitimate party.¹³⁸ Moreover, the recording of a change of ownership needs to be completed before the expiry of the period for filing the notice of appeal if the subsequent owner decides to appeal the EPO decisions; otherwise, the appeal filed by the non-recorded subsequent owner will be inadmissible.¹³⁹

The stronger enforcement mechanism is arguably established by the JPO. The JPO goes beyond the non-enforceability against third-party effects and provides that an assignment needs to be recorded with the patent office for it to take effect between the contracting parties (succession in law excluded).¹⁴⁰ However, the JPO does not specify the time limit for such recording. In any case, if in practice the contractual obligation between contracting parties does not take effect unless it is recorded, a subsequent patent owner may be more motivated to record an assignment to ensure that the transaction is legitimate. In other patent offices under study the legitimacy of the contractual transaction is not directly conditioned on the registration of the change of ownership. However, it is unclear whether this stronger remedy is strictly enforced. If the parties may register the transaction at any moment (e.g. prior to initiating a lawsuit) without any negative consequences, this remedy in practice would not be stronger than the one established by the USPTO. The only risk a subsequent patent owner undertakes is that the registered owner may assign the patent to another party in the meantime and the previous transaction would not be valid since it was unregistered.

Overall, it can be concluded that the potential repercussions for not recording a change of applicant or owner are generally not very strict, especially not when it comes to the EPO, the INPI, and the DPMA where no time limits for the recording are imposed and the repercussions of non-enforceability can be easily avoided. Similarly, the “subsequent purchaser” remedy may not be effective, for instance, when there is a low level of risk that the registered owner will reassign a patent (e.g. when there is high level of trust between the parties). Given that the repercussions are not severe, parties may not be motivated to record a change of ownership when it is executed but only record it when it is absolutely necessary, for instance, in order

¹³⁸ Decision of the Enlarged Board of Appeal of 25 May 2005 (EPO G 0002/04); Interlocutory Decision of the Technical Board of Appeal 3.3.03 of 24 November 2005 (EPO T 0261/03): “A first condition to be met is that the competent organ of the EPO before which the opposition proceedings are pending be informed about the transfer of the relevant business. It follows from the established case law of the EPO that without such a notification the transferor of the business remains opponent and the transferee does not acquire opponent status”, point 3.2.; Decision of the Technical Board of Appeal 3.4.01 of 10 December 2010 (EPO T 0128/10-3.4.01), point 2.2; Decision of the Technical Board of Appeal 3.4.01 of 1 December 2011 (EPO T 0960/08.4.01), point 2.2.

¹³⁹ In particular, it is stated that “for a transferee of a patent to be entitled to appeal, the necessary documents establishing the transfer, the transfer application and the transfer fee pursuant the Rule 20 EPC [currently Rule 22] must be filed before the expiry of the period for appeal under EPC 108 EPC [within 2 months]. Later recordal of the transfer does not retroactively validate the appeal” (Decision of the Technical Board of Appeal 3.3.4 of 18 May 2001 (EPO T 656/98), headnote; *see also* Decision of the Technical Board of Appeal 3.4.01 of 10 December 2010 (EPO T 0128/10 3.4.01), point 3.8).

¹⁴⁰ Arts. 34(4), 98 JPA; AIPPI Japan (2006) Q190 Contracts regarding Intellectual Property rights (assignments and licenses) and third parties, p. 1; Doi (2007), p. 120.

to enforce a patent. Thus, the requirement to record ownership changes may not be viewed as an obligation but more as a right, which can be exercised only when it is directly beneficial for subsequent patent owners. Moreover, in case of USPTO and UK IPO patents, the right to enforce a patent by the subsequent owner does not depend on the prior recording. The subsequent owner of a UK IPO patent in case of non-recording within six months from the assignment, however, risks losing costs and expenses awarded during the litigation. In our view, this potential financial disadvantage may incentivize a subsequent owner to record a change of ownership.

5.3 The Disclosure of Changes of Patent Ownership to the Public

Another important aspect to consider is whether patent offices transmit the acquired information related to the change of ownership to the public. As aforementioned, all patent offices under study maintain a register of interests in patents.¹⁴¹ The changes of ownership are entered to the registers of all patent offices under study. The UK IPO specifies that the change “must be entered in the register as soon as practicable after it occurs.”¹⁴² No other patent office provides any reference to the timing of entrance of the collected information to the register.

