The Patent Troll Business: An Efficient model to enforce IPR?

A typology of patent trolls, using empirical evidence from German case studies

Tim POHLMANN* Marieke OPITZ**

ABSTRACT

Patent trolls have many faces, since the media uses this expression in various ways. The patent troll phenomenon thus seems to be an ambiguous term that is discussed in several directions. This paper reveals that a patent troll as such has no distinct shape or appearance. Our analysis redeems a troll classification solely from firms' market position, such as being non-practicing, and shows that a patent troll business can only be defined by the respective activities to enforce IPR. Using 10 cases, of which five are treated in detail, the analysis reveals a distinct typology of the troll business. This paper is furthermore able to identify troll behavior to be: a) an efficient mechanism to enforce IP rights and b) a strategy that may yields excessive license fees and causes inefficient negotiation costs.

* Berlin University of Technology, Chair of Innovation Economics, Mueller-Breslau-Strasse VWS 2, 10623 Berlin Germany, tim.pohlmann@tu-berlin.de, Blog: innovationtomorrow.wordpress.com.
** University of Marburg, Department of Technology and Innovation Management, opitz@wiwi.uni-marburg.de.

INTRODUCTION

Technological change and market pace have drastically increased during the past decades. This can especially be observed in the fields of ICT (Information and Communication Technologies) where product lifecycles are getting shorter and innovation is changing in a rapid manner. This drastic change causes problems, since the patent system lacks transparency. In particular the protection of new innovations by IPR (Intellectual Property Rights) has developed to be more challenging. During the past years statistics have shown a strong increase in patent files, which in some technological fields even yields to patent thickets, a web of overlapping patents that protect similar innovations (Shapiro, 2001). This development allows firms to peruse new strategies to generate revenue from IPR. In this context popular litigation cases underline a special bargaining position to NPE (non-practicing companies) to enforce their rights. NPEs new way of enforcing IPR has brought up the rather negative term of "patent troll".

A patent troll is a person or entity who acquires ownership of a patent without the intention of actually using it to produce a product and in many cases did not actually engage in developing the technology (McDonough, 2006; Ohly, 2008). They are not inventors who pursue their own research, offer it for sale or provide early licenses in the process of innovation. They rather defend their rights against infringements. But, they are entities that – opportunistically or on purpose – profit from payments by companies that inadvertently infringe on the trolls' intellectual property rights (Henkel & Reitzig, 2008). There is the fear that these in most cases small entities use the courts as a mechanism to extract economic rents from large companies (Ball & Kesan, 2009). The term: "patent troll" is legally not established. It is a negative synonym used for non-manufacturing entities (NPE) and was popularized by the Intel Manager Peter Detkin in 2001, who used it to describe TechSearch and their lawyers during a patent litigation. Other related expressions are patent marketer, patent dealer, patent shark or are pictured by a comparison like David vs. Goliath (Chien, 2009).

Even though most sources in literature stereotype the troll business to certain characteristics: being non-practicing or strategically wait and hide to receive higher royalties; this paper analyses several litigation cases where companies reveal further characteristics and strategies.

The paper is structured as follows: we first give a review of the literature and reveal first implications on trolls' business models. We secondly analyze empirical evidence from the current research and derive our hypothesis. Afterwards, we present five in-depth case studies and are thus able to frame our typology. We scale other cases to our typology and end the

paper in a conclusion to deduce our policy recommendations.

THE BUSINESS MODEL: PATENT TROLL

The troll business seems to follow a defined structure: purchase and secure patents, hide until the market for a certain technology develops and the patents play a considerable role and finally turn patents against manufacturers to obtain high royalty fees (Henkel & Reitzig, 2008). Trolls are usually solely interested in the exclusion right, not in the underlying knowledge (Fischer, 2009). The patent trolls appear when the targeted product has already become a key or basic technology and irreversible investments have been made by the unaware infringer. In this lock-in situation there is in many cases no chance to invent around these patents or even stop using the technology. From an industry perspective the cost of not using the infringed intellectual property are (a) costs of the loss of future profits and (b) cost of investing in alternative technologies. These costs increase during the process of innovation along the phase of technology implementation. In most cases, affected companies already infringed the IPR when the troll states the claims. Obviously, trolls avoid the established rationales of understanding firms' patent based cooperation of either exclusion or cross-licensing to co-exist (Henkel & Reitzig, 2007). Hence, they seem to be in a position to negotiate licensing fees that are grossly out of alignment with their contribution to the alleged infringer's product or service. Their bargaining power tends to result in opportunistic behavior so that the troll claims excessive compensation (Sag & Rohde, 2006).

In the context of standardization, strategic patent behavior has also led to contentions. The litigation cases of Rambus, the company that was firstly associated with the so called "patent ambush" behavior, raised the attention of antitrust authorities and reinforced the political discussion about IP regulations concerning standards (Hovenkamp, 2008; Bensen & Levinson, 2009; Devlin, 2009). Patent ambush accrues when companies that participate in a standardization process withhold information of essential IPR and in hindsight assert that their patents are infringed.

Trolls produce uncertainty for innovators and their activities may lead to royalties which are a multiple of what the victim, as legitimate licensee, would have been willing to pay ex-ante (Reitzig et al., 2006). An important problem is the asymmetric information between trolls and unintentional infringers; companies often do not even know the troll´s IP exists. For the last decades R&D multinationals have been building up patent thickets with increasingly incremental inventions. It is hard to overlook those thickets because they are an overlapping

set of patent rights requiring that those seeking to commercialize new technology obtain licenses from multiple patentees. Today's patent trolls seem to place their bets on corporate carelessness or monitoring deficiency, i.e. to perform a patent research prior to own patent application and have better information at an earlier stage about patents likely to be issued (Henkel & Reitzig, 2007). With multiple overlapping patents, and under a system in which patent applications are secret and patents slow to issue there is a major threat of hold-up problems (Shapiro, 2001).

