MASTER

Trolling strategies of non-practicing entities in Europe

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Trolling Strategies of Non-Practicing Entities in Europe

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Management summary

A need breed op patent practitioners has landed on European soil. It is a type of company that does not engage in Research and Development or in the manufacturing of technology, but they have a business model that is focused on the monetization of patents. Their main sources of revenues stem from granting licenses, selling the patents or asserting the rights against (potential) infringers. This phenomenon is called a non-practicing entity (NPE). They first emerged in the United States, but are now also present in the European market for technology. Their presence has led to a vigorous debate. Some label them as patent trolls and regard them as the parasites of the system. Others see them as the first embodiment of a more mature market for the exchange of innovations and technological ideas. The debate faces a serious defunct though, namely a lack of detailed studied empirical evidence. The goal of this master thesis research is to (partially) fill the problematic 'empirical' gap in the debate on patent trolls. The empirical part of this study has a strong focus on the European context, since this was most lacking in other studies in this field. The findings are used to answer the following research question:

What are the driving factors behind the emergence of the patent trolling strategy of non-producing entities in the European market for technology?

A comprehensive literature study was performed to distill the most important factors behind the recent changes in the system and the upsurge of new business models for patent monetization. The discussion in literature is captured in a set of thirteen statements and questions. This set is used to interview European practitioners. Next to the interviews, four cases were studied in detail to understand the working practices of NPEs in Europe. One can find a detailed description of the dispute between KPN and High Point, the highly interesting case of IPCom in Germany, the clash between Papst Licensing and Toll Collect, and finally the portfolio management and filtering activities of OTB IP.

This research showed that patent trolling is mainly a reaction to the recent changes of the patent system. Patents turned into a business asset on their own. Institutional changes and changes in the overall mind-set towards IP had a serious impact on the patent behavior of many practitioners. Many scholars identify a steep increase in the number of patent applications, but moreover an increase in patents applications that represent decreasing technological value. In the ICT industry, which is known for its focus on complex, interconnected and standardized technologies, this led to a situation where opportunism could flourish. Specific types of patents (broad and vague, or reading on standardized technology) can be used for assertion against manufacturing entities and may generate a serious revenue stream. Some identified a new business model in this and created non-practicing entities. These parties used to focus on the United States, due to the high risk profile their business model imposes on manufacturers of technology. Fighting them in court is a costly and uncertain undertaking, which results in a preference of alleged infringers to settle the issue before entering a courtroom. Their strategic and often aggressive enforcement resulted in the label patent trolls.

Changes in the U.S. context, such changes in as the legal landscape, was the reason for trolling NPEs to try their luck on European soil. They seem to adopt their behavior to the new context quite easily. There are clear differences in for instance the national legal landscapes and overall business ethic, but the case studies confirm the presence of a variety of NPEs in Europe. The
variety of parties and their behavior is very similar to the situation in the U.S. The interviews and cases made clear that their presence is still in an upsurge. The research also showed a change in the type of parties that engage in patent monetization. The realm changed over time from incumbents that try to monetize their R&D investments and protect their product portfolio into a world of (aggressive contingency fee) lawyers and financial service providers. The newly created non-practicing entities do not assess the value of a patent of the technology or idea it tries to protect, but they focus on the likelihood that it will sustain licensing negotiations and/or court cases. This led to a decoupling of the technological value and the legal sustainability of patents.

The research finally showed that non-practicing is not the issue. The opportunistic behavior that some practicing and non-practicing entities show, that is the issue. There are many examples where it is highly interesting for patent owners to follow a strategy that does not (yet) include manufacturing. This holds for start-ups that aim to monetize their R&D investments early in their business development process, but also for established firms that that license-out a dormant part of their portfolio to other industries to create a greater revenue stream. NPEs can be vehicles though which innovations and technological knowledge can disseminate. These parties can contribute to a more fluid and transparent patent system that can be beneficial for innovation. This would be a true mature market for technology (Arora, Fosfuri, & Garambella, 2001). In this process, there should be a much stronger link between the monetary rewards and the technological value or scientific contribution though. FRAND should not just be a measure in licenses for standardized technologies. It should be an overall business ethic.

A research into patent trolling inevitably leads to a critical assessment of the current state of affairs in the patent system at large. The situation proved to be worrisome. The current patent system and the behavior of its practitioners are a potential threat to innovation at large. There are a number of possible countermeasures that follow this observation. Large corporations are most likely in the best situation to use their patent portfolio to add value to their business model. These practitioners should change their mindset about the role of IP though. Reasonable monetization should be the standard. Patents with little technological value are bad for large parties in the end as well, since they proved to be possible powerful weapons in the hands of opportunists. All parties should stop filing on innovations of little technological value. SMEs should fight IP ignorance. An IP strategy should be an important part of initial business model, independent of the industry. Lack of internal competence is no reason to ignore this issue. It is highly important to remember that changing the mindset of an entire industry is not a one man or one company job. It requires hard work and dedication. The issue should therefore also be addressed at a policy and/or institutional level. One could think of revisiting the system at large, such as the creation of a unified patent office and/or court. There is also the possibility of generating jurisprudence that can limit the possibilities of opportunists. The ‘four-factor equitable test for granting injunctions’ is one the examples of such jurisprudence in the U.S.

Further research could focus on gathering more cases studies in other national contexts. In addition, these cases could focus on the micro level to study the impact of the changing market of IP on the (innovation) management decisions. On a policy level, one could make a stronger international comparison on the institutional changes that influenced the freedom to operate of NPEs.
Preface

You are about to read the materialization of the end of an unforgettable student life at the University of Technology Eindhoven. It is the end of an era, as many say. This work finalizes my master in Innovation Sciences. This master and the preceding bachelor fitted me like a tailored suit. The multi-disciplinary nature and complexity of innovation is perfectly translated into a program that is both challenging and highly attractive. The same holds for the topic of this master thesis.

This master thesis research project resulted in many highly valuable experiences. I am first of all honored that I was given the opportunity to interview and discuss my research with persons on strategic positions in the industry. Their input was of invaluable importance to this research. I was furthermore given the opportunity to visit a number of congresses. It enabled me to get familiar with the working practices, structure and professional language of the world of IP. Overall, I learned the most from the qualitative research design behind this thesis. I had a fairly strong favor towards more quantitative analyses in the preceding years of my education. These skills were of little value for this topic. Performing interviews and analyzing court documents were for instance new or underdeveloped skills. This made the research an educational experience. Positive reactions from interviewees and supervisors made clear that I developed these skills. The entire process was therefore of great value for my personal development and future business life.

This research would not have been possible without the supervision of Rudi Bekkers and Jan Smits. I would like to thank them both for their own unique contribution to this work. With Rudi Bekkers being my first supervisor, he has seen my struggles and successes with most intensity. His enthusiasm about this field of research and all other aspects of life were inspiring, but moreover the reason for me to ask him for mentoring and supervision. His dedication and working spirit are things I aspire for the rest of my working life. Jan Smits fulfilled a very different role in the process. He was my second supervisor, so the number of our encounters was much lower. This did not make our conversations less intense though. His years of experience in the field give him the unique skill to identify (hidden) problems with an ease I have not often seen before. He needed a question or two to address the issues I not even knew I was struggling with. He pointed me towards new directions to explore, for which I am very thankful.

I would like to use this opportunity to thank my parents for providing me with the nourishing environment, love and support that enabled me to develop myself into the whole person I am today. My sister Moniek was an inspiration in this all, with her passion and dedication towards the dreams she pursues, even when those dreams take her to Mexico. My love and gratefulness goes out to my girlfriend Stephanie. I could celebrate my successes with her, but she was also there during times of struggle and frustration. Without here love and care, it would have been impossible to finish this work. My final, but not least, appreciation goes out to all of my friends. Stijn Zegel, Matthijs Janssen and Arthur Vankan were in a special position during my student life and beyond. Not only did we share a lot of joyful moments, but we were also able to combine hard work with having a great time together. It was an amazing time.

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1 Introduction

The world of intellectual property (IP) usually is not a topic of great interest to the average layman. It is seemingly complex, intangible, and distant from everyday life. Big lawsuits resulting in substantial damage awards may draw the layman’s attention, but besides that it probably doesn’t stir their imagination much. Coining the term patents and trolls in one phrase most likely does draw their attention. “Trolls?”, they say, “Aren’t they those small ugly creatures from Scandinavian folklore? What does that have to do with patents?”. What follows is the story on patent trolls.

1.1 Patent trolls and non-practicing entities

We begin our story by explaining the origin of the term patent troll. Peter Detkin was the first to popularize the expression in 2001. In his time as Assistant General Counsel at Intel he explained the phenomenon as follows: ‘A patent troll is somebody who tries to make a lot of money off a patent that they are not practicing and have no intention of practicing and in most cases never practiced’ (McDonough, 2006). He used the term in the light of a patent conflict with Techsearch LLC (Pohlmann & Opitz, 2011). The term, although heavily contested, refers to the ugly creatures from Scandinavian folklore that steal and try to extort the people they encounter. ‘The Three Little Billy Goat Gruff’ (Asbjørnsen & Moe, n.d.) is an example of a Norwegian folktale that includes a troll. In the story three goats have to pass a bridge and under the bridge lived a great ugly troll who ate all who tried to pass his bridge.\(^1\) When translated into a patent strategy, it describes a party that acquires a set of patents and tries to monetize it by means of extortion and socially undesirable aggressive enforcement. One can imagine the pejorative nature of using a metaphor like trolls to explain the behavior of certain patent owners. There are alternative metaphors or typologies tough, like patent sharks (Henkel & Reitzig, 2008), patent extortionists (Pohlmann & Opitz, 2011), and patent dealers (McDonough, 2006). They all have some or more negative flavor to them; all but one. Non-practicing entities (NPEs) is most likely the most political correct term to explain the business strategy of this relatively new breed of patent practitioners. It is a much broader definition that describes all kinds of patent holders that do not (yet) manufacture their appropriated technology. Their main sources of revenues stem from granting licenses, selling the patents or asserting the rights against (potential) infringers. Patent trolls fit this description, but are just one of the possibilities on a continuous scale of embodiments. They represent the dark side of the system, in which a patent holder not just tries to capture the value their own contribution to the invention, but also a disproportionate share of somebody else’s revenues. Albeit the latter is not unique for patent trolls, many claim that these parties are the parasites of the patent system and we should do everything to extinguish them. But is this really correct to claim? The counter opinions are two sided. Some argue that opportunistic NPEs are just able to filter out and assert high(er) quality patents from for

\(^1\) Fortunately, the three little goats were so keen to outsmart the troll. The first little goat told the troll to wait for his bigger and fatter brother. The second goat again convinced the troll to wait for his even bigger and fatter brother. Eventually, the biggest goat was so strong that he ‘poked [the troll’s] eyes out with his horns, and crushed him to bits, body and bones, and tossed him out into the cascade’. (Asbjørnsen & Moe, n.d.) [This might even be a good strategy for a small manufacturer encountering a patent troll!]
instance large auctioned patent portfolios. The other and more promising vision on the matter is related to the notion of markets for technology (Arora, Fosfuri, & Garambella, 2001). This theory describes a market with trade in existing technology, but there is also trade and generation of future technologies. In a mature market technology, there is room and moreover need for structural unbundling of the various market players. It creates parties that are specialized in the generation or manufacturing of technology, but also parties with a focus on the trade of technology in the form of patents. Patent trolls, but more specifically NPEs, could be identified as the early embodiment of this structural long term change in the market place. They use their legitimate right to create vehicles for technological dissemination.

This small discussion already shows that there are many aspects involved in this fascinating topic. We enter a world where technological innovation meets the world of lawyers and business economics. These worlds do not always coincide very well and they together give birth to the topic we are about to study here.

The patent system as such is also subject of perpetual debate. Whether it is on themes such as the inability of the patent offices to cope with the rising number of applications, on what should be patentable matter, or on what the minimum novelty or inventive step should be, never have we seen such a vivid and emotionally fed debate as it is the case with patent trolls. The debate on trolls faces a serious defunct though. Especially outside of the academic arena, many people have a hard time defining and understanding this new breed of patent practitioners. People usually refer to a small set of epic court cases in the United States in which a small NPE was rewarded tremendous damage awards or settlement or had a serious impact in another fashion. These cases will be discussed at greater length later, but we are talking about NTP v. Research In Motion (US$612.5M settlement), Eolas v. Microsoft (US$521M damage awards) and eBay v. MercExchange (change in the legal landscape). Most of the times it is questionable tough, whether the authors or debaters fully understood and studied these cases in a structural and factual manner. The debate is mostly fed by emotions and personal opinions instead of factual analyses. This lack of empirical evidence is also a problem in the academic world. Leaving the few valuable exceptions aside, they too refer to a limited number of known U.S. cases, but fail to elaborate on them. There are furthermore signs of European, including Dutch, firms being accused of infringement by NPEs. Empirical studies into these cases are even rarer.

There is a clear need to understand the role of NPEs within our innovation system. One of the main reasons is the financial burden they put on the system. Bessen, Ford and Meurer (2011) showed that trolls can be accounted for a 500 billion dollar loss of wealth of the companies they attacked in the U.S. in the past twenty years. This is a highly alarming number. Although we do not have these numbers for the European market, it does make us wonder what impact this must have on the incentives to innovate of the players involved. A loss of wealth may lead to a decrease in the investments in R&D and therefore even greater losses in the future. Others (cf. McDonough (2006)) interpret the rise of the NPEs in a whole other fashion. They claim that we are in the middle of a paradigm shift towards more mature markets for technology (term introduced by Arora, Fosfur & Garambella (2001)). These markets facilitate trade and generation of future technologies. Patent embody an important means in this process, since they can act as a vehicle in which technological ideas can travel. In this situation, a fully integrated innovating and manufacturing entity might no longer be the ideal solution of technological progress. Patent and license brokers can be important distributors of intellectual capital. If we
take the monetization of intellectual property out of these entities and place it inside patent dealing organizations, we might increase competition, lower downstream prices, and enhance consumer choice (Geradin, Layne-Farrar, & Padilla, 2008). We will address this rather classical economic argument in our theory chapter later on. What is important to learn now, is that trolls, but moreover NPEs might be the first signals of the changing market. This puts the developments in a whole new perspective.