It can be concluded that, on the positive side, all studied patent offices installed a system allowing initial patent owners and/or their successors to record a change of ownership. However, the system has a lot of limitations. The major drawback, in our view, is that there is frequently no time pressure to register the change of ownership which indirectly allows the parties to do it when it is absolutely necessary. Moreover, not every patent office imposes a party, requesting a change of ownership to be recorded, to provide evidence documents, which may lead to errors.¹⁴³ In addition, there is a risk that some patent offices accept low quality evidence documents, such as employment agreements instead of assignment agreements, which constitute an obligation to assign the rights but do not prove that an assignment took place.¹⁴⁴

¹⁴¹ 35 U.S.C. 261; Rule 143(w) EPC Regulations; Art. 27(1)(i) JPA; R613-53 CPI; Sec. 30(3) PatG; Sec. 44(6) UK PRs.

¹⁴² Sec. 44(6) UK PRs.

¹⁴³ For instance, in *Gaia Technologies Inc. v. Reconversion Technologies, Inc.*, the appellant was registered as an owner in the UPSTO register. The UPSTO made a recording of a change without obtaining the copy of assignment. However, the judge concluded, when assessing whether the appellant (registered owner) had standing in the proceedings, that the appellant did not have standing since she could not provide a document confirming the ownership. Thus, the changes of ownership registered at the USPTO may contain errors.

¹⁴⁴ This assumption follows from the Decision of the Legal Board of Appeal 3.1.1 of 24 January 2002 (EPO J 0012/003.1.1), where the Board rejected to record the change of ownership based on the Employee Confidentiality and Inventions Agreement and the Notice of Record of Assignment Document provided by the appellant to prove her rights. The Board states that the documents “are both not equivalent to an assignment document” and that “these documents are only ... a basis for further assignment” (point 7). The appellant disagreed and referred to the Decision of the Australian Patent Office which found the assignment legitimate and recorded the change of ownership. Thus, it is evident that there is a difference between the quality of the examination of provided documents between patent offices.

Overall, the procedure of requesting a recording seems to be relatively easy: parties need to submit a request, in some cases evidence documents, and pay fees. This narrow scope of the requirements, in our view, is not demanding and can be complied with. This view is also supported by the EPO which claims that “the procedure is particular simple and easy to comply with”, “merely because the requirement is so simple to comply with, is no reason to ignore it”.¹⁴⁵ Unfortunately, the simplicity of the process clearly does not always encourage patent owners to record the change of ownership. On the contrary, it is at times perceived as an extra administration burden (especially when the recording needs to be done in multiple patent offices) and a waste of financial resources. The potential need to translate relevant documents into national languages may also complicate the procedure and increase associated costs. The engagement into incurring extra expenses is only justifiable for some owners when there is a clear need to be identified, such as enforcement of patent rights in case of the EPO, INPI, and DPMA patents. Not to mention that some owners strategically decide not to disclose their identity. This so-called “voluntarily” recording of change of ownership significantly downgrades the quality of registers maintained by patent offices. In essence, a third party cannot be certain that the registered owner is an actual owner and would be forced to search for other means of obtaining this important piece of information.

6 Legislative Initiatives to Improve the Transparency of Patent Ownership

In response to executive actions announced by the White House on 4 June 2013 to “help bring about greater transparency to the patent system and level the playing field for innovators”,¹⁴⁶ the USPTO published a Notice on “Proposed Changes to Require Identification of Attributable Owner” on 20 February 2014.¹⁴⁷ To the best of our knowledge, this Notice represents the only attempt directly aimed at making patent ownership information more readily available to the public that has been initiated in the jurisdictions that we study. Despite the fact that the EPO and the European Commission also acknowledge flaws in the recording of patent ownership changes,¹⁴⁸ the USPTO Notice is not met by equivalent initiatives.

6.1 The USPTO Notice

The USPTO Notice proposed several modifications that were to be introduced to 37 C.F.R. Part 1. To avoid lengthy descriptions of the text of the Notice, we would like to highlight several core changes that the Notice put forward.¹⁴⁹

¹⁴⁵ Decision of the Technical Board of Appeal 3.3.4 of 18 May 2001 (EPO T 656/98), point 3.4.

¹⁴⁶ <https://obamawhitehouse.archives.gov/the-press-office/2013/06/04/fact-sheet-white-house-task-force-high-tech-patent-issues>.