Patent extortion will remain a viable strategy in technologically crowded industries when trolls choose patents on inventions that can be invented around rather easily before infringement, but are sufficiently sophisticated to be upheld in court and create significant mid-term switching costs for manufacturers after infringement (Henkel & Reitzig, 2007). In contrast, patent trolls and their supporters claim that NPEs enhance innovation and competition by providing capital to independent inventors and creating an efficient market for trade in technological information (Shrestha, 2010, Tarantino, 2010). Policy makers have given remarkable regard to this topic (e.g. U.S. Federal Trade Commission, 2003; Lemley, 2007) and discuss suggestions for patent reform based on theoretical and empirical findings.

There also has been a discussion in the U.S. media if universities are patent trolls. Universities are non-practicing-entities that share some characteristics with trolls (McDonough, 2006). Though, the differences are, that (a) the universities do not hide their patents and (b) most universities licenses give the licensee the right to avoid lawsuit and provide valuable know-how via technology transfer, thus maximizing the social impact of technology (Lemley, 2007). Furthermore, there is a much broader definition implying that all patent licensing and enforcement entities who take legal action are patent trolls (Chien, 2009).

LITERATURE

Legal methods of the troll business have been studied and researched (Magliocca, 2007; Golden, 2007; Lemley, 2007) but provided little empirical evidence on troll type patent lawsuits (Lerner, 2006; Magliocca, 2007; Reitzig et al., 2010). However, empirical evidence has revealed various strategies underlying the troll business and its sustainability to policy changes (Reitzig et al. 2006; Henkel & Reitzig, 2007). Data on litigation is often scarce since most infringement cases involving so called NPEs (non-practicing entities) do not reach court. The infringer rather settles the dispute by paying royalty fees, being afraid of high legal costs and lengthy litigation (Fischer, 2009). Reitzig et al. (2006) pick up on the patent troll

phenomenon and examine it from a theoretical perspective, encompassing legal, managerial, and economic aspects. The main finding is that the unrealistic high compensation through court ruling is the central stipulation for trolls to operate cost-efficient. Nevertheless, first empirical analyses have revealed that the increase in litigation cases was not caused by NPEs (Bessen & Meurer, 2008). Chien (2009) gives evidence that NPEs only cause a minority of patent suits: 17 percent of high-tech patent suits in the examined period. But they often name multiple defendants and sometimes, rather than sue, are sued, for declaratory judgment. Key finding in the study of PricewaterhouseCoopers is that damage awards for patent trolls are in average twice as high as those for practicing entities. However, NPEs have only been successful in 29 percent of the cases versus 41 percent for practicing entities (Levko et al., 2009). Fischer et al. draw on a dataset of 565 patents acquired by known patent trolls between 1997 and 2007, and compared them to 1,130 patents acquired by practicing firms. They could disprove the common belief that patent trolls focus only on minor technologies. Their patents are of significantly higher quality than those in the control group. This means that the patent troll business method is sustainable in the long run and cannot be terminated by lifting minimum patent quality (Fischer et al.; 2009). The patent database of infringement litigation information from the Stanford Law School's Intellectual Property Litigation Clearinghouse (IPLC) was evaluated in the review from Shrestha in 2010. The analysis tests some of the arguments made in favor and against patent trolls and determines whether these firms have a positive or negative effect on innovation.

Even though first empirical results are able to give some insights into the trolls business, there has yet been no clear definition which activities qualify as troll behavior. Furthermore there has yet been no analysis that values the effects of troll behavior. We therefore set up two hypotheses:

H1a: Paten Troll behavior is an efficient mechanism to enforce infringed IPR.

H1b: Patent Troll behavior yields excessive amounts of royalties and produces inefficient litigation and negotiation costs.

METHODOLOGY

Empirical work has been conducted to understand the practices of patent trolls and to better evaluate their role in highly patent intensive markets. However, these analyses always lag a distinct classification of patent troll behavior. This paper identifies 10 cases from the public media but also from non-public interviews to better define different appearances of patent

trolls. Therefore an in depth analysis of five selected cases was conducted by interviewing all involved parties. All interviews were transcribed and the use of information was permitted by all participants. Since all cases are very specific and allow implications in several directions, a standard questionnaire was used but extended by further questions on a case by case basis. If it was not possible to talk to both sides (plaintiff and defendant) other concerned parties were interviewed. Thus, all cases were built upon balanced sources of information.

CASE STUDY ANALYSIS

The commercialization and enforcement of patents is a rather complex issue which, as one could observe over the last years, can be perpetrated in many ways. Patent owners who are trying to enforce their claims face several alternatives. Not every commercialization of patents, even by companies without innovating or manufacturing activities, is an example for typical patent-troll behavior. There is a clear need to differentiate between various ways of how patent owners proceed. Our five in-depth case studies outline popular strategies and business activities of patent commercializing companies.

CASE STUDY: Papst Licensing GmbH & Co. KG

The next case describes the company Papst Licensing GmbH & Co. KG. The case study is based on an interview with both owners of the German based company. Papst Licensing is a globally operating patent licensing company, which has dealt with property rights since 1993 and has signed up more than 130 licensing agreements. The licensees include companies such as Sony, IBM, Toshiba and many other big players. There are no outside investors involved yet. The firm is specialized on the sectors of electrical engineering and precision engineering. These industries are very suitable because products in these markets often use a variety of patented technologies. Papst Licensing describes its activities as the detection of patent infringement and thereby usually follows a common practice. The company has about 15 employees, including patent attorneys, lawyers, engineers and economists. On the one hand the company searches for patent auctions in insolvency registers or the press. On the other hand it also approaches medium-sized companies that want to enforce their rights. Papst Licensing represents mostly German companies that operate internationally and whose patents have already been infringed.