An important study that does provide insight into real life cases is the annually presented litigation study by PricewaterhouseCoopers (PWC). It gives insight in the litigation behavior and success of NPEs. The 2011 version (PricewaterhouseCoopers, 2011) shows that the damage awards for NPEs averaged more than double the awards for practicing entities in the past five years. Figure 1.1 gives more insight into this. The main reason for this success is seemingly linked to the preference for jury cases instead of trial cases. The study shows that juries are more likely to grant high damage awards in favour of the patent holder. The success rate of NPE cases is lower though; 23% compared to 33% for cases filed by practicing entities. This is mainly explained by their focus on summary proceedings. The final observation that drew our interest is related to the damage awards. The main measure for damage awards is the calculation of reasonable royalties. This is fairly evident in the case of NPEs, since they are not entitled to lost profits, given the absence of production and sales. We will elaborate on all the legal matters at much greater length in our law section, but PWC’s study already shows the interest of the industry to monitor and understand the behavior of NPEs. The statistics of this study can be used as an input in the theoretical discussion in literature.

1.2 Research Question
The goal of this master thesis research is to (partially) fill the problematic ‘empirical’ gap in the debate on trolls. A structural and objective study into real-life trolling cases can help to study the mechanisms that have led to the trolling behavior of these parties. It can help to pin down what trolling really is and whether it is a real (new) problem. It is also of much interest to assess whether the phenomenon will stay with us for a long time in the future. By linking these questions to a set of known and a set of previously unstudied cases we can try to identify the driving factors behind this intriguing subject. The conclusions from this study can help practitioners and policy makers to better address the problems related to the emerging role of this new type of players in the market. Therefore, the main research question of this research is as follows:

What are the driving factors behind the emergence of the patent trolling strategy of non-producing entities in the European market for technology?

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2 It is hard to imagine how a jury is ever capable of getting a grasp of these often highly complex patent disputes, but that is a discussion to be held elsewhere.
Answering this question without taking any form of boundaries in mind would be an impossible undertaking. A study into the relevant publications showed us that the discussions are concentrated around four areas. The most important scholars use arguments with a *Legal/Institutional, Economics, Technology and Terminology view*. The latter two are respectively related to the role of IP and NPEs in the different technology domains, and the discussion on the different terminologies to describe NPEs. The prior two speak for themselves.

### 1.3 Methodology

The analysis that leads us to the answer to our main research question is both a theoretical and an empirical undertaking. Both are in need of attention. This study tries to tackle the lack of theoretical convergence and need for empirical analyses.

The **first stage** of this research encompassed a broad literature review to show how the issue is addressed in current literature. The insights from literature will give us a textbook introduction into the subject-matter. In a narrative style, we give a comprehensive introduction into all the aspects that are related to trolling. It moreover points us towards the areas in which scholars did not yet agree upon each other or to areas where there is a need for more empirical validation. There is a need for this narrative, since the topic we are about to discuss is still in its infancy. Without a proper overview of what is already written about it, it is not possible to add something to the body of knowledge. This introduction is used to position this research in the field.

For the **second phase**, the theoretical discussion was subsequently prepared for empirical validation. To achieve this, the discussion was boiled down into thirteen statements which was discussed with Dutch industry players. The reason why we need this empirical test is the strong discourse that is still present in literature. Many scholars make claims about trolling, but there is a lack of decent cases studies into more cases. The earlier mentioned notorious cases are of course very interesting, but they cannot be the sole input for theory building. More direct observations of affected parties are of great value. I used a set of predefined statements. This enables us to better interpret the opinions of the interviewees on the topics of interest to us.

Some of the interviewees pointed to real life trolling cases in the European context. The description of these cases and the lessons we can draw form them form the **third stage** of the research. Together with the two proceeding stages we arrive at the **fourth and final stage**, namely the assessment whether the current patent system is still in line with the original rationales behind its establishment. All the steps in the process must help to answer our main research question. The analysis is best explained with the research model as presented in Figure 1.2. All four themes are covered in four stages. I compare the basic rationale or foundations of the patent system with the contemporary views in literature. These insights are challenged by means of interviews and case studies.

The focus on the four themes helps us to better understand the context of the factors we are after in the research question. It enables us to argue which changes in the legal/institutional, economic or technological landscape gave room for trolling behavior by certain NPEs. It might even lead to the conclusion that we should assess the phenomenon in the mere positive vision of, inter alia, McDonough (2006) and Arora, Fosfur & Garambella (2001).
1.4 Study design

The role of context is of great importance in the discussion on NPEs. I therefore decided to combine the interviews with a set of case studies into cases in the European context. Pohlmann and Opitz (2010) were already able to add German cases to the body of literature. The combined insights from our studies will give a broader understanding of the phenomenon at hand. The qualitative approach of our research is best suited to study this phenomenon. According to Yin (1989), a qualitative case study is 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'. The subject is furthermore quite sensitive from a confidentiality point of view. The total number of people that encountered trolls in real life is also fairly limited. This made our research perfectly suited for a case study design based on documents and interviews. I considered the use of written questionnaires, but this method lacks direct observation and context. This was the reason not to select this method.

The research has an explanatory nature, since we would like to understand why and how NPEs operate in certain ways. We engage in a hypothesis-generating process, since our goal is not to write a final conclusion on the topic. It is of greater interest to demonstrate how the problem is perceived in the European context. Therefore, this report is written in a narrative manner in which we stipulate the causal links behind the story (Yin, 1989, pp. 113-115). This strategy is not really in line with Yin's overall positivistic approach for doing research. It leans towards the interpretative case study. Walsham's (1993) study into the interpretation of information systems in organization is considered to be the scholarly example of this research strategy. In this approach, generalization in not considered to be the utopian end goal of the study. Independent and dependent variables are not predefined. The main objective is to understand the deeper structure of the phenomenon. What is learned from the study can be used to inform
other settings (Paré, 2001). In our attempt to generate a strong interpretative case study, I selected cases, performed interviews and document searches, recorded and transcript the interviews, and eventually analyzed the responses in that fashion.

Foregoing showed the philosophy behind this research. The more practical implementation of the choices will be explained at the beginning of every chapter. The research methods that were used to generate and process the data for that specific chapter are also explained.

1.5 Reading guide

This report is structured in the earlier mentioned four staged process leading towards our conclusions. In chapter two, the reader will be introduced into the insights from literature that are related to patent trolls and non-practicing entities. It is a textbook introduction into the topic in which we discuss the Legal/Institutional, Economic and Technological foundations and contemporary views. We furthermore explain the discussion related to the Terminology. In the conclusion of this chapter, one can find the set of statements that we used in the interviews. Chapter three consists of the empirical validation and thus the third stage of our research. It is shown how the interviews enable us to shine more light on the open discussions from a European perspective. Subsequently, four cases in the European context are added to close the earlier mentioned empirical gap in the debate. We will cover the disputes High Point v. KPN, IPCOM v. Nokia in Germany, Papst Licensing v. Toll Collect and the portfolio management and filtering activities of OTB IP. These cases are found in chapter four. In chapter five, there is an explanation why the current patent system is a danger for innovation and therefore economic progress. The combined sub conclusions of every stage will lead to the overall conclusion of this research in the sixth and final chapter. We also discuss the limitations of this research and present a personal reflection.
2 Insights from the literature on patent trolls and non-practicing entities

This chapter is the first step in our quest into understanding and explaining the role of NPEs in our modern economy. In order to achieve this we first need to understand the basic principles or foundations of patents and the patent system. These foundations are subsequently challenged by discussing the contemporary views that were found in literature in the light of non-practicing entities. This enables us to question whether the current patent system is still in line with the original rationales for its establishment. It furthermore allows us to conclude on the role and desirability of NPEs in our economy and their impact on innovation. These matters will be covered in the earlier presented four pillared fashion, since the discussions are focused around these four themes. The findings and discussions in literature are presented in a narrative style, giving the reader a mere textbook introduction into the debate. The insights from this chapter form the basis for the empirical part of this research.

Method
There were several steps involved in writing this narrative. Multiple courses at Eindhoven University of Technology and at Chalmers University of Technology gave the insights for explaining the foundations of the patent system. The textbooks related to these courses are of great value our analysis process. I furthermore used online literature databases, such as Scopus and Web of Knowledge to search for the most important readings for the specific subject at hand. Key search queries were ‘patent troll*’, ‘non-practicing entities’ and ‘NPE*’. After this first selection, I used the ‘snowballing’ technique to come to a comprehensive search on the matter. In this technique, one uses the references in the known material to find more readings. By repeating this procedure, one ends up with all (or at least many of the) relevant publications. The main assumption behind this is that only the valuable publications receive citations from later publications. The citations serve as evidence that the preceding work contributed to the current research frontier (Diamond, 1986). It therefore serves as a filter mechanism in a literature search, since one does not have to go through readings of lesser value. We were aware of the infancy of the subject-manner. New publications which were not able to receive citations yet were therefore also scanned, but not always included,

Reading guide
As mentioned before, the topics of our interest will be discussed in the four themes from the research model. We start with the legal/institutional view. This enables us to understand the legal foundations and vocabulary, before we dig into the more critical discussions on the system and its shortcomings. As a part of the legal view, the reader will be introduced into a historical overview of cases involving non-practicing entities. The subsequent sections will cover the economic, technology and terminology foundations and its discussions. In the end of each section, there is an overview of the countermeasures that can be taken against opportunistic NPEs, seen from the respective section. This chapter ends with a conclusion to show which specific areas are in need of empirical validation.
2.1 Law and institutional view

2.1.1 Foundations

*Kort Begrip van het Intellectueel Eigendomsrecht* by (Gielen & Hagemans, 2000) is the key reading related to intellectual property law in the Netherlands and Europe. Together with Jaffe & Lerner (2004) and Granstrand (2009) it gives us the insights in the legal and institutional background of the patent system which are covered in this section.

**Patents**

A patent is a state rewarded, temporarily, and spatial monopoly on an invention. The establishment of a patent system and all its institutions is a strict national undertaking. Countries align their policies by means of treaties, such as the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement. Among many others, Gielen and Hagemans (2000) explain that patent law states that the invention should be new (to the world), non-obvious (or encompass an inventive step) and useful (or industrially applicable). The European Patent Convention excludes the following matters from patenting:

1. Discoveries, including scientific theories and mathematical methods;
2. Aesthetic creations;
3. Schemes, rules and methods for the conduction mental labor, playing games or doing business, and programs for computers;\(^3\);  
4. Presentation of information.

A patent gives the owner the right to exclude all others from making, using, and selling the invention. Therefore, it is called a right to exclude or a negative right. It does not give the owner obligation to practice the invention. The owner does not have to put the idea into action just because he holds the exclusive right to it.

The inventor has to apply for a patent at the national patent office. The patent is written by a patent attorney and examined by a patent examiner at the patent office. In case the patent is granted, the owner is granted the exclusive right in the country where he applied for the patent. If he wishes to pursue protection in other countries as well, he has to apply for it at every individual national patent office. In Europe, he can apply for a European patent, which is nothing more than a bundle of national patents at the European patent office. The advantage lays in the single application, which makes it faster and cheaper.

The monopoly comes at a price though. Next to the application fees, the owner needs to pay yearly continuation fees to the (national) patent office. The maximum life time of a patent is 20 years in most jurisdictions. The patent office always publishes the application, so the entire public domain is informed about the protected idea. After expiration, everyone is able and moreover allowed to make, use and sell it. In industries where a product can be covered by a

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\(^3\) In practice, one can apply for a software patent, even in Europe, as long as the applicant can prove that the invention is of a specific or technical nature. The use of a computer as such is not sufficient, despite its inherent technological nature. U.S. patent law recently became much clearer on this matter. Applications should pass the machine-or-transformation-test, which forces applicant to show how the software is embedded in a machine or which physical transformation is generated by the software. (Bilski et al. v. Kappos, 2010)
single patent, i.e. the pharmaceutical industry, this usually results in a radical market
transformation. The original inventor loses its monopoly and the market will be flooded with
generics more or less the day after the patent expires. The market thus makes a pay-off between
short term social losses (because of the monopoly and the dead weight lost it creates in the
economy) and long term benefits (publication of the idea to the world with its presumed
positive impact on technological progression).

The essence of the patent monopoly rights is that the owner of a patent is legally entitled to stop
others from using his idea. In case of infringement, as illegal use of someone else’s patented idea
is called, there are several options to stop the other party. First of all, he could ask the other to
stop. The patent as such can be enough to convince the other of his illegal practices. They could
negotiate a license for further use and, if needed, damage awards for past infringement. In case
this strategy is not fruitful, then there always is the possibility to pursue legal action. Every
jurisdiction with a patent system facilitates legal procedures in which a patent owner can
enforce the right he was granted. In these legal proceedings, the plaintiff (the patent owner)
accuses the defendant (the alleged infringer) of patent infringement. The plaintiff must show
why and how the defendant’s product, process or service is using technology that is covered
with plaintiff’s patent. The defendant will on the other hand claim that plaintiff’s patent should
be invalidated. He will try to convince the judge or jury that the patent should not have been
granted, for instance because of obviousness or lack of inventive step. Mistakes during the
application procedure could also be a reason to invalidate a patent. The defendant will
furthermore argue that he is not infringing upon the patent in the first place.

In the end of these (usually) highly complex proceedings, there can be different outcomes. First
of all, the patent can be invalidated. In such cases, it is no longer important whether defendant’s
technology was infringing, since the patent does not have any protective legal status anymore. If
the patent is considered to be valid and moreover infringed, there are again two options. If the
conflicting parties are able to settle a licensing deal and certain damage awards for past
infringement, then the infringing party turns into a licensee. This makes him a legal user of the
technology. If the patent owner does not want this, he can ask the judge to grant him an
injunction. In this case, the defendant is no longer allowed to produce, sell or use the
technology. A violation of this decision is considered to be a criminal offense.

Normal court proceeding and decisions take a lot of time. In case of immediate emergency, one
could choose a type of fast-track proceedings. The judge issues a preliminary judgment on the
matter before him. This is a very valuable legal tool in for instance cases where a strike of
certain employees could result in serious harm to society. Patent holders also have access to
these proceedings though. In case a product launch of a competing company might for instance
have serious impact on future market shares, he could ask a judge for injunctive relieve in a
summary proceeding. The judge can only issue a preliminary injunctive relieve. These decisions
can be appealed in a normal proceeding, but in many cases they are a strong indicator for the
positions of the two parties. The decisions can therefore have a serious impact, especially in
technology domains which have a strong tendency towards incremental product improvements.
If product lines follow each other very rapidly, for instance in the ICT sector, then it can be of
high strategic value to block your competitor, even for a short period of time. The
argumentation behind this is two folded. It is first of all unlikely that a customer, who bought a
certain piece of technology, say a smart phone, will to buy another device soon. As soon as that
particular device embodies a certain platform of interconnected technologies, there could also be a strong degree of switching costs in the future. The user thus gets locked-in into the platform and moreover into a certain manufacturer. This is the ideal situation for the producer of course, since it guarantees future revenues from future sales. The second and even more important explanation of the threat injunctive relief is the actual value of the device over time. At the time of the introduction, potential buyers perceive the value to be the highest, due to the improvements the device embodies. It could for instance be the first smartphone with a higher definition screen or camera. As soon as other brands start to introduce similar devices with similar specification, the manufacturers lose their temporary monopoly based on the unique features. They have to shift towards competition merely based on the prices of the device again, resulting in a lower revenue stream. Each brand will of course try to convince the customer of the uniqueness of their technology, but that is the playing ground of marketing.