¹⁴⁷ *Supra* note 5.

¹⁴⁸ European Commission (2015), p. 57.

¹⁴⁹ For more elaborate overview of the Notice *see* Anderson (2015), p. 407.

Information to be provided – First, the USPTO proposed to disclose and track the change of “attributable owners”, which aimed at significantly expanding the scope of information on rightsholders. The USPTO suggested not only to disclose the identity of titleholders but also enforcement entities,¹⁵⁰ since the latter are “real-parties-in-interest”, having the right to enforce the patent.¹⁵¹ It also proposed to introduce other types of attributable owners, namely the “ultimate parent entity”¹⁵² and “hidden beneficial owners”¹⁵³ since these entities may also play an important role in having the complete picture of “who-owns-what”. In proposed 37 C.F.R. 1.271(f), the Notice specified the information that an entity needs to provide to the USPTO in order to sufficiently identify attributable owners. Depending on the type of entity (e.g. natural or legal person; type of legal entity) the Notice provided detailed explanations on which information was to be submitted.¹⁵⁴

Occasions in which information needs to be provided – There were in total six occasions listed in the Notice at which a patent applicant or owner was requested to provide information about the current attributable owners. Those six occasions can be grouped into two categories: (1) the identification of attributable owners in pending applications,¹⁵⁵ and (2) the identification of attributable owners in patents involved in proceedings before the office.¹⁵⁶ The high number of occasions was meant to ensure that this information is obtained regularly to increase the level of transparency and accuracy of patent ownership.

Consequences of non-compliance with the suggested rules – The failure to comply with identification requirements were dealt with differently depending on the occasion. The USPTO provided certain timeframe allowing the parties to correct the deficiency.¹⁵⁷ In certain cases the non-compliance to provide the requested information on attributable owners could result in abandonment, however, only in case of pending patent applications.¹⁵⁸

¹⁵⁰ Fed. Reg., 4109.

¹⁵¹ Fed. Reg., 4107.

¹⁵² 37 C.F.R. 1.247(b); Fed. Reg., 4110.

¹⁵³ Fed. Reg., 4110.

¹⁵⁴ 37 C.F.R. 1.271(f).

¹⁵⁵ The three occasions which fall within the first category are (i) during the filing stage of a patent application (37 C.F.R. 1.273; only in case of non-provisional applications); (ii) in case of an ownership change during the patent prosecution stage (37 C.F.R. 1.275; only in case of non-provisional applications); and (iii) at the receipt of the notice of allowance (*See* 37 C.F.R. 1.311).

¹⁵⁶ The occasions which belong to the second category are: (i) the payment of maintenance fees (37 C.F.R. 1.381); (ii) the initiation of patent trial and appeal board trial proceedings (37 C.F.R. 1.383); and (iii) the engagement in supplementary examination or re-examination proceedings (37 C.F.R. 1.385).

¹⁵⁷ 37 C.F.R. 1.273; Fed. Reg., 4112;

¹⁵⁸ 37 C.F.R. 1.273; 37 C.F.R. 1.277; Fed. Reg., 4112.

6.2 Comments of Stakeholders on the USPTO Notice

Many companies which submitted their comments on the proposed changes¹⁵⁹ acknowledged the importance of increasing transparency of patent ownership and specified multiple benefits the improved ownership information could bring for the functioning of the patent system, including the importance of the disclosing the identity of patent owners “as part of the quid pro quo of obtaining a patent”.^{160,161} IBM further acknowledged that improved ownership information will “help fulfill the patent notice function”.¹⁶² The companies also recognized that the ownership transparency is essential for promoting innovation and for the efficient functioning of the markets for technology.¹⁶³ Furthermore, the lack of transparency of patent ownership is recognized to be one of the main enabling factors for patent assertions entities or patent trolls to sustain their business model and conduct their abusive acts.¹⁶⁴ Not surprisingly, Intellectual Ventures, the well-known patent assertion entity, was highly negative about the initiative.¹⁶⁵ GlaxoSmithKline was also critical and suggested that the USPTO failed to provide valid arguments in favor of higher transparency and seemed to prefer the voluntary registration system, rather than a more mandatory approach suggested by the USPTO.¹⁶⁶ Overall, pharmaceutical companies appear to be more critical about the Notice than companies from other industry sectors.