In a first step Papst Licensing checks the legal characteristics of the patent. The patent has to be registered in a formally correct way and must not already belong to the so called state of the art. Afterwards, potentially infringing products are decomposed into components and

tested in technical laboratories. Technical analysis is done by engineers; patent attorneys can then ascertain a possible patent infringement. In an economic evaluation procedure, products are later examined for their market potential and the technology for its potential degree of standardization. Papst Licensing refers to this as “infringement volume”. Papst Licensing works with external service providers, especially with patent law bureaus and market analysts in the respective countries.

After this thorough assessment Papst Licensing buys the patents to have a stronger bargaining position in court. Papst Licensing takes over the risk of commercialization; although the original patent holder receives a cash sum that consists of fixed and variable components. Papst especially targets companies that are active in the US, due to larger markets and hence a higher infringement volume. After asking infringing firms for royalty payments, they are threatened with injunctions in the US. About 10- 20% of all cases are taken to court. The high court costs and the extent of damages in American courts are effective means of exerting pressure to force out of court settlements.

In the following we describe the case of Papst Licensing versus Minebea Co. Ltd in more detail. Minebea is a Japanese manufacturer of miniature ball bearings, which for instance can be found in CPU fans. The company has been active in this field since 1968. It operates globally with more than 49,000 employees and has its own large R&D department. Last year it generated sales of 2.1 billion USD. Prior to the dispute with Minebea, Papst Licensing had sued several major manufacturers, including IBM and Western Digital, for patent infringement on computer hard drives. Western Digital, for example, has paid Papst Licensing 24 million USD for a license; the sum total of the licenses is estimated to range over 100 million USD. In response, Minebea, which serves these manufacturers as supplier of motors, sued Papst Licensing for violation and abuse of license agreements. Through Papst Licensing’s longtime experience in patent evaluation and enforcement in U.S. courts, the U.S. District Court in Washington dismissed the action of Minebea after ten years of hearings in 2006. During trials in the US, Minebea was advocated by Welsh & Katz Ltd. law firm. Minebea had to drop the claims of 500 million U.S. dollars and had to pay Papst Licensing a compensation of 5 million Euros.

Papst Licensing interprets this as a lawful confirmation of both its business model and licensing programs.

CASE STUDY: Alliacense (TPL group)

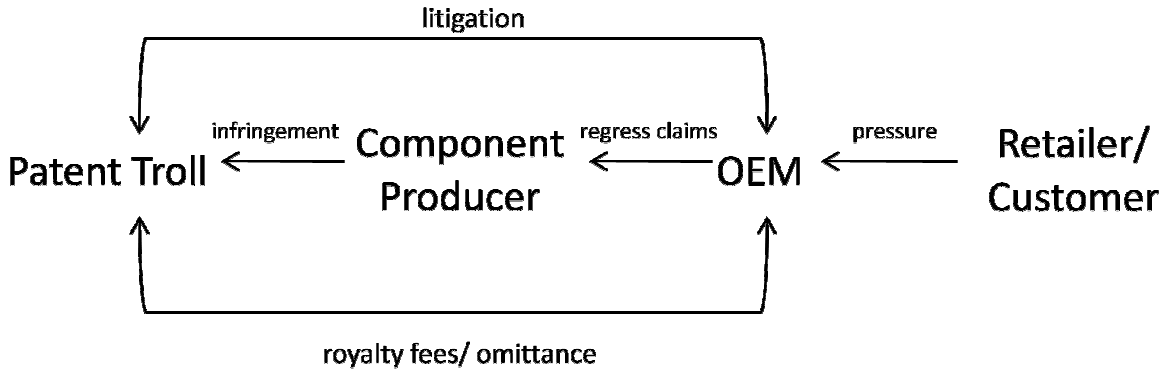
The next case study describes the US company Alliacense which accused German end-producers in the electronic and electrical industry of patent infringement. The following information is based on an interview with the legal division of the ZVEI (Central Association of Electrical and Electronic Manufacturers Germany). Alliacense is a wholly owned subsidiary of the TPL Group, which has been active in developing, marketing and licensing of intellectual property rights since 1988. The TPL Group also includes the manufacturing company IntellaSys, which was founded in 2005 and develops and produces processor solutions. It is believed that the manufacturing subsidiary company was founded to counter accusations of the TPL Group being a patent troll.

Alliacense holds four IP portfolios and is responsible for the management of the license rights. The portfolios include technologies from the vast field of electronics. It is striking that the patents are usually acquired through purchase or merger of the companies that have invented this technology.

In the case known to us, Alliacense uses one of the four portfolios to proceed against German end-producers. This is the mmp-portfolio, which was named after its inventor, Charles Moore, a member of the board of the TPL Group. The patents protect fundamental design techniques for improved performance of microprocessors that are used in products of many industries such as mobile phones, home appliances and automotives. The mmp-portfolio includes seven U.S. patents as well as their German and Japanese equivalents, which are valid until 2015.

The accused German companies are small and large system manufacturers which install these protected microprocessors into their devices. So far, Alliacense asked only those companies, which distributed their products on the American market to pay royalties. Alliacense specifically targets the end-producers on the downstream markets and not the microprocessor manufacturers. It proceeds cross-industry against infringers and communicates clearly that those companies which are the first to pay a license, get significant discounts compared to their competitors. The procedure of Alliacense can be illustrated by using a simplified sketch of a possible value chain (graph1).

Graph1: troll strategy to enforce IPR in the value chain



The potential patent troll, in this case Alliacense, does not address the component manufacturer, whose microprocessors infringe the patent, but the system manufacturer (OEM), which implements these processors in its devices. The reason why Alliacense chooses this strategy could firstly be due to the fact that higher license fee payments can be demanded from an OEM, because the processor is installed in a higher quality product. In contrast, the built-in microprocessor itself usually has a smaller value. Alliacense also uses the potential of pressure from retailers and customers, since OEMs are bound to deliver their products. If, due to patent infringements, OEMs are not able to supply, retailers could threaten them with terminating existing contracts.