The issuance of damage awards is the final legal aspect that should be explained a bit further. In case validity and infringement are proved, the judge can order the defendant to pay damage awards to the plaintiff. Although national differences might occur, all jurisdictions have two to three types of monetary indemnification besides the earlier mentioned injunctive relieve. The amount of damages can be calculated based on the lost profits of the patent holder, an ordinary licensing fee (against reasonable royalty) of on and infringers’ profits (so called unjust enrichment). It is most common to claim a licensing fee against reasonable royalties, since this is something both parties can agree upon together. It moreover costs the plaintiff the least amount of effort compared to the other options. They furthermore do not have to lay open their internal cost structures, which is highly sensitive information. The calculation of reasonable royalties is also a great challenge on the other hand. The court has to determine ex post what the royalty rate would have been if the two conflicting parties were in an ex ante licensing negotiation. If the plaintiff is able to show that the infringing party knew about the patent and thus willfully infringed upon it, then this can have a serious impact on the licensing rate in some jurisdictions. In for instance the United States, it can result in a royalty rate three times as high as it would be in case of non-willful infringement. (Reitzig, Henkel, & Heath, 2007)

**Rationale**

The classical argument behind the establishment of a patent system is to promote innovation. Without a fully working patent system including the different (legal) institutions, it is expected that nobody is willing to invest in innovation, since any party will be able to imitate the invention after it is launched into the marketplace. By assigning the exclusive rights to the inventor, this person gets the opportunity to monetize the (large) investments needed for the development of the innovation.

Mazzoleni and Nelson (1998) describe the four theories that explain why we want a patent system in place. They first introduce the invention motivation theory, which anticipates that patents provide motivation for useful invention. The patent guarantees the owner a monopoly on his invention, even if he does not have the resources to bring the product to the market (immediately). Secondly, patents on inventions are likely to induce the needed investments to develop and commercialize the underlying technology, which they describe as the ‘induce commercialization’ theory. The third theory, the ‘information disclosure’, explains patents as society’s award to individuals who disclose their inventions. The disclosure fosters faster dissemination of technical information. The ‘exploration theory’ is the final theory in which they
argue that patents can enable the orderly exploration of a certain technology field. Once you acquired a patent in a certain domain, you are more likely to practice further research in this field.

### 2.1.2 Contemporary views

The mere classical views of Mazzoleni and Nelson (1998) on the role of patents are no longer satisfying when we take the modern innovation environment into account. Patents became a separate business asset and moreover highly strategic business tool. There furthermore was a steep increase in patent intensity, especially in the United States. This increase in patent grants and applications puts a heavy burden on the patent system. Many scholars signal the rise of patent applications as worrisome. Book titles such as *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It* (Jaffe & Lerner, 2004) show the increasing awareness of the potentially devastating effects of the current patent system on our innovative capacity. Figure 2.1 clearly demonstrates the increase in patent intensity in the U.S. We can see a sharp increase in the number of patent applications and grants.

![Figure 2.1: Patent applications and grants per year in the U.S.](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)

Jaffe and Lerner (2004) regard the establishment of Court of Appeals for the Federal Circuit (CAFC) in 1982 by the U.S. congress as the single most important change in the United States legal patent landscape. Prior to 1982, plaintiffs and defendants of patent cases would appeal to a district court decision in an appellate court that would serve the specific needs of both parties. A plaintiff would select a court with a patent-friendly reputation, e.g. Kansas City, and a defendant would file the appeal in a district that was known to be skeptical of patents, e.g. San Francisco. This phenomenon is called forum shopping. This used to be the case and still happens in the in the selection of a district court, but more on this later. The pro-patent climate in the CAFC resulted in decisions that have a threefold impact. It first of all made clear that software, business models and certain kinds of biotechnology are in fact patentable matters. Secondly, its

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rulings set standards for novelty and non-obviousness. These standards were much lower than what was taken for granted, making it much easier for patent owners to defend the validity of their patent in court proceedings. CAFC’s decisions finally improved the enforceability of patents, which made it economically much more attractive to assert patents against potential infringement. It is not without a reason that we see the increase in patent applications after 1982 in Figure 2.1. It not only led to an increase in the number of patents, but also in the number of court cases and damage awards. A patent is no longer a monopoly for the inventor of a truly new, non-obvious and industrially applicable invention is no longer a golden rule, but a powerful legal weapon which can be used to assert against a broader array of alleged infringers. The latter is merely the result of the broader and vaguer claims in many of the newer patents that (often) shouldn’t be granted in the first place.

The rise in court cases could be the result of patent owners that reassessed the value of their portfolio and found some valuable patents in their attic. This does not explain the rise in applications though. This increase can be the result of two processes. On the one hand it could be that applicants started to apply for patents on minor product improvements. This would imply that the technological value of each patent decreased. The other process behind the increase in applications could be a changing attitude towards intellectual property rights. Companies started to believe in the strength of patenting over the strength of for instance secrecy as their main method for protecting their valuable ideas. This automatically leads to an increase in applications, without the need of an increase in the innovativeness of the market players. The innovations where always there, but we could just not measure them in terms of patent applications.

These changes in the legal landscape have an impact on the entire system. We need to take a small detour into the economic pillar to show this. Companies have to deal with this new environment and have to arm themselves against the potential threat of patent assertion by others. Large corporations realized the hidden value of their already acquired portfolio. Kortum and Lerner (2004) not only signaled an increase of cross-licensing deals among the larger players, but also a misuse of power of large corporations against the smaller firms in their market. These small players usually prefer to pay the proposed license, even if they believe that they are not infringing upon the patents. They just do not have the monetary resources to get involved in fully fledged court proceedings. This proved to be a highly profitable business strategy for some of the larger players, such as IBM and Texas Instruments. Their patent licensing units generate a revenue stream that sometimes equals that of the product sales. Besides this direct monetary effect, there is also a worrisome long term effect. SME’s are discouraged to put R&D investments and innovation effort in industries where large firms have a strong patent position.

Among many similar observations, Parchomovsky & Wagner (2004) presented a good illustrative theory for this change with their ‘patent portfolio theory’. They explain that patent decisions of many companies are no longer related to the individual value of each patent in their portfolio; it is the portfolio that creates the value. The whole is greater than the sum of its parts. A strong portfolio enhances the opportunities in the marketplace and the eventual protection of the produced technology. This all led to a steep increase in patent intensity. We now see a much higher number of patent applications per dollar or euro R&D investment and therefore a steep
increase in the total number of patent applications. A decrease in the technological value or contribution is inevitable, but more on this matter in our economics section.

Non-practicing entities should be understood in the light of the legal and system level changes. Merges (2009) publication on patent trolling clearly explains the challenges we are facing today. He did an analysis of the secondary market for patent rights. In this market, which should be understood in a similar fashion as the markets for technology by Arora (see below), there is a variety of players involved. There are parties with a strategic interest in certain patents, for instance to create freedom to practice their own idea into a working solution. In case they were only partially capable of generating all the required patents to create full protection of the technology, they either invent around the other patents or try to license or buy that particular piece of property. In these situations, the right as such is just a secondary goal. The underlying information and technology are the primary goal. A party that does not plan to produce any technology, hence a non-practicing entity, will assess this differently. Those parties have no interest in the information or technology, there primary goal is to get the right to exclude others. Once they acquired the patent in a particular field of technology, they can use this to extort the ones who are engaged in the production of technology. Merges labels them as patent trolls in this article. One should understand that patent trolls are just one embodiment of the different types of NPEs, but we will elaborate much further on this in the section on terminology.

PatentFreedom⁵, an NPE monitoring organization, presents the litigation efforts by NPEs. Figure 2.2 shows increase over the last ten years. It shows the number of NPE lawsuits and number of operating companies that are involved in these lawsuits. The number of involved operating parties shows a different trend than the number of lawsuits, which tells us that NPEs try to kill more birds per stone. The total number of defendants shows a tenfold increase. Unfortunately, the public version of the website does not distinguish the number per geographic area, so we cannot assess whether the numbers represent the global or only the U.S. landscape.

![Graph showing Patent Lawsuits involving NPEs](image)

Figure 2.2: Patent lawsuits involving NPEs. ⁶

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⁵ Website: www.patentfreedom.com (accessed on 05-04-2012)
The phenomenon of forum shopping by plaintiffs in the selection of U.S. district courts was mentioned before. The earlier introduced PWC litigation study (PricewaterhouseCoopers, 2011) gives us more insight into this behavior by NPEs. Table 2.1 shows the number of NPE cases compared to the total number of cases and the eventual success rate of their cases. We can learn that the selection of the district court is of great interest to a litigation focused NPE, since there are clear differences at the success rates. This of course holds for every patent holder that wants to assert its right against others.

<table>
<thead>
<tr>
<th>District</th>
<th>Decisions involving NPEs</th>
<th>Total identified decisions</th>
<th>NPE % of total decisions</th>
<th>NPE success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas Eastern District Court</td>
<td>35</td>
<td>101</td>
<td>34.7%</td>
<td>48.6%</td>
</tr>
<tr>
<td>Illinois Northern District Court</td>
<td>30</td>
<td>125</td>
<td>24.0%</td>
<td>13.3%</td>
</tr>
<tr>
<td>New York Southern District Court</td>
<td>26</td>
<td>113</td>
<td>23.0%</td>
<td>15.4%</td>
</tr>
<tr>
<td>California Northern District Court</td>
<td>20</td>
<td>117</td>
<td>17.1%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Delaware District Court</td>
<td>16</td>
<td>144</td>
<td>11.1%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Other</td>
<td>121</td>
<td>477</td>
<td>25.4%</td>
<td>21.9%</td>
</tr>
<tr>
<td>All identified decisions</td>
<td>339</td>
<td>1617</td>
<td>21.0%</td>
<td>23.0%</td>
</tr>
</tbody>
</table>

Table 2.1: NPE litigation per district court (the original list only included districts with more than 5 identified decisions involving an NPE as the patent holders). (PricewaterhouseCoopers, 2011)

This same behavior can be identified at international level, especially in Europe. The differences in the national legal and economic landscape are primary selection criteria for asserting patent holders. Perkins and Mills (1996) stipulated the procedure for testing and proving the infringement, the availability of preliminary injunction, the speed of decision and the costs of the procedures as important factors. These and other country specific factors can have a serious impact on the success rate of their actions.

2.1.3 History

Trolling or non-practicing is not new. Although the recent upsurge seems to imply that many practitioners very recently found out about this route of monetization, there are clear signs stemming from different eras showing otherwise. Over time, there were many parties employing patent strategies other than monetization through manufacturing and (whole)selling of technology. A distinction is made between the different cases over time, namely historic, early and recent cases.

**Historic case 1 - Agricultural patent sharks**

Magliocca (2007) is one of the scholars who tried to compare recent patent trolls with late nineteenth century patent sharks in the United States. Sharks used so called design patents reading on basic agricultural techniques. One of the key features of design patents was the possibility to acquire them on marginal improvements. The main consequence of this new type of patents was that the patent office got flooded with new applications. Even basic technologies, such as the shovel, were captured in a wide variety of design patents covering a number of possible embodiments. Given the incremental nature of the changes in their design, it was very hard to distinguish which specific piece of technology was related to a specific patent. This made it virtually impossible for patent owners and manufacturers to keep track of who owned an applicable patent or who was infringing. There were many dormant patents around, meaning
that the owner did not practice that specific patent. He simply kept it on the shelf. Opportunistic licensors in the making identified this defunct of the patent system and started to buy these dormant patents. Instead of chasing the manufacturers, who most likely had a relevant patent as well, these parties started to trace consumers using the technology. As one could expect, farmers and the like had very little knowledge about legal matters and were thus very much intimidated by the appearance of sharks at their doorstep. It was easy for the sharks to force the farmers into paying a settlement. The trick was not to demand excessive amounts of money, since only richest farmers would be able to pay a lot of money. Getting a hold on a large number of small and quick settlements was the best and most lucrative working method. The emergence of patent sharks led to much controversy. The Patent Office tried to fix the situation by raising the bar for new design applications. In 1880, Congress eventually decided to set the standard back as it was before 1860, the year where the experiment of the design patent started. They literary abandoned this part of the patent system.

It is very interesting to compare the opportunistic agricultural licensors with modern day NPEs. The main resemblance is that they operate in an environment in which the costs of getting a patent are very low in comparison with the potential revenue it can generate in infringement suits. Legal action is very costly though. The troll thus offers the alleged infringer a settlement that is way below the costs of running a fully fledged court case. It is therefore much more likely that the infringing party will sign the settlement. Magliocca (2007) further claims that it does not make sense to blame the Patent Office as such for the emergence of this type of practitioners. In both eras, there seem to be a focus on specific types of industries. Back then it was agriculture, now there seems to be a focus on IT related matters. This is remarkable, since these technologies share a set of characteristics:

- Substitution effect: the costs of substitution are high because of the complex and interdependent nature (IT) or because they are a basic necessity (farming)
- Marginal/incremental improvements: manufacturers benefit from marginal improvements in both industries. In IT there is also a great need for interoperability, so if a troll gets hold on a patent in that system, it can be of great danger for system as a whole.
- Cheap technology: trolls only need a single and cheap patent to force a large settlement, given the highly integrated nature of the products (IT) or because the patent reads on basic necessity (farming). Both situations lead to a high willingness to pay on the side of the alleged infringer.