Despite displaying the general understanding of the importance of increasing transparency of patent ownership, the commentators pointed out several flaws of the Notice, which required additional attention. First, it was stressed that the Notice imposed a high level of administrative burden on stakeholders which would lead to excessive costs.¹⁶⁷ Nonetheless, Hewlett-Packard was of the view that the benefits

¹⁵⁹ <https://www.uspto.gov/patents/laws/comments-public/comments-changes-require-identification-attributable>.

¹⁶⁰ Hewlett-Packard Company https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_hp_20140424.

¹⁶¹ Cook Group https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_cook_20140424; Microsoft Corporation https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_microsoft_20140424.

¹⁶² IBM Corporation https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_ibm_201404024

¹⁶³ Dell Inc. & Cisco Systems https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_dell_20140424; Hewlett-Packard Company, *supra* note 160; Microsoft Corporation, *supra* note 161; Ocean Tomo LLC https://www.uspto.gov/sites/default/files/patents/law/comments/ao-e_ocean_20140424.pdf; Wayfinder Digital LLC https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_waybetter_20140423.

¹⁶⁴ Dell Inc. & Cisco Systems, *supra* note 163; Novartis AG https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_novartis-20140415.

¹⁶⁵ Intellectual Ventures https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_intellectualventures_20140424.

¹⁶⁶ GlaxoSmithKline https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_glaxo_20140424.

¹⁶⁷ Cook Group *supra* note 161.

the initiative could bring outweigh the costs.¹⁶⁸ Second, the commentators complained about the unclarity of the scope of attributable ownership,¹⁶⁹ as well as about the general difficulty to identify all attributable owners and provide the requested information about them from the administrative perspective.¹⁷⁰ Third, the occasions for submitting information concerning the identity of the attributable owners specified in the Notice were claimed to be too frequent.¹⁷¹ Finally, the punitive action of abandonment was considered too excessive.¹⁷²

7 Recommendations for Improving the Transparency of Patent Ownership Changes

7.1 Recommendations in Reference to the USPTO Notice

Although the USPTO has ultimately opted not to advance the Notice, the proposed provisions and the comments submitted by stakeholders during public hearings thereupon provide a suitable starting point for a discussion of the “minimal requirements” that future initiatives aiming to improve the transparency of patent ownership need to take into account.

In what follows we group these requirements together into four categories: (i) requirements concerning the scope of ownership to be disclosed (the “who-question”); (ii) requirements concerning the timing of the disclosure (the “when-question”); (iii) the type and extent of corrective action upon failure to meet requirements concerning such disclosure (the “what-if-question”); and (iv) requirements concerning the recording and public disclosure of submitted ownership information (the “how-question”).

Our recommendations are based on the belief that the transparency of patent ownership is an essential part of patent notice and that patent notice is key to the functioning of markets for technology. The principle of transparency is one of the key principles of property law and can be divided into “passive transparency” and “active transparency”.¹⁷³ Whereas the objective of passive transparency is to ensure that certain information is available and accessible, the objective of active transparency is to ensure that information is not only available but is also complete, accurate, reliable, and useful. One of the means to achieve both passive and active transparency of property is to establish and maintain property registers. Hereby, one can distinguish between property registers that rely on the “voluntary” registration of ownership and those that rely on the “obligatory” registration of ownership.¹⁷⁴

¹⁶⁸ Hewlett-Packard Company, *supra* note 160.

¹⁶⁹ Dell Inc. & Cisco Systems, *supra* note 163; GlaxoSmithKline, *supra* note 166.

¹⁷⁰ Cook Group, *supra* note 161; GlaxoSmithKline, *supra* note 166.

¹⁷¹ Pfizer Inc. https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_pfizer_20140424.

¹⁷² Cook Group, *supra* note 161; Novartis AG, *supra* note 164.

¹⁷³ Drahos (2010); Cottier and Temmerman (2013), p. 215.

¹⁷⁴ Clarke and Kohler (2005), p. 537; Gorbatyuk (2019b), p. 235.

Whereas the former registry system is based on “positive enforcement” by providing property owners that register properties with certain privileges, the latter is based on “negative enforcement” by inducing “penalties” for not registering properties. In our comparative analysis of requirements for the establishment of patent owners we have essentially argued that whilst the registration of patent ownership changes is obligatory *de jure*, it is voluntary *de facto* in most jurisdictions under study. We argue that an active transparency of ownership can only be achieved if the registration of patent ownership changes shifts from a voluntary registry system towards a more obligatory one. At the same time, we acknowledge that the benefits of such a system need to outweigh the additional transaction costs associated therewith.