Following a first-mover strategy by offering lower royalties, Alliacense is able to build up considerable pressure between the competitors. Similar to a prisoner's dilemma cooperation – i.e. everyone not paying license fees – would be the best strategy for all patent infringing competitors. However due to risk aversion, pressure from retailers and the possibility to be the first and get favorable licensing terms, one company might choose to free-ride and apply for a license. This has the consequence that the others are urged to enter into a license agreement, especially if the first-mover is an influential company. This way Alliacense can build up and benefit from additional pressure potentials between the potential licensees.

Therefore, OEMs are in a position which only allows few escape options. Alliacense's patents are grounded on patent law and are non-trivial. However, in some cases the scope of the patent was not affected by the technology of the accused company. Since the companies were under such great pressure, the license was paid in many cases without further checking for patent claims. In such cases it is crucial to consider the particular interests of different departments within a company. Given an infringement charge, the legal departments first wait and then check carefully whether there are legal ways to bring down the patent or whether the

patent is actually touched by the company's technology. Sales divisions however fear the pressure of customers and are therefore interested in a quick solution by means of a payment.

If the OEM does not agree with the royalty requests, Alliacense usually sues these companies in court. Some German companies are currently involved in litigation in the US. The OEM will probably try to make the component manufacturer recourse. Thus, on the one hand transaction costs accrue for the OEM. On the other hand, some microprocessor manufacturers have already passed over to withdrawing guarantees on their products being free of third party rights. Based on these observations it can thus be shown that for enforcing its IPR, Alliacense uses the bargaining power of other actors towards the final manufacturer to promote its interests.

The extent of the Alliacense case against German OEMs can be illustrated by the fact that the ZVEI formed, at the suggestion of many affected members, a special task group. Representatives from affected companies, who are accused of patent infringement by Alliacense, are thus able to negotiate. The main purpose of this work group is the mutual exchange of information. Common legal steps have not yet been taken. For antitrust reasons, agreements and actions compelling to all members are not possible. However, political influence is being pursued thoroughly. As the automotive industry is also accused of infringement charges from Alliacense, it is thought to exchange information with the VDA (Association of the German Automobile Industry).

It is expected that Alliacense will also accuse OEMs manufacturers on the German market. In a message from 02.02.2009, the German Patent Court in Munich confirmed the validity of a patent from the MMP portfolio. This suggests that Alliacense is planning to increase its presence on the German and European Market.

CASE STUDY: IP Com

The next case study describes the Munich-based company IP Com, which describes itself as a patent management company. The following information is based on an interview with the CEO of IP Com.

IP Com GmbH & Co KG was founded in 2007 and currently has 10 employees. They are highly skilled economists, engineers and legal academics. The company works with more than 10 outsourced firms and employs several engineers and research agencies to conduct detailed market and company analysis. Funding source is the U.S. investment company

Fortress, which currently maintains 34 billion USD. It acts as a general partner in the GmbH & Co KG.

The business model of the company focuses on two groups of customers that IP Com can serve due to their particular market position. The activities of the company are limited to the management of patents; implementation or research is not part of the business model. A future goal is to serve the customer group of small innovative inventors and entrepreneurs. Due to the lack of financial resources and experience, these SME cannot enforce patented innovations. The big players in the market normally innovate in-house and show little interest in small inventors. IP Com is trying to fill this gap and communicate promising innovations to manufacturing companies. In this case, licensees would be enlisted which have not yet infringed the relevant patent. The customer group of small inventors is not yet served and it remains open whether this will be taken into account in the future business model. The second group of customers are large manufacturing companies, which are vertically integrated and often possess unused patent portfolios. Some big companies cannot use their patents as a result of specific market structures. In this context, vertically integrated players often conduct so called silent cross-licensing agreements, where IPR is mutually used without paying royalties. Due to powerful market positions of large companies, these market-sharing strategies are not equally divided. Being a non-innovating and non-producing company, IP Com buys these unused patents in order to enforce them profitably. Since IP Com is not active in the market, it is not vulnerable to attack or blackmail by market power. The ownership transfer of patents from vertically integrated companies to IP Com enables IP Com to take advantage of its market position concerning the license requirement.

In 2007, IP Com purchased a patent portfolio of Bosch GmbH for an unknown amount. The portfolio consists of over 1,000 patents in the mobile communication area. One fourth of these patents are standardized wireless technologies like GMS, GPRS or UMTS. These patents are essential to widely adopted standards in the industry and are used by almost all market participants in the mobile sector. The patents are all registered in Europe and 50% of them in the most relevant markets such as in the U.S., Japan, China and Korea.

Bosch developed this patent portfolio between 1983 and 2000 and was, in these early stages of mobile technology, seen as a pioneer. Bosch was involved in the development of transmission standards and has sat in many standardization committees. For the development of these innovations Bosch spent an estimated 8 billion EUR. Bosch was only operational in the mobile industry until 2000, then selling its mobile sector to the Siemens AG. However,

Bosch retained the patents, since it was difficult to assess patents on their economic benefits at this time and Siemens could not make an acceptable offer. Because Bosch had turned away from the mobile communication industry, it tried to exploit the unused patents and requested licenses. In this context, especially Nokia had used many of the innovations concerned. Bosch however was not able to get Nokia to pay license fees. Nokia threatened Bosch with counter lawsuits, and even with the cancellation of computer chip orders. For Bosch, Nokia is an important customer and thus, Bosch had no economically lucrative ways to enforce their patents. In 2007 it was decided to sell the portfolio, but Nokia was not interested in buying it at that time. It is believed that Nokia expected to sell to another market participant. During that time Nokia held a market share of around 40% and was by far the strongest player in the market. This market power could have helped Nokia not pay any licenses, like with Bosch. The purchase by IP Com was a surprise to Nokia.