Despite the resemblances in the problems, the solutions are not that easy to mimic (Magliocca, 2007). We cannot just abandon a certain type of patents because they give life to opportunistic licensors. Simply ruling out software or business model patents might decrease trolling activity, but it might do much harm to innovation as such. It is also not really possible to allow a form of innocent user defense, also an idea strongly advocated in the nineteenth century. In short, an alleged infringer should not be accused of infringement in case he did not know that the item was patented. This most likely applied to most farmers back then, but still it would weaken patent rights as such. Legitimizing such a defense nowadays would also hurt small inventors to a great extend. Their presence is usually unknown and the alleged infringer could therefore easily fall back on the innocent user defense. One mechanism that might work according to the author is or a mere administrative nature. By imposing a higher tax on patent by means of
higher maintenance fees, there is less incentives for the patent holder to create dormant patents. This solution does have a financial effect the entire patent system, but so does the presence of trolls.

**Historic case 2 - The sewing machine thicket**

The first case showed that non-practicing entities can impose a serious threat on the economy. Another phenomenon that has that same potential is the patent thicket (key reading: Granstrand (2009)). Problems emerge in situations where multiple patent holders own a part of a technology that is the result of incremental innovation. This creates a minefield of patents in case some of the patent owners are not willing to grant a license. Their individual interest are thus not in line with the general interest of technological development. It is a classical example of the problem of the anti-commons. The existence of multiple rights of ownership frustrates the achievement of a socially desired outcome.

Mossof (2011) discusses one of the earliest patent thickets, namely that of the sewing machine. This thicket resulted in many issues that are also in play in modern patent policy debates, such as ‘patent trolls’ (NPEs), the function of injunctions in patent litigation, royalty stacking, and, of course the existence of patent thickets. The author draws a parallel between the now infamous case of NTP v. Research In Motion (see under section ‘recent cases’) and mister Elias Howe. Howe was a non-practicing entity in the mid 1850s. The author vividly describes the technological development of the sewing machine and the role of the various actors in the process. The technology is clearly a result of incremental innovations. Isaac Merit Singer was the first to successfully introduce a working solution to the public though. Elias Howe is on the other hand of great interest for this research, since he acted as a true non-practicing entity. He was able to extract a lot of licenses from producing entities. His patents on certain parts of the final product enabled him to threaten with an injunction. He was able to make a lot of money by means of royalty collection in an era where the manufacturing companies weren't even yet able to sell a lot of working solutions. His financial success created a litigation free-for-all between the various patent holders and manufactures using their overlapping patent claims. The war ended with an early example of the public-ordering regulatory model known as patent pools. The Sewing Machine Combination is the first example of a voluntary standard setting organization in the form of a patent pool. Despite of the alleged misuse of power in this form of monopoly, the pool was able to resolve the Sewing Machine War. It unchained the sewing machine manufacturers from lengthy and costly litigation burdens and enabled them to get down to the business of making and selling sewing machines instead.

This case clearly shows the possible impact of non-practicing entities on the development of new technologies. Without a top-down regulatory measure, it is very uncertain whether the technology would have made it to the final users. We all know the tremendous positive social and economical impact of this piece of equipment on industries and households all over the world (further reading on this matter: (Mokyr, 1990)). Patent holders should only have the right to extract the added value of their contribution from the final revenues.

**Historic case 3 - The Selden Patent**

The Selden Patent is our third prominent historic example in the discussion on claiming royalties without manufacturing or even contributing to technological development. The
example is used in Cowan & Hultén (1996), Merges & Nelson (1994) and Merges (2009) to respectively discuss technology lock-in, patent scope, and for the overall introduction into trolls.

This historical case of rent-seeking by means patent extortion started in the very late nineteenth century. George Selden applied for a patent on the idea to use light gasoline in an internal combustion engine to power an automobile. He was awarded with a patent grant. Although the claim was so broad and despite the absence of a more detailed description about the engine, the Patent Office did grant his claim. Selden was not able to develop a working vehicle using his own principle. Instead of this, he decided to use the patent to attack those who were able to develop a working solution. Under attack in court, the defendants argued the claim was way too obvious. It furthermore did not enable anything new for those already skilled in the art. Back then, the challenge was not to come up with the idea of using light gasoline in a combustion engine, it was the challenge to build on that was light enough for the use in a vehicle. Selden was so fortunate that two district courts upheld his claim. This enabled him to collect a lot of royalties from the leading players in the industry. The patent was simply hated among those active in the manufacturing of automobiles. Eventually, the Second Circuit did narrow the claim tremendously. Moreover, the industry formed Association of Licensed Automobile Manufacturers acquired the patent and took control over licensing program related to the patent. The timing of the action is quite remarkable, since the patent was already at the end of its lifetime. Selden already generated a lot of income and frustrated many parties. For companies like Ford, paying the licenses most likely did not really affect their development efforts. For smaller market entrants, this might have been the case. Perhaps they took a lot of valuable new information to their 'grave'. These innovations might have had a severe impact on the progression of the automobile. The question is whether the patent pool eventually had that same effect, given that only the stronger and large market players were part of it.

Selden used his fundamental right to exclude others from producing 'his' technology. On the other hand, his actions had clear negative economic effects and some claim that his idea did not enable anything new for those skilled in the art. This contradiction is the essence of the 'problems' we face with NPEs. We cannot simply prohibit them to use their rights against others. This would also harm small inventors that do not have the resources yet to develop their idea into a product. There are other solutions though. If we prevent the assignment of patents on obvious inventions and only allow the inventor to reap the benefits from the specific contribution he made to the total technology, than there might be some light at the end of the tunnel. Other solutions, including their feasibility and workability, will be discussed later on.

**Early case 1 - The Lemelson Foundation**

The next case we would like to discuss is one of the early 'modern' patent trolls. It is the case of Jerome Lemelson and the Lemelson Foundation. Jerome Lemelson was a very active inventor and patentee who submitted his first patent application in 1954. His first patent issued in 1963 and this is where the story begins. Lemelson used a strategy that used the continuation in parts router in U.S. patent law to expand the life time of his patents. This technique, which is no longer allowed, enabled a patent holder to apply for minor improvements upon the original patents, without losing the protection and priority date of the original. You could have a patent dating from the 1960's and have it granted again in the 1995. The trick was that these continuations were not published by the patent office, which enabled you to keep a very low profile. This phenomenon is called submarine patents. The victims of the patent owners were moreover not
able to invalidate the patent by means of proving prior art, since the patent had such an early priority date. This technique was available to everybody, but Lemelson was the one who mastered the technique to gain advantage of it.

In 1978, Lemelson got a patent issued on the basic techniques behind barcodes. He understood the highly strategic value of this technique, since the U.S. automobile manufacturers adopted a standard related to the use of barcodes in their production lines. This industry is all about producing high-volume standardized products that generate a lot of cash-flow. It made them the perfect victim of a patent troll. Unfortunately, Lemelson himself died of cancer. This did not end the problems. His family started a for-profit foundation with the purpose of funding cancer research. They generated income by hiring contingency fee lawyers, which are paid only is case of successful licensing deals. These highly aggressive law-firms filed suit against nearly 400 companies all over the world. Their main goal was to settle without entering a court room. This is much too expensive. Therefore, they offered their prey a settlement below the costs of legal action. Alleged infringers had to be very subtle in their defenses, since nobody wants to be known for his aggressive behavior against a fund-raising institution. The alleged infringed received a letter explaining how bad they were because of the infringement. The letter was send to the CEO, which is usually quite impressed with such matters. The foundation was furthermore Texas-based, which legal system is known for its favor towards patent owners. This combination of factors made it a complex matter to circumvent. It took the opponents eventually until 2004 to get a judge to invalidate 14 of the most important patents. The Foundation is not out of business by the way. Patentfreedom, an organization that assesses and addresses NPE risks for its members, still ranks them as the 13th largest non-practicing patent holding, responsible for 465 patent publications that are part of 218 patent families.7

‘Lemelson’ is again a case with a clear conflict between individual and collective interests. The foundation was able to come up with a highly successful business model. Over time, they collected a huge amount of damages and licenses. We will never know which share of the revenues ended up in the pockets of the lawyers and other shareholders and which share really made a contribution to research into cancer prevention. Regardless of the ‘good’ intensions of the foundation, it is clear that the patents did not make any contribution to the promotion of the progress of science and useful arts.

Recent case 1 - NTP v. RIM
One of the most profound patent cases in the light of patent trolls ended in a settlement of US$612.5 million in early March 2006 (Guellec & Pottelsbergh de la Potterie, 2007). The lawsuit is the result of a dispute between the Canada-based manufacturing company Research in Motion (RIM) and a US-based licensing company NTP. RIM is most famous for its Blackberry smartphones since their launch in 1999. In 2006, the company had a customer base of 4 million users, mostly in the US. NTP on the other hand has nothing to do with producing technology. The small licensing company accused RIM of infringing upon at least five of its patents on radio frequency wireless text communication. Their inventor, Thomas Campana, was the co-founder of NTP (New Technology Products) but died in 2004. The patents protect a system to

synchronize emails between computers and wireless devices, which was one of the unique selling points of RIM at that time. Campana and his lawyer Mr. Stout sat on a bunch of patents for quite a while already (McKenna, Waldie, & Avery, 2006). The born inventor Campana was in a development project with AT&T before, but the technology didn't make it to the market eventually. Their move to go after RIM proved to be a move worth hundreds of million dollars later on. Their first step was to send a letter to a number of companies, RIM among them, stating that they were infringing upon NTP's wireless e-mail patents. No insider details related to this letter were encountered, so we cannot assess whether the content included a reasonable licensing offer. The sheer action of sending the letter does show the willingness to negotiate with the infringing parties. The story did not continue along these lines though.

Mr. Lazaridis, the founder and whiz kid behind RIM, went through a lot of hard and dedicated work to make RIM into the billion-dollar success story it was in 2002. He hired a respected law firm to get rid of the NTP problem. This turned out a bit different though. In trial, RIM tried to invalidate NTP's patent with a demonstration of a technology called SAM. Dating 1991, the technology could send messages from a laptop to a pager; the essence of NTP's patent. The problem was that they used an undated piece of software on the laptops. Judge Spencer ruled out the evidence, which made it a turning point in the trial. The jury assessed (enhanced) damages of US$23M and a royalty based on the number of Blackberry's sold in the U.S. The judge's eventually swelled the damages to US$53M plus about US$4.5-million in legal fees. He also assessed a royalty to 8.55 per cent. His main argument behind this raise was the combination of the willfulness of the infringement (after receiving the NTP letter in 2000) and the fraudulent action during trial. RIM didn't rest their case. On appeal, the judge issued an injunction for the United States. He agreed to let the injunction stay, in case RIM would put a US$240-million in escrow. RIM didn't settle. Two rounds of appeal, a new set of lawyers and a new legal battle ground (U.S.) later, RIM was forced to settle for a final damage award of US$612.5 million (Tapia, 2010). It settled the infringement upon all claims of five patents until their expiration. This was only a couple of day before the district court was expected to issue a permanent injunction on millions of Blackberrys. As we saw before in the Lemelson case, the plaintiff's lawyers were also paid for their success. They received one-third of the patent infringement settlement, which in this case thus amounted to over $200 million (Abril & Plant, 2007).

It turns out that the Board of Patent Appeals and Interferences (BPAI) invalidated the patents at the heart of this case after a re-examination procedure in late 2009. On appeal, the CAFC affirmed this decision and rejected U.S. Patent 6,317,592, 5,819,172, and 6,067,451 at August 1, 2011. Some of the claims of US Patent 5,436,960 and 5,625,670 were eventually upheld. The CAFC consider the BPAI to reinterpret the notion of “electronic mail” or “electronic mail message”. (In Re NTP, INC., 2011) This could help NTP to reargue their case at the BPAI, but it will be a lengthy and uncertain process again. NTP furthermore withdrew all its pending patent applications at the EPO. (Guellec & Pottelsbergh de la Potterie, 2007)

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8 The decisions can be found at: http://des.uspto.gov/Foia/BPAIReadingRoom.jsp. Direct links to the documents of our interest can be found at: http://www.foley.com/intelligence/detail.aspx?int=8740 (accessed at 11-04-2012)
With these more recent invalidity decisions in mind, the case of NTP is even more controversial than was known before. The risk of an injunction was so profound, that RIM just did not have the time to wait for the invalidation decision. Paying a US$612.5 settlement deal for a small number of later invalidated patents cannot be put in perspective though. This is a tax on innovation that is highly unwanted.

RIM does show that it has learned from his ‘mistakes’. They were recently involved in a trademark dispute over the name of their new operating system. The original name BBX was already a federally registered trademark of Basis International Ltd, an Albuquerque-based software company. Basis won a temporary restraining order (Basis International v. Research in Motion, 2011), which forced RIM to change the name of their operating system to BlackBerry 10 (Business Wire, 2011). Maybe the Canadians learned from the past?

**Recent case 2 - Eolas v. Microsoft**

Although not as often cited as NTP v. RIM, the dispute between Microsoft and Eolas was just as notorious in terms of damage awards (Abril & Plant, 2007). The University of California was granted a patent related to displaying plug-ins in a browser. The patent dates from 1998 and is titled "Distributed hypermedia method for automatically invoking external application providing interaction and display of embedded objects within a hypermedia document". The original inventor received an exclusive license to the patent. He was the founder and only employee of Eolas Technologies, Inc. The company had no intention to practice the invention. They filed suit against Microsoft in 1999 instead. Eolas accused Microsoft of infringement on the patent with technologies behind Internet Explorer. The plaintiff convinced a jury at trial and was awarded with $521 million of damages and an injunction in case the parties were not able to negotiate a licensing deal. A winning troll one would think. The battle was not over though. The companies fought over the dispute on appeal and the patent was subject to re-examination at the U.S. Patent and Trademark Office (Anderson, 2007). The patent got validated so Eolas was ready to continue the fight in court, but the two companies eventually settled for an undisclosed disbursement (Swords, 2007). Microsoft made a smart move in the settlement with Eolas. They agreed to pay a (lower) damage award up front and a percentage license over a longer period of time. By designing the technical component out of their software, Microsoft was able to dodge the licensing part of the deal. The release of a new service pack simply solved the problem for them (Stasik, 2011).