7.1.1 Requirements Concerning the Scope of Ownership to Be Disclosed

Whereas the USPTO Notice advocates the disclosure of “any entity necessary to be joined in a lawsuit in order to have standing to enforce that patent or any patent resulting from the application”, we propose that the requirement to disclose information about the identity of patent applicants or owners should be confined to the names, registered addresses, and contract information of the exclusive or joint titleholders and their ultimate parent entity. We consider that the disclosure of ownership of the titleholders and ultimate parent entity is sufficient to allow for an efficient functioning of markets for technology as well as to limit the activities of entities that purposely seek to benefit from hiding their ownership by not recording ownership changes or by making use of shell companies.^{175,176}

Furthermore, we believe that limiting the requirement for the disclosure of ownership information to these entities types strikes a fair balance between ensuring a consistent flow of information to the public and the potential of imposing unduly burdensome requirements that may negatively impact the legitimate confidentiality of business interests.¹⁷⁷ We contend that the disclosure of information on the identity of the titleholders and their parent entity is part of the *quid pro quo* and is readily available to parties required to submit this information to patent offices.

7.1.2 Requirements Concerning the Timing of the Disclosure of Patent Ownership

We propose that given that technology transactions can occur throughout the entire lifetime of patents, any future initiative should impose requirements to record

¹⁷⁵ Cook Group, *supra* note 161.

¹⁷⁶ It must be noted that we do not claim that all patent holders that fail to notify the ownership change do that with a malicious intent. On the contrary, we believe that the majority of non-registrations take place due to negligence and/or unwillingness to engage in time-consuming and costly registrations of ownership changes in each relevant patent office. The latter observation is based on conversations with interviewees in the framework of the Ph.D. dissertation Gorbatyuk (2019a). In particular, some interviewees acknowledged the importance of signalling “who owns what” but were reluctant to engage in complicated and costly administrative proceedings of recording ownership changes at patent offices. Nonetheless, the lack of malicious intent does not diminish the importance of disclosing this valuable information.

¹⁷⁷ Novartis AG, *supra* note 164.

changes of ownership regardless of when they occur during the patent lifecycle, within a reasonable time window after their occurrence.¹⁷⁸ The USPTO Notice imposes much stricter obligations to applicants than to owners. Whereas patent applicants are required to disclose the identity of attributable owners at the filing date and notify the office of changes of attributable ownership during the patent application phase, once the patent is granted, the patent holders are only required to submit information about the identity of the attributable owners upon payment of maintenance fees or during post-grant proceedings in front of the office. In jurisdictions where the payment of maintenance fees is due after short time intervals this requirement might be sufficient to provide a constant flow of accurate ownership information to the public. However, in the US patent system, where the payment of maintenance fees is due after three, seven, and eleven years the long-time intervals between these events only allow for an occasional availability of ownership information. Given that the final maintenance fee for a US patent is due after eleven years, this entails that in the worst-case scenario changes of ownership that occur directly after the payment of this fee may not be observable for a period of up to nine years.

We also propose that ownership information should only be notified to a patent office when a change of ownership has effectively occurred, as it minimizes the burdens for submitting this information whilst maximizing its accuracy. We support the arguments submitted by multiple stakeholders during public hearings which indicate that the requirement to identify attributable owners at specific moments regardless of whether the change has taken place may be unduly burdensome, given that the attributable ownership does not change at all during the lifetime of the far majority of patents.¹⁷⁹

7.1.3 Corrective Actions for Non-Compliance with Requirements

We propose that any failure to comply with the disclosure requirement concerning the identity of the titleholders and their ultimate parent entity following any change of ownership should lead to punitive action in the form of abandonment of the patent (application) even though most stakeholders find this an excessive penalty.¹⁸⁰ The USPTO Notice foresees such a penalty only in case of failure to meet this requirement during the pendency of a patent application and at the moment that a notice of allowance has been sent to the applicant and does not indicate penalties for failure to meet requirements post-issuance. Given that the primary motivation for putting forward future initiatives aimed at improving the transparency of patent ownership is based on the conviction that a voluntary recording system is insufficient to achieve a satisfactory level of such transparency, we believe that an effective enforcement of requirements must incorporate penalties for non-compliance that are administered consistently. We are of the view that the prospect of

¹⁷⁸ Hewlett-Packard Company, *supra* note 160; Oracle Corp. https://www.uspto.gov/sites/default/files/documents/comments_attributable_owner2014.pdf#ao-e_oracle_20140424.