Since the acquisition of the patent portfolio, IP Com is enforcing these patents worldwide. The procedure follows a very professional strategy. In a first step, the patents are legally examined with the help of the attorney office Frohwitter Munich. The second step is an economic assessment. About 35 out of 160 patent families could be identified as essential patents to communication standards. Therefore the whole market volume in the telecommunication sector reflects the value of the patents. Violation of the remaining patents is determined by using engineer consultants. The relevant mobile devices are set apart and examined very carefully in their individual components.

The second phase is technical negotiation with the infringing companies. IP Com meets worldwide in San Francisco, Tokyo and Seoul with the engineers of the companies to introduce the patents. All information about the patents in question is disclosed so that the affected companies have an accurate picture of the scope, duration or even counter-patents. Usually, the technical negotiations do not exceed three to five meetings. From this point on, commercial negotiation begins. IP Com conducts previous thorough research in order to know about all business activities of the respective company. This is done by so- called research offices, mandated by IP Com, which claim to be reading up to 160 analysts' reports per week. Main focus is to determine the future strategy of the infringing companies and thus observe their activities in each country accurately. Therefore, relevant markets are constantly monitored, to be able to enforce license payments effectively after market entries. If the commercial negotiations, however, run unsuccessfully, IP Com has to assert its intellectual

property rights by legal action. Probably the best known litigation case in the media is Nokia versus IP Com.

After the purchase of the patent portfolio, IP Com tried to agree on a royalty payment with Nokia. However, Nokia was not willing to pay so IP Com had to enforce its patent rights. It is particularly interesting, that for the first time the amount of the royalty was negotiated- in court. Courts often only decide on the finding of a patent infringement. For cost reasons, the license amount is usually negotiated out of court.

The case with Nokia is currently being heard at the patent courts in Mannheim and Dusseldorf. For determining the amount of the license right, there are two methods of calculation. Firstly, IP Com can present a report prepared by Nokia themselves, by which one can calculate licenses due to the importance of the patents for the whole product. This report was commissioned by Nokia in an earlier case where Nokia was the plaintiff. This report states that one can demand 1-1.5% revenue share per essential patent. The calculation flattens towards the top, because of the added value. At 4 to 5 infringed and essential patents one can demand a revenue share of approximately 4-5%. In the Nokia case one can thus calculate an amount of 12 billion EUR. But Nokia did not agree with its own calculation model and pleaded for distortion of competition. Secondly, the two patent courts will determine a FRAND[3] (Fair, Reasonable and Non-Discriminating) license. This form of royalty calculation is used particularly in industries and sectors with universal technology standards that are used by all market participants. A license determination can thus be uniformly established for essential patents on standards. "Fair" is to ensure that the license does not support competitive dominance of a market participant. "Reasonable" is aimed at a proportionate license, which especially considers the importance of the patent for the whole product. "Non-Discriminatory" stands for equal treatment of each licensee. Especially the term reasonable is criticized to be a rather vague definition (Rysman & Simcoe, 2007).

The lawsuit will still be running for at least one or two years until an accurate determination of the license is complete. It costs several million USD per month. With a positive court decision, IP Com expects other infringing companies to accept the amount of a FRAND license too.

[3] As a member of the European Telecommunications Standards Institute (“ETSI”), Bosch took part in the GSM and UMTS (WCDMA) standard setting processes and therefore granted irrevocable licenses under FRAND conditions. IP Com confirmed to the EU Commission to take over Bosch’s previous commitment to grant irrevocable licenses on FRAND terms.

CASE STUDY: Sisvel S.p.A.

Sisvel S.p.A. is an Italian based company that started as a manufacturer of televisions in 1982 and has dealt with IPR since 1986. Sisvel also acts as a patent pool administrator e.g. for the MPEG audio patent pool and is currently planning a patent pool for LTE technologies. Sisvel focuses on the entertainment industry and holds a portfolio of almost 500 patents. Major clients including firms like Phillips, Apple or Creative Labs, have outsourced their patent commercialization activities to Sisvel. The firm became famous for pushing the claims on a patent on a volume bar in TV sets, which visually increases according to the sound volume.

For several years, Sisvel manages IPR for MP3- and MPEG4-technologies among companies such as France TeleCom, Telediffusion De France, Philips Electronics and the Institut für Rundfunktechnik (IRT). The following case shows how Sisvel proceeds to enforce and effectively license those patents. Information is based on an interview with two Clifford Chance attorneys who worked for the defendants and thus revealed detailed information about the case. Due to data protection reasons both attorneys could only give some names of the companies involved. The case study particularly stresses the strategies used to commercialize patents and shows how licensees are being coerced to fulfill immediate and high payments.

Some days prior to the CeBIT 2008 fair in Hanover, Sisvel S.p.A. sent requests for license payments to more than 40 exhibitors. Requests were up to a three-digit-million USD range and could therefore not be incurred immediately. Since IPR infringement is a crime in Germany, Sisvel was able to sue nearly 40 electronics manufacturers. As a consequence, more than 200 constables confiscated products like MP3-players, DVD-players with MP3 function, GPS devices and mobile phones at the CeBIT in 2008. The accused firms are large manufacturers like Sagem or Hyundai. Several of the affected firms are from Asian countries. In the course of this incident the respective firms were termed as product pirates in the media, which, especially due to their Asian origin, damaged their image rigorously. Moreover, the prosecution not only accused the corporate body but also the responsible executives, since infringement is also a crime in civil law.