**Recent case 3 - eBay v. MercExchange**

eBay v. MercExchange (eBay Inc. et al v. MercExchange, L.L.C., 2006) is the final case discussed in this section. It is not a key decision in terms of damages, but it let to the single most important court decision in the discussion on NPEs (Davis, 2008) (Tapia, 2010). MercExchange was the owner of the patent reading on the technology behind online auctions. Facing bankruptcy, the company decided to try its luck in the game of being a royalty claimant. The company was very successful and was able to convince the district court and the Court of Appeal of the Federal Circuit. This is not where the story ended. It is one of the rare cases that reached the Supreme Court. The Supreme Court used eBay to strike down the rule that entitled every patent holder to ask for a preliminary injunction. This rule was the most important weapon in the arsenal of patent trolls, since it posed a high threat for the producing parties under attack. Facing a total shutdown of their production, alleged infringers are much more likely to sign an early settlement. The decision did not only overturn the district court and the CAFC, it furthermore
embraced the importance of the four-factor equitable test for granting injunctions. It also provided advice on how to apply it. In the test, the defendant must show:

1. That it has suffered an irreparable injury;
2. That remedies available at law, such as monetary damages, are inadequate to compensate for that injury;
3. That, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted;
4. That the public interest would not be disserved by a permanent injunction.

With this test in use, trolling gets more difficult. The threat of a preliminary injunction has always been the most powerful weapon of trolls. Since it is very hard to prove the presence of irreversible harm in case you do not have any market share or what so ever, it is less likely for a troll to achieve the same level of threat. It can only apply for monetary, but more over reasonable, damage awards. Although the four-factor equitable test is in use, there is still a lot of controversy on how to interpret it.

2.1.4 Countermeasures

The possible countermeasures against opportunistic trolling behavior by particular NPEs are diverse. The legal and institutional measures are covered in the subsequent sections. Other solutions can be found at the end of the other views.

Legal

From a legal point of view, the only way to limit the possibilities of trolling behavior by NPEs is the generation of jurisprudence that does so. It is highly important to understand the possible consequences of such decisions. A change in the legal landscape does not only affect NPEs, it affects every patent holder and therefore also ‘good’ NPEs. One must always keep this in mind when assessing the impact of countermeasures and decisions. From a legal perspective, we can address four important court decisions that had a severe impact on the working practices of non-practicing entities. The rulings originate from the U.S. and therefore only have an effect in this jurisprudence. The United States is still is the main playing ground for trolls, so the impact on this business is serious.

*eBay v. MercExchange* created a much higher threshold for granting injunctions because of the four factor test. (eBay Inc. et al v. MercExchange, L.L.C., 2006) We already discussed this case in our historic overview of important cases involving NPEs.

*KSR International v. Teleflex* gave new strength to the concept of non-obviousness. (KSR International v. Teleflex, 2006) This makes it a lot harder to obtain a patent on trivial inventions. This also means that it is easier to invalidate the patents that resemble such trivial technological improvements. (Tapia, 2010) It is often claimed, that patent trolls often use patents that represent no or minor technological improvements. I will further discuss this matter in the section on patent quality.

*Quantas Computer v. LG Electronics* clarified the principle of “patent exhaustion”. (Quantas Computer v. LG Electronics , 2008) Once you granted a license to one party, you cannot go further down the revenue stream.
In re Bilski opened the discussion whether business models should be patentable matter. (Bilski et al. v. Kappos, 2010) This is the modus operandi to get a patent on software in the U.S. Many claim that software patents are of very little value for innovation in this sector. It is just a very strong incubator for trolling behavior. The Supreme Court eventually decided to uphold business models as patentable matter, only if they can meet the 'Machine or transformation test'. This test states that: ‘A process is patentable [...] only if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing’ (Bilski et al. v. Kappos, 2010).

There are no specific Dutch cases with such a direct impact on the opportunities of NPEs. Germany does have the famous case of IPCOM, which is included in our case studies in chapter four. Although the number of court cases is so limited, it is merely the European legal landscape as such that already imposes limitations. Legal procedures are relatively cheap and swift, which makes it more attractive for an alleged infringer to try its chances in court. The legal systems of for instance the Netherlands and Germany are moreover known for their high standards when it comes to patent cases. The judges are highly skilled and very well capable of handling the often complex technological nature of the dispute.

Institutional

Jaffe and Lerner (2004) used their study into the impact of the changing (legal) patent landscape to conclude on an action plan towards a functional patent system. The main goals of their reform are to improve patent quality, reduce uncertainty (because of attacks by opportunists and expensive defense against assertion) and to keep the operational costs of the patent office under control. The costs should moreover be in line with the quality of the provided service and output. Most of the changes have to take place at a system level involving the facilitating institutions; the patent offices and courts. The authors came up with three important building blocks to achieve this reform. In short, they claim to:

1. Create incentives and opportunities for parties that have information about the novelty of inventions to bring that information to the PTO when it is considering a patent grant.
2. Provide the possibility for multiple levels of review of patent applications, with the time and effort expended escalating as an application proceeds to higher levels, so that money is not wasted on unimportant patents, but sufficient case is taken to avoid mistakes where the stakes are high.
3. Replace the juries with judges and special masters in ruling on claims of patent invalidity based on existence of prior art, so that parties threatened by invalid patents have a reasonable opportunity to make their case. (Jaffe & Lerner, 2004)

Their main advice is thus to get all parties more engaged in the granting procedure by means of giving third parties to opportunity to apply for pre- and post-grant reexamination. They can feed information regarding prior art into the process, making it less likely for the patent office to grant a patent that shouldn't be granted.

The point of Jaffe and Lerner (2004) is in conflict with an earlier article by Lemley (2001). He claimed that the current situation is somewhat efficient. It is highly costly to fight ignorance of the patent office. Cases that really matter will be fought out in court anyways, so it is better to let those parties spend the required money. Jaffe and Lerner counter this again, saying that the
uncertainty of the current situation lead to much higher intangible costs than the costs of the court cases. It leads to lesser incentives to invest in certain domains and therefore to a loss for the society as a whole. Innovation will always remain the accelerator of economic growth.

2.2 Economics view

2.2.1 Foundations
As already presented in the legal and institutional foundations, there are four rationales to establish a patent system. Mazzoleni and Nelson (1998) summarized them in the innovation motivation theory, the induce commercialization theory, the information disclosure theory and the exploration theory. All the theories have a strong link towards economics, since the main purpose of stimulating innovation is the stimulation of economic growth. It serves the possibility of a ‘free lunch’ in an economy. The optimal allocation of labor and capital is not the only option to generate growth. Innovation can shift the production possibility frontier, resulting in the old dream of free lunches, since it can generate growth (in welfare) with the same amount of labor and capital. The four rationales are furthermore in line with the evolutionary economic growth models, which emphasize the importance of variation of new technology entrepreneurial activity and spreading of knowledge. Patents generate a protected environment in which new ideas can incubate until they face open competition.

2.2.2 Contemporary views
The earlier demonstrated changing market for IP imposes serious threats for the companies that have to generate the technological change. Businesses have to deal with the status quo and individual parties are not able to change it on their own. They have to make their investment decisions and pin down their patent strategy to cope with the current environment. They have to decide what to do with newly assigned patents. The nature of and the rationale behind the decisions are very much dependent of the characteristics of the company and the context in which they operate. With these parameters in mind, we can in short identify four options (Abril & Plant, 2007). The patent owner could first of all decide to manufacture the technology. The second option is to license the technology to other parties. Another option is to sell the piece of intellectual property. The final option is to litigate those who are infringing upon your invention. It is highly important to understand that companies do not have to pick one of these strategies. It is very common to combine the production of a certain technology with licensing-out certain other parts of the portfolio. Moreover, production itself is not even necessary for a successful business model. This is where we arrive on the playing ground of non-practicing entities.

Non-practicing entities
Reitzig, Henkel and Heath (2007) modeled and explained the strength of the business model behind trolling. They modeled the game between a Shark and a Manufacturer, in which they distinguish different types of innovative companies. It ranges on a scale from capacity-unconstrained to capacity-constrained. The IP exploitation strategy of these companies is heavily dependent on the capacities to produce technological goods. They described the rationales and actions of both parties as follows:
- Shark: a small capacity-constrained patent holder of a non-sophisticated technology has the option to approach a manufacturer before or after infringement. A shark will always calculate which approach will deliver more value.

- Manufacturer: Lives under the uncertainty whether his technology is patented elsewhere. He has to make a pay-off between risk (infringing) and uncertainty (knowing not to know) since it takes a lot of resources to investigate the freedom to operate.

Indemnification remedies induce incentives for the patentee (PH) to trap manufacturers (M) in a situation where M inadvertently infringes a patent on an obvious solution to a technological problem at hand rather than inventing around. Existing regulations comprise of injunctive relief and damages. The latter can be broken down in three awards, namely lost profits, ordinary licensing fee (determined \textit{ex post}) and infringers’ profits (unjust enrichment). The technique to determine these damages are subject to national regulations. The problem is situated at the point where the court tries to determine the reasonable royalty fee \textit{ex post}. Since the quantity of goods sold by M while infringing are most likely higher than when M held \textit{ex ante} licensing negotiations, M will be hit harder when the damages are calculated in court. The solution would be to consider counterfactual invent-around costs. Hiding a patent (know as submarine tactics) may be far more profitable in case of obvious technologies, since the willingness to pay is probably very low during ‘normal’ negotiations.

In this article, Reitzig et al (2007) also explain why unwillful infringement is a matter of growing concern. They claim that monitoring costs have increased dramatically, especially in complex technological industries. Patents can easily slip the manufacturer's attention. Patents can moreover change ownership, in which a harmless patent can become a threat. The former owner could be part of formal or informal non-litigious pacts. The new owner, or the new business strategy of the owner, can result in surprises. The authors finally claim that standard setting is an action which results in irreversibility of substituting infringing components with alternative (easy-to-invent technologies). We will see why standards are of particular interest to use in the following chapter. Patent trolls translated the increased likelihood of unwillful infringement by manufacturers of technology in the business model of ‘being infringed’.

\textit{Alternative rationale}

All scholars seem to agree that trolls are out there and their actions result in inefficient licensing and patent enforcement. There are other opinions on the matter though. Some put the overall skeptic views of the future of the patent system in a whole other perspective. The rising importance of patents in our economy may prove that we are at the dawn of a new era. This might be the era in which markets for technology are an as important market as the market for financial products or the market for real estate. Arora, Fosfuri and Gambardella introduced the concept ‘markets for technology’ (Arora, Fosfuri, & Gambardella, 2001). In the past twenty to twenty five years, they observed a change in the exchange of technologies and technological services. Not only is there a market for existing technologies, there is also a lot of activity in the trade and generation of future technologies. Joint R&D ventures and partnerships, licensing and cross-licensing agreements, and contract R&D are embodiments of these futures. Markets for technology can enable more companies to profit from their research, even if they do not have the complementary assets to engage in the downstream development of their technology. Patents can serve as a very important vehicle to streamline these developments. In a mature market, which we have not reached by far, intellectual capital is treated is the same fashion as
financial capital. It can be valued, transferred and is an important factor for the production of goods. As compelling as the concept of markets for technology may sound, it seems clear that the current market did not reach this mature state yet.

In line with the preceding analysis is the claim by McDonough (2006), who argues that NPEs have the potential to become efficient market-makers. He claims that trolls are able to identify undervalued patents and able to market those patents to other firms. It is the result of investments of time and efforts. Their actions even benefit society, since they act as intermediaries in the market for patents. They provide liquidity, market clearing and increase the overall efficiency of the market. Their actions impose a credible threat of litigation to others and they clear the market by risk pooling and equalized pricing. They moreover fit in de natural evolution of the market for technology (key reading: Arora, Fosfur, & Garambella (2001)).

Another opinion on the emergence of NPE stems for the more classical economical view of Garardin, Layne-Farrar and Padilla (2008). They argue in favor of the presence of NPEs and claim that the popular definitions are incorrect. The authors consider the positive effect of patents in combination with a non-integrated firm structure can have on competition and innovation. They agree that there genuine patent trolls around, but these parties should be separated from other non-practicing/competing entities. Patents as such have far reaching (positive) implications for industry structure, competition, and social welfare. Furthermore, patents lower transaction costs in contracting (given the certainty of ownership and patent law) and they make it relatively easy to enter a market as an (niche) upstream specialist (start-up with licensing business model). A non-integrated upstream specialist in patent brokerage (dealing/enforcing/etc.), a NPE, can have benefits over large integrated and commercially focused manufacturing entities. The disintegration may for instance result in design shops without any laboratory. They simply license the technology and only focus on marketing the innovation.

The authors introduce a model in which there are three kinds of firms:

- A = Entity that practices R&D and generates the necessary technology or innovation behind good $x$;
- B = Manufacturing entity that is willing to produce $x$;
- AB = Vertically integrated company developing and producing $x$.

With a patent system in place, A can apply for a patent and grant a license to B. The relationship between A and B to produce good $x$ is not likely to occur without patents. A patent gives the legal certainty both parties need for a long term relationship. Furthermore, there can be multiple As and Bs, thus specialization can be a good thing for competition on price and/or quality and thus can lower downstream prices for consumers. $X$ could be prone to advantages flowing out of integration, such as economies of scale or scope. In this case, the benefits lay at AB. Furthermore, there can be a double marginalization effect in the A-B relationship (both want to earn). It is all a discussion on comparative advantage: which form can reap the best benefits. If specialization turns out to be the most profitable, then AB can decide to bounce of one layer of their integrated structure; they create a spin-off. Concluding: all outcomes are possible (advantage for AB, A-B or both (A-B quality, AB price), but the entrance of specialists will always lead to increased competition and improved welfare. Trolls or NPEs fit very well in
this model, since one could label them as an A-party. Their existence can thus boost competition, raise product quality, and increase consumer choice.

The views of McDonough (2006) and Garardin, Layne-Farrar and Padilla (2008) are in sharp contrast to the overall negative perception of the opportunistic NPEs of trolls in many of the other scholars that are cited in this thesis. There is a clear need to monitor and analyze more empirical cases to give more closure on this matter.

**Patent quality**

The potential of the business case of a NPE is heavily dependent on the quality of the patent(s) involved. In literature, there is an interesting discussion on patent quality. Any patent holder would like to assess the value of every patent in his portfolio. As said, patents are a highly strategic business asset with an important position within many business cases. It can draw new investors or can help you in negotiations with other producers of technology. In many cases they are mere barter chips. But how can we assess the value of each and every patent in a portfolio? We can’t. First of all it is very hard to pin down what value means in the light of patents. Burke and Reitzig (2007) boiled the discussion on quality down by grouping the two types of quality into ‘technological value’ and ‘legal sustainability’.

The first type of quality, technological value, must be seen from an economic/technical point of view. One could argue that the value of a patent can only manifest itself in the technology that it tries to appropriate. The technology as such creates value to the society or can be transferred between parties. In this respects, low quality patents are patent that do not represent valuable technology or technological progress of any kind.