¹⁷⁹ Novartis AG, *supra* note 164; and Pfizer Inc., *supra* note 171.

¹⁸⁰ Cook Group, *supra* note 161; IBM Corporation, *supra* note 162.

facing an abandonment of a patent (application) will incentivize parties to record ownership changes to a far greater extent than recording on a voluntary basis.¹⁸¹ Given the severity of the penalty of abandonment, we suggest a sufficient time window for correcting errors made in good faith.

7.1.4 Platforms for Recording and Disclosing Submitted Patent Ownership Information

We propose that the potential burden and costs associated with the submission and retrieval of ownership information should be minimized by providing an online, easy to access, and free-of-charge platform for submitting and retrieving such information. We believe that allowing parties to submit ownership information free-of-charge on such a platform will greatly lower the burdens and costs that parties are currently facing when submitting ownership information to most patent offices. We contend that making ownership information readily available to the public, free-of-charge through an online platform immediately after processing the submitted information (with the exception of ownership changes that involve patent applications that have not yet been published and are subject to secrecy requirements) is equally important as allowing parties to submit such information.¹⁸² Ultimately, if a patent office aims at establishing a highest level of active transparency, additional resources could be allocated to processing submitted information and verifying its accuracy and completeness.

7.2 Alternative Solutions

Whereas we predominantly focus on public patent registers and advocate that active transparency of patent ownership can be achieved through implementing stronger penalties for not registering ownership changes, alternative mechanisms for increasing transparency of patent ownership can also be further explored. For instance, private patent registers, that can take form of “conventional” databases¹⁸³ or other IT solutions, such as blockchains,¹⁸⁴ can be developed to collect and communicate data on patents and patent owners. However, none of these alternative mechanisms can, in our view, lead to active transparency of patent ownership. As stated above, core characteristics of active transparency, apart from accessibility, are completeness, accuracy, and reliability.

¹⁸¹ In his paper, Anderson puts forward a set of “milder” remedies, for instance, “barring enhanced damages and recovery of attorney’s fees for parties who do not comply with disclosure obligations during litigation” or “requiring fee-shifting for costs associated with discovery of ownership information” (Anderson (2015), p. 442). In our view, such “milder” penalties may fail to bring the desirable results, since they are linked to financial disadvantages that wealthier undertakings could choose to undergo. In addition, undertakings may easily overcome the first penalty by registering the transfer of ownership prior to the litigation.

¹⁸² IBM Corporation, *supra* note 162.

¹⁸³ For instance, OROPO (Open Register of Patent Ownership), a voluntary, non-profit patent database (<http://oropo.net>).

¹⁸⁴ For instance, IPwe, a blockchain technology platform for patent transactions (<https://ipwe.com/#about>).

These (private) alternative solutions are unlikely to incorporate all these characteristics. First, considering the private (commercial) nature of such solutions, the collected data may not be freely available, which undermines its accessibility. On the contrary, public patent registers are often accessible online and free-of-charge as part of their “quid pro quo” public disclosure function. Second, such private registers may entail voluntary participation of patent owners, thus, compromising its completeness. Considering the territorial nature of public patent registers, global completeness of patent data cannot be easily achieved either.¹⁸⁵ Nonetheless, the territorial completeness is guaranteed since patent rights cannot arise without undergoing a patent acquisition process administered by a public authority that governs an underlying patent register. Third, the most challenging characteristics to satisfy, by either public or private registers, are accuracy and reliability since they require constant maintenance of patent data. Patent data, in particular information on patent owners, can change over time and originally inputted data becomes inaccurate and, thus, unreliable. The power to increase accuracy and reliability of patent data is in hands of patent holders as they are principally in charge of this information. The role of patent registers is to “incentivize” them to disclose this information in timely, accurate, and complete manner. As mentioned above, these incentives can either be “positive” (by granting privileges) or “negative” (by penalizing). From our point of view, “positive enforcement” may be less effective since it offers patent holders a choice not to benefit from a possible privilege (e.g. a patent fee reduction), hence, making the act of providing up-to-date data “voluntary”. In addition, to ensure that provided information is reliable, the administrative staff of patent registers should have the means to evaluate the provided data by imposing the submission of evidence documents, such as underlying contracts.