According to German law, firstly the patent infringement has to be ascertained and in a second step the license fees are set. The infringing firms were aware of the validity of the patents because of earlier paid royalties and the disclosure of the IPR portfolios of Sisvel. Thus, the trial was not even started, since the situation seemed to be clear. Due to public pressure and the accusation by the prosecutor of Lower Saxony, it came to a swift out of court settlement which committed the offending companies to pay licensing fees. Patent

infringement claims are usually not held in civil courts. The strategy of suing executives personally for up to 5 years imprisonment has to be examined with regard to the proportionality of the situation. Although the violation of property rights is a crime, the civil prosecution has not been pursuing patent infringement claims so far. Accusing the violating companies at the time of the Hanover exhibition resulted in two important strategic advantages for Sisvel. First, it is very difficult to get an injunction in Asia and court procedures are lengthy and complicated. The location advantage of Germany and the legal context are important foundations for the effective enforcement of property rights. Another advantage is the use of the press as a pressurizing medium. The CeBIT is the largest IT fair in the world and the seizure of the stands imposed public pressure on the respective firms. The affected companies operate globally and have their own large R&D departments. The presentation as product pirates in the press is therefore strongly damaging the firm's image. The measure of accusation in Germany and the public pressure during the CeBIT had created a strong negotiating position for Sisvel. They were thus able to force the infringing companies to pay licensing fees in a very effective and quick manner. Sivels activities to enforce their rights can be classified as so called "forum shopping", a strategy of litigants that choose a court in a most preferable country or district.

CASE STUDY: EpicRealm

The next case deals with the American based company EpicRealm Licensing which is a medium-sized company that can be considered as being a pioneer in dynamic content delivery for web pages. This technology was one of the first to permit up-to-the-second content delivery. The following case was constructed after an interview with the executive director of PUBPAT, a non-profit organization which has the mission to protect freedom in the US patent system.

In the years of 1996 and 1999 the U.S. Patent and Trademark Office (PTO) granted two website patents of EpicRealm. The protected technology was a program code for the dynamic construction of web pages that was used by almost all companies that provided websites that can produce custom responses to individual visitors or users. In the beginning of 2005 EpicRealm sued more than a dozen online players, including matchmaking sites such as eHarmony.com and Friendfinder.com, day-planner specialist FranklinCovey, weight-loss drug company Herbalife, and automobile-glass repair company SafeLite. All of these companies can be considers as being rather small, since EpicRealm feared attacking the big players. But the SafeLite case had a surprising dimension, as Safelite is an "Oracle e-Business Suite"

customer. Oracle is a much bigger target, one with a bigger wallet and more at stake and the "Oracle e-Business Suite" is used in conjunction with the delivery of dynamic web pages. EpicRealm did not accuse Oracle in the first place, but attacked its customers that used the technology without paying royalties. This is a new way of attacking the big players. Oracle was not only under pressure because they are infringing a patent, but they were accused by their own customers. This is a big issue especially when taking into account Oracle's reputation and customer relationship. Oracle had to face reduced credibility, damage that can cause immeasurable costs. The suits were filed in the U.S. District Court of the Eastern District of Texas, which has a reputation for being friendlier towards patent holders.

EpicRealm's aggressive assertion caused substantial public harm by threatening the way in which most useful aspects of the web were provided to the public. PUBPAT, a legal group whose directors include free and open-source software advocates, heard about this case and tried to challenge these patents. In 2006 PUBPAT filed a request to the USPTO, which argued that the PTO was not aware of existing prior art technology when it granted the two patents to EpicRealm in 1996 and 1999. PUBPAT found that IBM also applied for a patent in 1995 that covers a method of fulfilling requests of a web browser. In the end the PTO granted the request made by PUBPAT and reviewed the two patents held by EpicRealm. In theory, the re-examination process should have taken several months, but in reality it often takes years. Oracle feared losing customers during the time the case was not solved and might decide to pay the patent license right away next time since the costs of fighting trolls are not only monetary.

TYPOLOGY: IPR enforcing companies

To better understand companies' different approaches to enforce their IPR, we constructed a typology identifying which behavior can be considered as a troll business. We believe that a classification only needs to take into account the companies' activities concerning the respective IPR. We assume that a manufacturer who owns a patent but has no intention of producing it and therefore might even operate in a different market, has a comparable position to non-practicing entities. We furthermore assume that the main goal of the patent owner is the income through royalties but not through selling. We especially consider activities of non-producing and non-innovating companies, which are classified in a sub-typology of patent trolls.

Graph 2 illustrates the typology of IPR enforcing companies to distinctly identify the troll business model. In the columns we distinguish between the use of trivial and non-trivial patents. In the lines, the classification distinguishes between combinations of innovating / non-innovating and producing / non-producing; based on the activities of the patent owner concerning the patent. It is thus possible that companies with several patents and therefore several activities can be classified in different typologies. The characteristic “producing" implies the technical implementation of the technology or the intention to do so in the future. The characteristic "innovating" stands for the independent innovation of the patented technology.

Attributes in italics reflect the motivation and reason for the company to enforce their IPR:

The **technology-blocker** tries to defend its technologies from imitation. The manufacturing and innovating company’s main goal is to protect its market share and block its competitors. In most cases these companies would probably omit the use of the protected technology. However, in some cases, when the technology is introduced in a standard technology, the company has to declare the patent to be licensed. Examples for these companies are usually medium-sized or big companies such as IBM, Siemens, Nokia or Motorola or small companies that operate in niche markets.

Graph2: typology of IPR enforcing companies

activities concerning the patent / patent-quality	non-trivial patent	trivial patent
innovative / manufacturing	technology *blocker*	trivial-technology *blocker*
innovative / **non**-manufacturing	patent *enforcer*	trivial-patent *enforcer*
non-innovative / manufacturing	patent *implementer*	trivial-patent *implementer*
non-innovative / **non**-manufacturing	patent *troll*	trivial-patent *troll*

The **trivial technology-blocker** owns IPR on technologies which are already state of the art and therefore do not contain a new technological step. Such trivial patents are enforced in

order to gain market share or protect entire markets. Since especially trivial patents may cover a wide range of constructive technologies, whole industries can be blocked or forced to pay royalty fees.