Legal sustainability is the other indicator of patent quality. It has no link with the underlying technology. A high quality patent, in legal terms, is well written, applied for without mistakes and is likely to be upheld in court. Other important factors are the type of claims and whether the applicant took all the necessary steps in the process of applying for the patent.

Whether you need both types of quality heavily depends on the business model you are pursuing. A producer of technology that wishes to keep his competitors of the market has other preferences than a party that is building a portfolio to earn his position at the table in instance standardization procedures. It is especially interesting to see what kind of patents NPEs are looking for. NPEs have their specific wish list when looking for new patents. Since they have to interest in producing the technology, they do not need patents of high technological value. It was a common believe that most NPEs use super vaguely written patents reading on minor technological improvement and therefore represented little technological value. Fisher and Henkel (2009) showed that this is not the case. Their analysis showed that their patents are of significantly higher quality than those in a control group. NPEs focus on patents that have a broad scope and that lie in patent thickets. In such mine fields of patents, it is much more likely that a producing party infringes upon a piece of appropriated technology. The authors also showed that trolls seem to focus on patents that impede high costs of inventing around the invention claimed in the patent. The broad claim furthermore strengthens the position of the troll, since it is then much harder for the alleged infringes whether their specific technology will infringe upon the claims in the patents. This enables the NPE to capture the biggest part of the technology sphere as possible. The study furthermore shows that the troll’s patents had a high
probability to be upheld in court. Remember, a patent is a likelihood property (Lemley & Shapiro, 2007) and its validity can only be questioned in court. Patent law assumes a patent is valid as soon as a patent office grants the patent to an applicant. The NPE uses this information asymmetry in a very clever way. Broad and vague claims enable them to confuse the alleged infringer and it also lays a heavy burden on the judge to prove (in)validity during trial. We can conclude that Fisher and Henkel (2009) were able to show that trolls are able to acquire patents of high technological value and legal sustainability which can guarantee the sustainability of their business model.

**Patent Origin**

Taken this wish list in mind, we need to distinguish the sources of their patents. The overall view we get in literature (cf. Reitzig, Henkel, & Heath (2007), Chien (2011) and Davis (2008)) is that NPEs (reasonable and opportunistic) buy patents from, inter alia, (near) defunct companies. It could either be the original owner that offers its portfolio to the market to prevent bankruptcy or NPEs can attend the final bankruptcy proceedings. A recent example of this mechanism is the notorious bidding war that took place during the auction of Nortel’s portfolio.9 RPX, ‘a provider of patent risk solutions, offering defensive buying, acquisition syndication, patent intelligence and advisory services’10, tried to compete in the bidding. It turned out that the competing bidders had a highly strategic interest in the portfolio. The final bid was on a level where sole defensive ownership was no longer financially viable. The winning bid of $4.5 billion came from a consortium of Apple, Microsoft and Research In Motion. Besides, RPX should be regarded as a goodhearted NPE, since they are a good example of party that tries to limit the possibilities for trolls. More on this matter will follow in the discussions on countermeasures.

Bankruptcy is not the only situation where patent owners sell (parts of) their portfolio. There are many signs of companies who try to sell parts of their portfolio that do not play a strategic role within their company. These so called dormant patents are not of a direct assessable value to the owner (Magliocca, 2007). There is a lot of work required to filter out the limited number of high(er) value patents. The owner can therefore decide to sell the bulk. This creates an income from the sale and saves money, because they do not have to pay the continuation fees any longer. In case the new owner is able to find the little hidden gems (or Rembrandts in the attic as they are called (Jaffe & Lerner, 2004)), they can surprise other producing entities. Complex technologies are best suited for this practice, since it is very hard to determine whether you are infringing or not. Infringers are always liable for the infringement though even if they did not know the technology was patented. It is not always necessary that the valuable patents are hidden deep insight of the portfolio. It could very well be that the patents were not being enforced deliberately, because of hold-up strategies. The owner waits until something is an industry standards and then start to sue. On must remember that trolls are not interested in cooperative pooling arrangements, since they do not produce technology themselves.

Public auctions are the final source of patents that is of interest. Ewing (2010) studied public patent auctions organized by Ocean Tomo. Although the buyers would like to stay anonymous,

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Ewing managed to trace who were the buying parties at these public auctions. The auctions have the potential to become a very valuable and transparent market place for intellectual property, but now it is a place where Intellectual Ventures buys most of the auction items. Transparency is mostly absent. Most operating companies are reluctant to trade intellectual property. Others just do not have enough assets to spend on it. It seems that we are still not in a real open innovation era, since it would imply more trade by operating companies as well. Corporations have typically been more willing to trade IP assets in private because, among other things, the corporate actors can carefully control the public information about such transactions and may even be able to keep them out of the public view altogether. The auction is also still not the embodiment of a liquid market. There is uncertainty about validity and commercial relevance. Usually there is only a very small pool of potential buyers. Public auctions can overcome this, but there is a small chance that an operating company will find the patents he really needs. If companies offer IP of great value, then it might result in higher prices. This can be an incentive for practicing companies to offer higher quality IP.

2.2.3 Countermeasures

The countermeasures that followed from the law and institutional section focused on legal and institutional change. The creation of jurisprudence and changes in the application procedures were identified as strong methods to fight opportunism. Many of what we saw in this section though, is related to corporate believes and practices. The patent office for instance does no longer have to deal with low quality patents, if applicants do no longer apply for them. Following their earlier mentioned model, Reitzig, Henkel, & Heath (2007) came up with countermeasures which manufacturers can use to arm themselves against trolls. Henkel and Reitzig elaborated a bit further on five of those strategies in their 2008 article (Henkel & Reitzig, 2008). They advise companies to slim down their patent portfolios and stop building a huge portfolio for future cross-licenses with competitors. Secondly, firm should develop smarter, simpler technical standards and design more-modular components. These standards should furthermore be open-source. This will prevent a lock-in into a standard with infringing core components that cannot be substituted without serious financial losses. The open-source nature forces the members to put more effort in patent searches and the publication of the standard makes it prior-art for all future patent applications. Thirdly, the industry players should cooperate earlier with their competitors in their efforts to spot predators. Although this might require them to share information about their R&D initiatives, it might save all parties a lot of effort down the road. The same holds for a closer relationship between the functional departments within the company. By taking legal consideratis into account in the very early steps of R&D, firms can strengthen their position in the final development of new products. The author’s final advice is to stop filing for patents on minor innovations.

Corporate change is a challenge en usually takes quite some time tough. The advices based on observation and theories may feel plausible and straightforward, but it is unlikely that years of corporate culture change in an instant. A change in patent behavior, industry-wide collaboration programs, policy changes; they are all examples of long-term processes. Some parties recognized these problems and described the idea of defensive patent aggregation (Menage & Dietrich, 2010). As a defense mechanism, aggregators pool resources to form a collective defense against trolls. Examples of aggregators are RPX Rational Patent, The Allied Security Trust (AST) and the Open Innovation Network (OIN).
2.3 Technology view

2.3.1 Foundations

Some technology domains show more NPE activity than others. The type of technology could therefore be an important indicator for the success rate of opportunists. Before we can discuss why and how the type of technology and its related patents can foster this behavior, we need to take a more legal route to understand what matter is exactly patentable. Gielen and Hagemans (2000) clearly describe the legal background of this matter. They explain the foundations of European and more specifically Dutch patent law with great detail. Article 2 Dutch Patent Act 1995 states that inventions should be industrially applicable. Article 7 further elaborates on this, stating that is should be possible to produce or apply the subject of the patent in whichever field of industry, including agriculture. Therapeutic methods and methods for medical treatment are excluded, due to ethical issues. It is possible to get a patent on methods for the production of medicine and therefore on the produced matter, the chemical compound. One can apply for a patent for the pharmaceutical preparation, in which the applicant claims a method for including the compound in a pharmaceutically acceptable carrier; a drug.

We can learn from the legal foundations that an inventor can apply for a patent, as long as it is new, non-obvious and industrially applicable and not part of the list of excluded matters. There is no distinction between the different types of technologies and therefore industries in a legal sense. In practice, the role of intellectual property and patenting behavior differs strongly among the different industries. The pharmaceutical industry is for instance the only industry left where one product is covered by one or a very small number of patents.

2.3.2 Contemporary views

Complex and interconnected technologies, such as telecommunication technologies, have a unique set of characteristics. The development of these technologies requires enormous investments and changes in design in the later stages of development result in serious losses due to sunk costs. The company that is engaged in the process works itself into a lock-in. The final products moreover need to communicate with other devices (from other producers) in a network. The highly complex but more over incremental improvements of the technology creates an interesting situation in terms of intellectual property. The main source of uncertainty is created by hold-up (Shapiro, 2001). Hold-up refers to the situation where a patent holder obtains the right to an injunction, which gives it the power to stop an infringing firm to design, manufacture and sell the infringing product. Opportunist licensors use the threat of hold-up during licensing negotiations in their efforts to reap as much benefits from their patents as possible. The main sources of hold-up stem from:

- **Inappropriate taxes on innovation** - patents that are overly broad, vague and that shouldn’t have been granted in the first place impose such taxes.
- **The cumulative effect of many small taxes** - In some industries, there are literally hundreds of patents reading on one product. As a result, a single product can easily infringe a number of patent owners. The manufacturer steps into a mine field (Granstrand, 2009) or thicket (Shapiro, 2001) of patents. Many ICT technologies fit this description.
- **The timing of the assertion** - In case the patent is *a priori* easy to invent around, then a producing entity is at best willing to pay a small and reasonable amount of money. The total costs of the license should not exceed the costs of inventing around. The patent holder
might therefore ‘better’ wait until the patented technology is incorporated in a fully marketed product and then assert it against the manufacturer. The costs of inventing around can be near infinite in this case and the threat of an injunction is even more serious. Fortunately, *eBay v. MercExchange* limited the possibilities of opportunistic NPEs by limiting their access to an injunctive relieve decision.

The industry came up with a number of solutions to fight the threat of hold-up. Their first reaction was to set up cross-licensing deals. Especially in the late twentieth century, many parties with large and strong portfolios set up deals with other strong parties in which they agreed not to assert their patents against each other. These deals were sometimes formally covered with contracts, but also in mere informal industry-wide agreements. The second measure, as already shown in some of the historic cases, is the establishment of patent pools. In this case there is one entity that offers a license to a bundle of patents from different patent holders. It can lead to an anti-competitive situation, in case two strong parties decide to bundle their forces in a pool and push out all other parties from that industry or at least capture licenses from other’s activities. The third measure is cooperative standard setting, more on this follows below. The final measure is to settle the dispute, by means of company merges, paying the others to exit the market or agreements not to sue in trade of a (small) market share between incumbents and new-entrants. In the latter case, the new-entrant might have a piece of valuable and thus threatening IP, but so does the incumbent and it is therefore attractive to set up such an arrangement. All versions of the final measures to settle the dispute are usually closely followed and studied by national competition bodies, since it can easily lead to an anti-competitive situation.

**Voluntary standard setting**

One of the mechanisms to tackle hold-up and guarantee interoperability is the establishment of standards. In order to guarantee for the product to work, industry players engage in such industry wide collaboration projects. In so called voluntary standard setting organizations (SSO), they decide which technological solution should be the standard for those who want to participate in that particular market. Patents play a key role in the generation of such standards.

Despite the standardization efforts, hold-up is still a potential problem. The threat it two folded. The SSO might first of all overlook a valuable piece of IP in the hands on non-members. The owner might deliberately wait until the standard is set and investments are made. In this case, he is called an opportunist. The second source is similar, but now imposed by member of the SSO. They are even in a better position to steer the process into a domain where they have strong pieces of IP that they did not bring to the table. This is called patent ambush. Most of the standard setting bodies overcome this problem by means of their policy guide, which stake that all members must declare their essential patents during the process. All members are furthermore requested to commit themselves to license their patents on (Fair) Reasonable and Non-Discriminatory (Europe/U.S.) terms. All implementing parties want to prevent hold-up, since it is closely related to relationship-specific investments. The agreements between the members directly lead to investments specific to the set standards. These so called sunk-investments are often of no or lower value outside of the specific collaboration. The threat of hold-up would discourage parties to invest efficiently in the collaboration. It is therefore of high relevance for the SSO and its members to set clear rules about disclosure and future assertion. (Department of Justice & Federal Trade Commission, 2007)
There are examples of standard setting procedures that ran into some rough waters. Rambus is the best known case of patent ambush in a standardization setting. It took place in the development of the synchronous dynamic access memory (SDRAM) standard by the SSO ‘Joint Electron Device Engineering Council’ (JEDEC). The company was a member of the SSO for four years, but did not declare all its essential patents. After the standard was set, they tried to demand licenses against a royalty rate that was not in line with the fair, reasonable and non-discriminatory policy of JEDEC. In Europe, the Commission even sent Rambus a Statement of Objection ([European Commission, Antitrust: Commission confirms sending a Statement of Objections to Rambus, 2007]). It stated that Rambus abused its dominant position by not disclosing essential patents during JEDEC’s meetings. It later asserted the patents against implementing parties and claimed unreasonable royalties. This is not in line with EC Treaty rules on abuse of a dominant position (Article 82). The Commission claimed that Rambus wouldn’t have been able to charge the excessive royalty rates without the earlier patent ambush.

Setting standards does not only have positive effects on the market and innovation. Shapiro (2001) gave a comprehensible overview of the costs and benefits. He stated that:

There are significant benefits associated with achieving compatibility. These include:

- Successful Launching of a Bandwagon or Network;
- Greater Realization of Network Effects;
- Protecting Buyers from Stranding;
- Enabling Competition Within an Open Standard.

Likewise, standardization and compatibility can impose very real costs on consumers:

- Constraints on Variety and Innovation;
- Loss of Ex Ante Competition to Win the Market;
- Proprietary Control Over a Closed Standard.