While private patent registers play a useful role as intermediaries in facilitating patent transactions, by putting forward a set of selected patents, they are not equipped to resolve the more fundamental issues of the failure of patent notice as part of patent bargain. They may secure that the information on a selected sample of patents is complete, accurate, and reliable, by closely cooperating with their “clients” (e.g. patent holders). However, such platforms are unlikely to provide the society with complete and accessible (free-of-charge) patent data.¹⁸⁶ Consequently, in our view, public patent registers are best placed to secure active transparency of information on patent owners.

¹⁸⁵ Global “active” transparency of patent ownership can, thus, be achieved if each national/regional patent authority moves towards active transparency.

¹⁸⁶ Nonetheless, these alternative solutions can be instrumental to increase the level of transparency of ownership of non-registered IP. For more information about registration of IP ownership and mechanisms to increase its transparency, please consult a follow-up paper Gorbatyuk A (2022) Intellectual property registers: how transparent is intellectual property anyway? SSRN https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4020328.

8 Conclusion

In this paper we aimed to highlight issues concerning the disclosure of patent ownership information which, rather than facilitating organizations' patent monetization activities, might instead act as a barrier to these activities. We have argued that the market for patent monetization relies to a great extent on the effectiveness of the patent system's notice function. The ability to know both the boundaries that define a claimed invention as well as the identity of the parties that hold rights to this invention is a primary requirement for the initiation of technology transactions. In particular, based on a comparative analysis of the patent provisions of six patent offices (the EPO, the USPTO, the JPO, the INPI, the DPMA, and the UK IPO) we addressed recently expressed concerns that current provisions provide only limited opportunities for tracking changes of ownership. We find support for the legitimacy of these concerns, our analysis reveals that although all six patent offices under study impose strict requirements concerning the identification of initial patent applicants, they do not impose and/or enforce such strict requirements with respect to the disclosure of the identity of subsequent owners, following a change of ownership. Furthermore, there is generally no legal basis to impose punitive action following failure to report ownership changes. As a result, the disclosure of the identity of subsequent owners is largely left to the discretion of initial or subsequent owners and takes place on a voluntary basis. Therefore, the likelihood of identifying actual patent owners may be significantly reduced following changes in patent ownership.

Despite the potentially negative implications of a limited transparency of patent ownership for technology markets, we are only aware of one initiative that aims specifically to address the flaws of current patent provisions, namely the USPTO's Notice on "Changes to Require Identification of Attributable Owner". Although the USPTO has ultimately decided not to advance the proposed provisions, we have drawn upon them as a basis for proposing recommendations for future initiatives. Based on the conviction that the disclosure of information on the identity of patent rightsholders is part of the quid pro quo of granting exclusive rights to a claimed invention to these parties, we propose four minimal requirements that future initiatives by patent offices should impose to warrant a more adequate, accurate, and timely disclosure of patent ownership information. First, we suggest that the requirement to disclose information about the identity of patent applicants and owners should be confined to the names, registered addresses, and contact information of exclusive or joint titleholders and their ultimate parent entity. Second, we suggest that future initiatives should impose requirements to record changes of ownership regardless of when they occur during the patent lifecycle, within a reasonable time window after their occurrence. Third, we suggest that any failure to comply with the disclosure requirement concerning the identity of the titleholders and their ultimate parent entity following any change of ownership should lead to punitive action in the form of abandonment of the patent (application). Lastly, we suggest that the potential burden and costs associated with the submission and retrieval of ownership information should be minimized by

providing for an online, easy to access, and free-of-charge platform for submitting and retrieving such information.

We believe that our recommendations strike a fair balance between ensuring a consistent flow of information that allows technology markets to function efficiently and the potential of imposing unduly burdensome requirements that may negatively impact the legitimate confidentiality of business interests. We hope that this article will inspire academics and policymakers to actively engage in combined efforts to find solutions that improve the transparency of patent ownership. Access to accurate and timely patent ownership information will not only positively influence markets for technology but will also aid firm's freedom to operate, including decisions related to litigation activities.¹⁸⁷

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¹⁸⁷ Anderson (2015), p. 398; Feldman (2014), p. 291; Menell and Meurer (2013), p. 18.

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