In practice, there are several case examples of companies that tried to enforce trivial patents. The following cases are briefly presented in order to illustrate this type of IPR enforcement. The first case concerns the company Amazon.Com Inc., which filed the so-called "1-Click" patent in 1999 at the USPTO. This patent protects the function of storing customer information, for repeated on-line purchase. The direct competitor Barnesandnobel.Com LLC used the same technique of customer data storage for the web based purchase of books. Amazon moved for an injunction to omit the usage of the “1-Click” technology. In parallel the USPTO initiated a repeated evaluation of the patent but still grants it as valid. The European Patent Office in contrast reviewed the patent and rejected it in 2007. Another case discusses the American telecommunications giant AT&T which received a patent in1994 for a billing systems that can be used in voice mail messages. The patent protects the function to differentiate between long-distance and short-distance calls and thereupon adjusting the billing system. The competing company Excel Communications used the same accounting technique and was therefore sued for an injunction. However, the District Court of Della Ware identified the patent as being invalid.

The **patent-enforcer** does not want to produce his innovation, but still economically enforce its IPR to compensate for efforts and investments in innovation. These companies usually sell or license their IPR. A blocking strategy is usually not pursued since these non-practicing entities do not operate in downstream markets. Exemplary companies are Qualcomm or Inter Digital.

The **trivial patent-enforcer** is in most cases a small innovative company or individual. The inventions are not current state of the art and contain no new technological step. Nevertheless, granted patents can be enforced under the cloak of innovative technologies. The aim is mainly to receive royalties using the pressure of injunction. As the patents are not legally valid, judicial processes are usually avoided. The license payers are in most cases not aware of the patent quality, or simply not able to afford litigation financially.

A good example is the EpicRealm case which was discussed before. Another case is about NTP a one man company that became famous by suing RIM. However, the intended injunction on a technology that would have omitted the use of all Blackberry smart phones in

North America was not approved by the court. In later cases NTP also sued Palm for infringement, but patents were re-examined by the PTO and identified as being prior art.

The **patent-implementer** uses the technology for its products without pursuing the effort of invention. For this purpose, companies can either purchase a license or buy the patent. Widely adopted technological standards such as GSM, UMTS, MPEG or the IEEE 802 standards are protected by thousands of patents belonging to a various number of patent owners (Blind & Pohlmann, 2010; Baron & Pohlmann, 2010). Most innovative products build upon these standards and therefore even highly innovative firms may pay licenses to others.

The **trivial patent-implementer** is a company that buys trivial patents or pays royalties to trivial patent owners. These companies are not aware of the missing quality of these patents, or are simply not in the financial position to fight in litigation cases.

TYPOLOGY: The patent troll business

Graph 2 illustrates the typology of IPR enforcing companies. Since we need to pay special attention to non-manufacturing and non-innovating firms we classify them in a sub typology of patent trolls (graph 3). We are thus able to differentiate cases where the licensee has formerly infringed or is initially buying a license and we furthermore divide into extortive and efficient IPR enforcement.

Graph3: typology of patent trolls

license recipient / laverage-potential	initial licensee	infringer
efficient IPR enforcement	license supplier	royalty claimant
extortive IPR enforcement	license extortionist	excessive royalty extortionist

We learned from the case studies, that even though the so called “patent trolls” are all non-manufacturing and non-innovating, activities in enforcing their IPR differ from case to case. The crunch question therefore is: Is the troll business an efficient way to enforce IPR? And furthermore, which activities may cause excessive royalties or excessive litigation costs?

We firstly differentiate two types of licensees, one that has already infringed and one that can choose to buy a license. The latter case of a **license supplier** has yet been discussed very sparsely in literature and there is little knowledge about how reasonable such situations are in practice. Learning from our five cases, we can at least conclude that IP Com and Papst Licensing pursue such businesses. Especially in the context of standards setting, we have evidence that trolls can extort companies to pay royalties even though they have not infringed the patent yet (**license extortionist**). When technological standards are widely adopted, companies have to implement this technology in order to ensure interoperability among other products or applications. However, most standard bodies or standard consortia use FRAND licensing terms, which is a binding commitment for essential patent holders to license under fair, reasonable and non-discriminating terms (Rysman & Simcoe, 2007; Salant, 2007; Pohlmann, 2010)

Most troll definitions not only characterize a troll by being non-innovative and non-practicing, but also link the troll behavior to a wait and see tactic. Thereby the troll hides until the patented technology is implemented or even standardized and then appears to claim royalties (Henkel & Reitzig, 2007). Nevertheless, the use cases of IP Com and Sisvel show that in many cases these patents are known by all market participants and used for several years. In our typology we therefore classify these companies as **royalty claimants**. It is often a certain market constellation in which patent owning companies are not able to enforce their rights (Bosch, SMEs in the Papst case, SMEs in the Alliacense case). The use cases of Papst Licenses, Alliacense, IP Com and Sisvel have shown that the patent troll business is an efficient way to enforce IPR and burst uneven market constellations.

Situations where the infringer does not even know about the patent in question and where trolls strategically hide their IPR are different. The Alliacense and Papst cases show that these companies serve or even acquire SMEs and enforce their IPR ex post to the implementation of technology and standard adoption, to demand higher fees. The Sisvel and EpicRealm case further revealed specific strategies how patent trolls are able to use public media and infringers fear of bad reputation to extort excessive royalties. Especially the case of Sisvel revealed a common practice called forum shopping, where the plaintiff strategically chooses a certain court in a certain country or district that might allow a more favorable judgment. The Alliacense case illustrated tactics such as first mover pricing discounts or suits on OEMs to increase the pressure and royalty amounts for infringers. This behavior would classify the companies of our cases as **excessive royalty extortionists**.

CONCLUSION

The phenomenon of patent trolls is often considered as being overrated, but has still caused significant litigation cases and therefore drawn the attention of economic research. This paper is the first to provide evidence of specific patent troll strategies and methods to enforce IPR. Furthermore this paper constructs a distinct typology of IPR enforcing companies and in particular of patent trolls. Thus future cases in the context of IPR infringement can be distinctly classified. Policymakers, business leaders and innovators are hence able to assess the troll business and anticipate its possible effects.