**(F)RAND**

The obligation of SSO members to grant their essential patents on (F)RAND terms is one of the most powerful measures to prevent anti-competitive behavior. It remains highly difficult to interpret (F)RAND though (cf. Tapia (2010) and Layne-Farrar, Padilla & Schmalensee (2007)). Firms often want to stretch the term as far as possible, since it directly affects their licensing revenue stream. The problem lays at the term reasonable. Licensing negotiations during among the members of standard setting organizations take place behind closed doors. This makes it hard for outside parties to understand the rationale behind the proposed licensing fee. In court cases on the other hand, both parties use and present their own calculation methods to determine reasonable royalties. Tapia (2010) presents the following possible starting points for their argumentation:

- The 15 Georgia-Pacific factors - Introduced in the dispute between Georgia-Pacific and US Plywood (1970) to evaluate the type of monetary payments that would compensate for patent infringement.
- Goldscheider’s 25% rule - The classical rule of thumb states that license(s) may add up to 25% of the gross profit margin. In case of multiple patent holders, the cumulative royalties also shouldn’t exceed 25% (Goldscheider, Jarosz, & Mulhern, 2002). Tapia (2010) argues that this rule might also be used in case of (F)RAND based licensing. [The
interpretation of this rule usually leads to the highly complex discussion over the actual contribution of the patented innovation to the final product and its related added profit. An example might for instance be the determination of the added value of 3G technologies in a tablet of smartphone when compared to for instance a tablet or smartphone without a 3G.

- Charts available and previous licensing agreements - Numbers related to earlier licenses of the patent holder to other licensees or numbers of industry averages can also be a valuable source for determining the height of new licenses.

A discussion on (F)RAND and all its implications would be a thesis on its own and we can therefore not give it the attention it deserves here (for further reading: Tapia (2010)). Fortunately, there is a highly interesting German court case related to FRAND and NPEs, namely the case of IPCOM. This case is included in our empirical section.

2.3.3 Countermeasures

We saw that cross-licensing standard setting and the like were the industry’s remedy to limit hold-up practices. Opportunistic patent holders are still able to find their way into specific technology domains. The process of standard setting is furthermore criticized. The current setup of standard setting organizations is perfectly suited for large industry players with a large patent portfolio. Their patents became a bartering tool which enables them to steer the negotiations into the direction they want. For new-entrants, it very difficult to enter the debate, since they own little or no intellectual property. This imposes increased transaction costs for these new-entrants, since they have to put a lot of effort in building a portfolio before they can really contribute in the market space. Sometimes, their reaction is to convert their business model towards opportunism, using the little IP they have to frustrate the SSO members as soon as they adopt the standard. Both results are of little value for innovation as such. The list advices of Henkel & Reitzig (2008) in the economy section already introduced two measures to counter these problems. They advise companies to slim down their patent portfolios and stop building a huge portfolio for future cross-licenses with competitors. Secondly, firm should develop smarter, simpler technical standards and design more-modular components. These standards should furthermore be open-source. This will prevent a lock-in into a standard with infringing core components that cannot be substituted without serious financial losses. The open-source nature forces the members to put more effort in patent searches and the publication of the standard makes it prior-art for all future patent applications. As said before, these measures are in need of an industry-wide change in mindset, which can be a very long term process.

2.4 Terminology view

2.4.1 Foundations

Taking the very basic principles of the patent system in mind, one could say that there is no reason at all to distinguish different types of patent holders. Every legally entitled entity has the fundamental right to use the granted patent right in the way it wants. Practicing or non-practicing is in no way prescribed by patent law, as presented in our law section. The act of labeling certain entities as NPE and certain behavior as patent trolling is therefore a pure arbitrary deed. All actors combined seem to have a common understanding where reasonability ends and opportunism ends. But is this really the case? Many claim that the act of labeling is the result of vicious lobbying by players that have a certain interest in this white-collar
blackmailing. What is certain is that people seem to have an interest in identifying which entity is using which kind of patent (assertion) strategy. This is quite logical, since this can be highly valuable industry intelligence. This information can for instance be used in the freedom to operate reports that are writing by manufacturing parties that are about to decide whether or not to launch a new product into the market space. We will investigate which types of typologies are around and which is best at describing the present state of affairs in the market for technology.

2.4.2 Contemporary views

We all know... That we actually don't know... how to give a single and comprehensive definition of what a patent troll is (non-practicing entities –NPE-, or companies “I don’t like’, or companies using weaknesses of the patent system and the power of court systems/damages, etc.); anyway, the collective feeling in the IP world is that “They are out there somewhere”. (Menage & Dietrich, 2010)

Statements like this were the main motivation for us to start our quest for understanding the recent developments in the world of patents. The inability to give a single and comprehensive definition of what these parties really are gave a lot of room for personal interpretations on the matter. Before we can understand the dynamics at hand when studying the Dutch cases and reactions from representatives of the Dutch industry, we need to capture the different explanations. The rising presence of NPEs in our economies let to a strong debate on the classification of this type of companies. Peter Detkin's mere classical definition of trolls seems no longer sufficient. The punitive nature of the label is not in line with the wide variety of companies that made the strategy of non-manufacturing to their business model. As already shown in section 2.2.2, Abril and Plant (2007) identified and explained four patent strategies. The patent owner could first of all decide to manufacture the technology. The second option is to license the technology to other parties. Another option is to sell the piece of intellectual property. The final option is to or litigate those who are infringing upon your technology. One should understand that it is not necessary for a company to pursue just one of these strategies. The authors claim that all technology is created in a technology web, which is much in line with the concept of markets for technology. It is no longer the case that all the steps involved in the generation of inventions and innovations take place under the roof of one company. Instead, many parties together form a web in which we see specialization in certain areas of the innovation process; a division of labor if you like. Companies do not have to manufacture something in order to play a role in the technology web. They introduce three groups of NPE business models, namely (1) business models that try to sell, barter of license (or facilitate such transfer), (2) business models that seek to bridge the technology web gap, and finally (3) business models that seek to patent assertion and litigation in order to generate revenue without producing. Let us elaborate on these groups a bit further.

The first group of business models seek to sell, barter of license intellectual property. They could also try to facility these types of transfer. They are the proactive parties in the web. The authors identified four types of companies that fit this business model description, namely:
1. **The small garage inventor** - If practicing fails, then these parties usually try to license their IPRs to others. They can also decide to place in a patent collecting entity. Those entities have the potential to become a real troll, in case licensing does not pay off.

2. **Corporate Patent Bank or Investment Bank** - The strong financial position of some corporations or investments banks enables them to capture and collect many patents. This portfolio can generate substantial income. The companies can use it in a variety of ways. It is a latent resource for future internal product development, for patent exchanges, or for defensive commercial or litigation purposes. The patent-holder can furthermore corporate and sell the patent to external parties. A corporation can also simply have the patent sit in its extensive patent bank or make it available via a patent pool to other corporations with whom it is collaborating toward a product. Their IPRs can be a very powerful tool to shape the technology web.

3. **The Invention Company** – Intellectual Ventures (IV) is the prominent example of this. These sheer patent-holding companies produce and buy as much patents as possible. Eventually, the holding tries to generate licenses and pool resources. Tom Ewing’s report and website state that IV’s ‘portfolio’s overall size to comprise more than 10,000 patent families that amount to some 30,000-60,000 directly controlled patents/applications worldwide by the end of 2010, although this number could range even higher depending on factors such as the company’s international filing preferences. Thus, in just a few years of active acquisition, IV appears to have acquired a patent portfolio among the top 10 in size for domestic US companies and quite possibly at the upper end of the top 10.’ (Ewing, 2011)

4. **IP Intermediaries and Universities** - These parties that have too few assets to gain the full potential of their IP and therefore act as intermediaries between researchers and developers. [The role of universities later on will be covered later on.]

The second group of business models seeks to bridge the technology web gap. They do not hold a proactive position within the system, but try to reduce transaction costs between patent holders and licensees or buyers.

5. **Internet-based IP Marketplaces** - Internet marketplaces try to reduce transactions costs. There are some difficulties with this model though. First of all there is information asymmetry. It is very hard for the buying party to assess the quality and legal strength of the patents at auction. Secondly, one needs a bundle of patents to produce a technology in most industries. Thirdly, patents are no commodity, which makes it hard to put a price tag on them. Bartering licenses instead of patents still seems to be the overall working practice.

6. **Patent auctions** – To overcome some of the challenges of online marketplaces, Ocean Tomo holds live patent auctions. This makes the process more transparent.

7. **IP Information Portals** - These portals create more transparency by means of added value services. An example is the Derwent Innovation Index, which allows researchers to search patent literature more quickly and effectively.

The final group of business models seeks patent assertion and litigation in order to generate revenue without producing.
8. **Patent trolls** – These parties acquire a patent and then they send letters to offer potential infringers a license deal or large settlements. Legal action might be necessary to force the others to pay.

9. **Blocking Patents** – As a defensive business strategy, some companies try to frustrate product launches of complex technologies because they hold a patent on a certain part of the complex end product. The patent holder might feel that a potential licensee's participation in a web would be detrimental to its own overall corporate strategy and therefore refuses access to their patents, thus forcing the product out of the market or raising its cost to consumers and irreparably harming its manufacturers. Patent hold-up can be a serious threat to standardized technologies. More on that in the respective chapter.

Foregoing typology can be used to describe many of the entities that are active today. It is not unique though. Hiratsuka and Osawa (2007) were also aware of the fact that there are different types of NPEs around. Their focus is more specifically on patent trolls, but they propose to focus more on the behavior in stead of the entity as such. They propose a three stage classification of trolling behavior. The first group does not carry out innovations, but purely focuses on assertion. The second group licenses their not-practiced patents to others. This could be companies who manufactured product before, but changed their patent monetization strategy. The final group exercises their patent right associated with technical standardization. According to them, a real troll will wait for the standard to be set and then he will start to sue. Keeping this in mind, they proposed a test for the identification of trolls. This test is shown in Table 2.2.

<table>
<thead>
<tr>
<th>Requirements for designation</th>
<th>Patent troll</th>
<th>Non-trolls: Tech. License Office, Private inventor and patent holding companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patent troller</td>
<td>Those who carry out trolling</td>
</tr>
<tr>
<td>Business embodiment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never practicing their own</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>patents previously, currently or in the future</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never carrying out innovations</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Purpose and embodiment of exercise of right</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Their purpose is earning huge royalties</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Filing a motion of injunction in attempt to maximize the royalties</td>
<td>+</td>
<td>Depends</td>
</tr>
<tr>
<td>Delaying intentionally the exercise of right in attempt to maximize the royalties</td>
<td>+</td>
<td>Depends</td>
</tr>
</tbody>
</table>

Table 2.2: Requirements for designation: ‘+’ = meets the requirements, ‘-’ = does not meet the requirements (Hiratsuka & Osawa, 2007).

The typologies of Abril and Plant (2007) and Hiratsuka Osawa (2007) and are quite comprehensive, but their articles lack empirical validation. They fortunately were not the only one to conclude on more elegant classifications than just labeling every NPE as patent troll. Pohlmann & Opitz (2011) studied 10 cases involving NPEs to reveal a distinct typology of IPR enforcement mechanisms and to suggest a framework to assess the troll business. They used
Papst Licensing, Alliasence, IP Com, Sisvel, Epicrealm, Barnesandnobel.com LLC, NTP, MercExchange and HIPPO as input for their analysis. They only described cases involving the first five companies. Their study into these cases resulted in the conclusion that a patent troll is just one particular type of NPE. According to the authors, there should be two main parameters to assess the behavior of a particular NPE. The actions should be measured against the activities related to the patent and against the quality of the patents involved. Determining the latter is a rather arbitrary undertaking in our vision though. It brought them to the typology as shown in Table 2.3.

<table>
<thead>
<tr>
<th>Activities concerning the patent</th>
<th>Patent quality</th>
<th>Non-trivial patent</th>
<th>Trivial patent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative/ manufacturing</td>
<td></td>
<td>Technology blocker</td>
<td>Trivial-technology blocker</td>
</tr>
<tr>
<td>Innovative/ non-manufacturing</td>
<td></td>
<td>Patent enforcer</td>
<td>Trivial-patent enforcer</td>
</tr>
<tr>
<td>Non-innovative/ manufacturing</td>
<td></td>
<td>Patent implementer</td>
<td>Trivial-patent implementer</td>
</tr>
<tr>
<td>Non-innovative/ non-manufacturing</td>
<td></td>
<td>Patent troll</td>
<td>Trivial-patent troll</td>
</tr>
</tbody>
</table>

Table 2.3: NPE typologies (Pohlmann & Opitz, 2011).

Pohlan and Opitz (2010) further elaborated upon the non-innovative and non-manufacturing subclass; the patent trolls. They conclude from their case studies, that the actions of these parties differ from case to case. There are two important indicators to determine the strategy of the troll. It depends on the type of enforcement and on the type of licensee. Table 2.4 shows which types of trolls are possible when one takes this in mind, in which the bottom row poses the most serious threat to the market.

<table>
<thead>
<tr>
<th>Leverage Potential</th>
<th>License recipient</th>
<th>Initial licensee</th>
<th>Infringer</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/Rand IPR enforcement</td>
<td>License supplier</td>
<td>Royalty claimant</td>
<td></td>
</tr>
<tr>
<td>Extortive IPR enforcement</td>
<td>License extortionist</td>
<td>Excessive royalty extortionist</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.4: Patent troll typologies (Pohlmann & Opitz, 2011).

**Universities**

There is one type of organizations that should be emphasized on a bit more, namely the university. Lemley (2008) addresses the issue in his paper *Are universities patent trolls?* A university per definition fits the description of NPEs. The author signals some trends that seem to worry the industry. First of all, he too claims that there is an upsurge in the amount of litigation filed by non-practicing entities. It results in the earlier mentioned patent hold-up, where patent holders not just try to capture the value their own contribution the invention, but also a disproportionate share of somebody else’s product. The ICT sector is most vulnerable for this, given it complex nature and need for interoperability. Secondly, there is a rise in university patenting. It is the result of the Bayh-Dole Act, which stimulates (or forces) patenting of
government funded inventions. These patents do not sit dormant though. They raise over $1 billion a year in revenue. Some interesting facts: universities hold 12% of the total amount of patents in nanotech, which stands for 75% of the fundamental building blocks of this field of research. In biotech, they hold 18%.

Universities also have the classical asymmetry as any other NPE, since they only want to license-out, but never license-in, since they do not produce. They are considered to be greedy. Lemley (2008) explained their focus on exclusive licenses instead for non-exclusive. There are three institutional incentives for this: exclusive licenses result in higher royalty rates, the companies with which they negotiate often want exclusivity (many are university spin-offs) and exclusive licensees pay the costs of any potential patent prosecution. In the long run, non-exclusive can deliver much higher awards in case of a basic enabling technology though. The technology transfer offices often overlook this in their short-term goal setting. Lemley argues that universities should aim for maximizing the social impact of technology. This may coincide with short term financial benefits. He does offer a set of solutions, especially for so-called enabling technologies. Universities could for instance grant field-specific exclusive licenses or temporary exclusive licenses. They could furthermore make a distinction between licenses for commercialization and licenses for further research. The former could be exclusive and the latter non-exclusive. The license could also be royalty free in some technology areas. It is always important for them to assess their proper role. His main point is also to focus on bad acts, not on bad actors. Sometimes a university will act as a troll (e.g. Eolas v. Microsoft), but so are other NPEs and even manufacturing entities.