By using our five cases and the typology of patent trolls we are able to confirm both of our hypotheses. We believe that our case study analysis is able to give evidence that the patent troll business is able to break open unbalanced market constellations. A patent troll is not vertically integrated and not active on product markets and therefore has a certain bargaining position. Patent owning companies are in many cases either too small or too dependent on other market participants to enforce their IPR. We conclude and approve our hypothesis *H1a* that the patent troll business is an efficient way to enforce IPR.

However, we also confirm our second hypotheses *H1b* and find evidence from our cases that patent trolls' strategies to enforce IPR may also lead to excessive royalty fees and increasing negotiation costs. We identified leverage methods such as influence on infringers' image through the media, forum shopping, first mover incentives to take early licenses, pressure by accusing OEMs, retailers, consumers and executives and the move to sue injunctions. These methods combined with an uncertainty about the patent scope and values often yielded excessive royalties, lengthy negotiation and costly litigation.

Even though we only analyze ten patent troll cases, we believe that our empirical results are able to add value to findings in literature and that our typology can be applied to a various number of cases.

REFERENCES

BALL, G.; KESAN, J. P. (2009): *Transaction Costs and Trolls: Strategic Behavior by Individual Inventors,* Small Firms and Entrepreneurs in Patent Litigation, working paper.

BARON, J., POHLMANN, T. (2010): *Essential Patents and Coordination Mechanism. The effects of patent pools and industry consortia on the interplay between patents and technological standards,* working paper.

BESSEN J., MEURER, M.J. (2008): *Patent Failure,* Princeton University Press, New Jersey.

BLIND, K., POHLMANN, T. (2010): *Firms' cooperative activities as driving factors to declare patents on technical standards. Evidence from firm level analysis on cooperative arrangements and business models,* working paper.

BUCHANAN, J.M. (2006*): Deference Overcome: Courts' Invalidation of Patent Claims as Anticipated by Art Considered by the PTO,* Stanford Technology Law Review 2.

BENSEN S. M., Levinson R. J. (2009*): STANDARDS, INTELLECTUAL PROPERTY DISCLOSURE, AND PATENT ROYALTIES AFTER RAMBUS,* NORTH CAROLINA JOURNAL OF LAW & TECHNOLOGY VOLUME 10, ISSUE 2: SPRING 2009.

CHIEN, C.V. (2009): *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*. North Carolina Law Review, Vol. 87, 2009.

DEVLIN, A. (2009*): STANDARD-SETTING AND THE FAILURE OF PRICE COMPETITION*, working paper.

EDISON, T. (1898): Interview in Scientific American 78 (2): 19.

FISCHER, T. et al. (2009): *Patent Trolls on Markets for Technology – An Empirical Analysis of Trolls' Patent Acquisitions*, working paper.

GOLDEN, J.M. (2007): *"Patent Trolls" and patent remedies*. Texas Law Review Vol. 85, p. 2111-2161.

HOVENKAMP, H. J. (2008*): Patent Continuations, Patent Deception, and Standard Setting: the Rambus and Broadcom decisions,* working paper.

HENKEL, J.; REITZIG, M. (2007*): Patent sharks and the sustainability of value destruction strategies,* working paper series.

HENKEL, J.; REITZIG, M. (2008): *Patent Sharks*, Harvard Business Review.

LEMLEY, M. (2007*): Are Universities Patent Trolls?*, Stanford Public Law Working Paper No. 980776.

LEMLEY, M.; SHAPIRO, C. (2007*): Patent holdup and royalty stacking*, Texas Law Review Vol. 85, p.1991-2048.

LERNER, J. (2006): *Trolls on State Street? The Litigation of Financial Patents,* Working Paper p.1976-2005.

LEVKO, A.; BARRY, C.; TORRES, V.; MARVIN R. (2009): *A Closer Look: Patent litigation trends and the increasing impact of non-practicing entities,* PWC Patent Litigation Study.

MAGLIOCCA, G. (2007): *Blackberries and barnyards: Patent trolls and the perils of innovation*, Notre Dame Law Review Vol. 82(5), p.1809-1838.

MCDONOUGH III, J. (2006): *The Myth of the patent troll: An alternative view of the function of patent dealers in an idea economy,* working paper.

OHLY, A. (2008): *„Patenttrolle“ oder: Der patentrechtliche Unterlassungsanspruch unter Verhältnismäßigkeitsvorbehalt? – Aktuelle Entwicklungen im US-Patentrecht und ihre Bedeutung für das deutsche und europäische Patentsystem*, in: GRUR Int, Heft 10, S. 787-798.

POHLMANN, T. (2010): *Attributes and Dynamic Development Phases of Informal ICT Consortia*, working paper.

REITZIG, M.; HENKEL, J.; HEATH, C. (2006): *On Sharks, Trolls, and Their Patent Prey - ”Being Infringed” as a Normatively Induced Innovation*. Exploitation Strategy, working paper.

RYSMAN, M., SIMCOE, T. (2007): *A NAASTy Alternative to RAND Pricing Commitments*, working paper.

SAG, M; ROHDE, K.(2006): *Patent Reform and Differential Impact*, working paper.

SHAPIRO, C. (2001): *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, working paper. In: A Jaffe, J Lerner et S, Stern (Eds), Innovation Policy and the Economy, vol. 1. MIT Press.

SHRESTHA, S. (2010): *Trolls or Market-Makers? An Empirical Analysis of Non-practicing Entities*, Columbia Law Review Vol. 110.

SALANT, J. (2007): *Formulas for fair, reasonable and non-discriminatory royalty determination*, working paper.

TARANTINO, E. (2010): *A Model of Technology Adoption in Standard Setting Organization*, working paper.

U.S. FEDERAL TRADE COMISSION (2003): *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, A Report by the Federal Trade Commission.