**Patent privateers**

_Thus the Kings of France and Great Britain have . . . [shown] hatred to attack and injure these provinces, as well as [its] good inhabitants everywhere. So is it that the . . . States-General of the United Netherlands, with God's blessing, have found it necessary because of this, so as to obtain reparations for the damage suffered by the aforementioned inhabitants, as well as to prevent as much as is feasible the great ruin of the commerce and navigation [of this state], and to this end employ all means of retaliation . . . have conceded that Jan Adriaense Noot, . . . Shipper from Dordrecht . . . may attack and capture . . . all ships, and goods belonging to the subjects of the said Kings, and their . . . allies . . . as well as persons . . . in those territories and allegiances . . . (Lunsford, 2005)

What you just read is an official declaration of the Dutch state in which a privateer was granted the right to attack the fleet of France and Great Britain in the Golden Age (17th century). You might wonder why it deserves to be mentioned in a research into non-practicing entities in the market for technology. The reason for this is a publication by Thomas Ewing (2010), who drew the analogy between these wartime privateers and a particular type of NPEs; patent privateers.

Patent privateers are entities that attack a manufacturing entity on behalf of and other manufacturing entity. He describes several techniques for this, ranging from a very stealthy mode to a mode where it is relatively easy to determine who is responsible for the (legal) action. In short, there are four strategies, namely:

1. Not very stealthy: sell some of your intellectual property to a third party and let them attack your competitor.
2. Stealthy: search for strong patents in the portfolio of a third party and bribe them to sue. You could also buy that party's IP and place it at another trusted other party.

3. Sponsor a set of contingency fee (fee in case of winning) lawyers. Let them approach small IP owners. In this case, nobody knows who sponsored the suit.

4. Extra layer of stealth: you can create a limited liability company (LLC) to stall your patents. This is a very common strategy, not just in the case of privateering. A LLC is the near perfect strategy given the great amount of privacy. Ewing analyzed the pre-litigation behavior of 448 LLC's. 262 had ownership changes before trial. 5% of all cases had come (nearly) directly from an operating company.

One might wonder why a firm would want to put so much effort in creating these layers of stealth. Why wouldn't you just attack your competitor directly? First of all, one must realize that there might be some millions at stake in the NPE litigation deal, but there are billions at stake among the large commercial actors. It's thus not the direct effects (damages etc.) of the privateering action but the indirect effects that count. Ewing provides us with four situations where privateering might be of great value, namely:

1. Two large technology companies are competing for a supply contract from a third party. If there is an imbalance in the strength of the company's IP portfolios, then the strongest player could decide to attack via a privateer. His action can force the other player of the market. A direct attack might influence the relationship with the customer.

2. An incumbent's market position is being etched away by an up starting competitor with a replacement technology. Both can attack in a situation where their portfolios do not overlap. Third parties might also have the required additional IP. It doesn't have to be necessary to place the IP under their flag. Motivating the third party to sue can be enough to hamstring, distract and/or embarrass the competitor.

3. In case of a near monopoly, some companies have such market power that employing their IP portfolio raises problems with the competition authorities. They hire or sponsor a privateer to do the job for them.

4. A large company would like to change some aspect of IP law in a particular jurisdiction. Finding fellow companies facing the same problem (or creating them) helps them to raise their voice. Although the goals of the strategy are not in line with the other three, it still is an example of privateering.

These privateering strategies might sound appealing, but they are of little value without real life examples. These examples are known though. Although not confirmed, many claim that Microsoft paid SCO Group Inc. to attack Linux. Another example is the attack of MobileMedia Ideas LLC on Apple, HTC and RIM. MPEG-LA LLC, Nokia Corp and Sony Corp all individually owned more than 10% in MobileMedia Ideas LLC. The best known example of using LLC's in the process of licenses extortions are the efforts of Intellectual Ventures. They are the godfather behind many LLC shells. Patents change ownership (form one LLC to another) often. Ewing's final alleged action of privateering stems for Micron Technology. They recently sold about one-quarter of its highly valued patent portfolio to Round Rock Research, LLC. John Desmarais, a distinguished patent litigator, runs Round Rock. The relationship between them is kept a mystery. Ewing concludes that privateering can be used for the good and the bad. Prospective plaintiffs, privateers, defendants, suppliers and regulators; they all need to be highly aware of all the aspects involved.
Another recent example of privateering without any layers of stealth is the deal between Nokia and Mosaid Technologies.\textsuperscript{11} Mosaid Technologies, a Canadian licensing company that is now part of the private equity firm Sterling Partners\textsuperscript{12}, acquired the portfolio of Luxembourg based Core Wireless Licensing S.a.r.l. The portfolio consisted of 2000 standards-essential wireless patents and 800 wireless implementation patents originally filed by Nokia. Instead of paying for the portfolio up front, Nokia and Microsoft (because it entered into licensing agreements with Nokia related to some of the patents) get a share in the revenues from future licensing deals.\textsuperscript{13} This action fits the contemporary strategies of large industry players.

\textbf{Final thought}

Although I consider the discussion on the terminology highly interesting, Lemley (2008) distanced himself a bit by saying: ‘\textit{I think we could successfully define patent trolls by distinguishing cases in which non-manufacturing entities license only the right not to be sued from cases in which the patent owner actually engages in technology transfer.}’

\section*{2.5 Conclusion}

This chapter showed that the discussion on NPEs is not yet closed on many of the topics. Some of the scholars do already propose countermeasures, but the debate is still lacking empirical validation. Many of the analyses and conclusions are drawn from a limited number of cases. Most of the cases moreover originate from the United States. To test and challenge some of the claims in literature, these topics should be discussed with important players in the European market for technology. I therefore constructed a set of statements (which are sometimes stated as questions). I wanted them to be a mix of open and closed questions in order to challenge the interviewees during the conversations. The statements were directly constructed from the foregoing literature study and are stated as follows:

1. **Trolling as a highly profitable business model** – The threat of (preliminary) injunction in the hands of non-practicing entities is a threatening combination. For them, ex post determined damages are a far better pay off then ex ante negotiated licensing deals.

2. **Normal business risk** - Being a subject of trolling is just a normal business risk when involved in the world of patents.

3. **Perception of patents** – Should patents be seen as offensive or defensive business tools? Did this perception change over time? Does the emergence of open innovation, public auctions and the like signal a change?

4. **Selecting their targets** – What kind of strategies do trolls use in their quest for possible targets? Where do they usually focus in the value chain of the technology?

\begin{itemize}
\item \textsuperscript{11} MOSAID Acquires 1,200 Nokia Standards-Essential Wireless Patents and 800 Wireless Implementation Patents - \url{http://www.mosaid.com/corporate/news-events/releases-2011/110901.php} (accessed on: 12-02-2012)
\item \textsuperscript{12} MOSAID Technologies Announces Closing of Acquisition by Sterling Partners - \url{http://www.mosaid.com/corporate/news-events/releases-2011/111223.php} (accessed on: 12-02-2012)
\item \textsuperscript{13} Wall Street Journal article related to the sale - \url{http://online.wsj.com/article/SB100014240531190471660457654441441198816.html} (accessed at 06-04-2012)
\end{itemize}
5. **Trolling in standardization settings** - Hold-up in standardization is a serious issue. Are current standardization practices well enough armed against trolling?

6. **Trolling in a time perspective** - Is it just a recent phenomenon? Is there an upsurge in trolling? Is it here to stay?

7. **Legal context** - Differences in national legal systems result in international ‘forum shopping’ by patent holders.

8. **Field of technology** - Some fields of technology are better suited for trolling than others. The accumulative nature of some technologies results in many patents on incremental improvements. These patent thickets are an incubation environment for trolls.

9. **Privateering** – What if the presupposed troll (secretly) has practicing sponsors?

10. **Counter strategies** - Can the market counter trolls by creating smarter and simpler standards, design modular components, early cooperation between competitors, share information internally and externally, and stop filing for patents on minor innovations?

11. **Defensive patent aggregation** – A desirable reaction?

12. **Classifications** - Is it possible to create a more elegant classification for non-practicing entities? ‘Trolls’ is a catch-all expression and should maybe be used more subtle in literature and popular media. Moreover, perhaps it doesn’t even make that much sense to focus on identifying bad actors. We should shift the focus to bad act and try to prevent them.

13. **Trolls as market makers** – With their role as patent dealers, trolls create a legitimate threat of litigation, their acts make patents more liquid (commodities), and they clear the market by risk pooling and equalizing pricing. In short, they stimulate the proliferation of markets for technology.

The statements all have direct links to the four views of the other sections of this thesis. Table 2.5 shows which statement is linked to which theme(s).

<table>
<thead>
<tr>
<th>Views</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal/institutional</td>
<td>7</td>
</tr>
<tr>
<td>Economics</td>
<td>1, 2, 3, 4, 10, 11, 13</td>
</tr>
<tr>
<td>Technology</td>
<td>5, 8, 10, 13</td>
</tr>
<tr>
<td>Terminology</td>
<td>6, 9, 11, 12, 13</td>
</tr>
</tbody>
</table>

Table 2.5: Statements per theme
3 Empirical validation

The primary goal of this master thesis research is to add more empirical observations to the discussion on contemporary patenting and assertion strategies. I therefore conducted a number of interviews with relevant actors in the European market. I analyzed their visions in a holistic manner, which enables us to compare the findings from literature with experiences from their perspective.

3.1 Method

We interviewed a total of six highly interesting practitioners in five interview sessions. We used the earlier introduced set of statements to structure the interviews. The transcripts of these interviews were codified into the core topics of our interest. Combining the viewpoints of the different interviewees enables us to build our analysis in a narrative manner. (Kvale, 1996) (Miles & Huberman, 1994) We want to identify the main driving factors behind the upsurge in trolling in Europe. We therefore need to analyze whether the main findings from our literature study are confirmed when challenged from a European perspective. A qualitative approach is chosen, given the high importance of grasping the context in which these matters take place. The narrative style of presenting the findings helps to focus on those aspects that the interviewees perceived to be of high importance in our quest of understanding.

We want to guarantee full privacy of the people involved in our research. Although all interviewees emphasized that their responses only reflect personal opinions, we want to prevent that it may be used to harm the businesses they are affiliated with. I use nicknames to achieve this goal. It enables us to give the interviewee’s personality without revealing their identity. I will refer to the interviewees as Mr. Blonde, Mr. White, Mr. Pink, Mr. Orange, Mr. Blue and Mr. Green. They are all active in the Europe in the field of intellectual property. They are active in a variety of sectors and hold different positions. Their expertise varies from corporate IP strategies to the role of IP in standardization and patent assertion. Their shared expertise enables us to give a decent overview of the vision on our topics of interest from a European perspective. The topics are discussed in the same four pillared fashion as we did in the preceding sections of this thesis. I want to present the views of the interviewees, but at some points we will present some of my own views on specific matters in italics and between brackets. [This is an example.]

Before we emphasize on specific topics, I present a summary of the findings from literature related to the set of thirteen questions and statements. This is subsequently compared with the opinions of the interviewees. The main body of this chapter gives an in-depth overview of the topics that were considered to be of most importance in the discussion according to the interviewees. These insights can directly be translated into the factors that form the basis of the answer to our research question.

3.2 Results

The set of statements served as a strong tool to structure and compare the different interviews. Since we would like to address the differences and resemblances between the findings from literature and the interviews, the earlier set of statements is translated into a set of testable statements that can be used for our analysis. One could say that it is a very short summary of the
findings from literature. The overview can be found in Table 3.1. The statements are lettered instead of numbered to emphasize the difference with the earlier presented set.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Trolling as a highly profitable business model</td>
<td>Trolls understand the risk they impose to the system and use this in a strategic manner. In the U.S. they did lose their access to a preliminary injunction though.</td>
</tr>
<tr>
<td>B. Normal business risk</td>
<td>Attacks from trolls are part of being in the business of manufacturing and selling technology.</td>
</tr>
<tr>
<td>C. Perception of patents</td>
<td>It changed since the late 20th century. It’s no longer just a defensive tool, but can also be used offensive. It is often a mix of both. One should use IP to add value to the organization.</td>
</tr>
<tr>
<td>D. Selecting their targets</td>
<td>Follow the money down the value chain.</td>
</tr>
<tr>
<td>E. Trolling in standardization settings</td>
<td>NPEs are no members of SSOs, but they focus on standardized technology due to high volume sales and technological lock-in.</td>
</tr>
<tr>
<td>F. Trolling in a time perspective</td>
<td>It is in an upsurge since the late 1990’s in the U.S. There was a lesser focus on Europe, but this changed recently.</td>
</tr>
<tr>
<td>G. Legal context</td>
<td>There is a focus on specific states in the U.S. and specific countries in Europe.</td>
</tr>
<tr>
<td>H. Field of technology</td>
<td>The ICT industry is most attractive.</td>
</tr>
<tr>
<td>I. Privateering</td>
<td>Some manufacturing parties use NPEs to attack competitors.</td>
</tr>
<tr>
<td>J. Counter strategies</td>
<td>Short term fixes (RPX and the like) and a long term change in the mindset about the use of IP are both required.</td>
</tr>
<tr>
<td>K. Defensive patent aggregation</td>
<td>Aggregators act as an insurance policy.</td>
</tr>
<tr>
<td>L. Classifications</td>
<td>There is a wide variety of NPEs. The label ‘troll’ is often mistakenly used and has a punitive nature.</td>
</tr>
<tr>
<td>M. Trolls as market makers</td>
<td>Trolls could be the first embodiment towards a mature market of technology, but we did not reach this point yet.</td>
</tr>
</tbody>
</table>

Table 3.1: Findings from literature

The insights from literature have pointed us towards the most important factors that might explain the recent upsurge in patent trolling and overall NPE activity in Europe. Our goal is to research whether these findings are in line with the experiences from our interviewees, which are active in this European market. In Table 3.2, an overview is presented of how the visions from the different interviewees compare to the results as they were presented in Table 3.1.
Table 3.2: Overview of findings (+ = confirmed, 0 = no opinion, - = disagreed)

Table 3.2 shows that many of the findings from literature were confirmed by the interviewees. We could leave it at this very simplified conclusion, but that would not give credit to the in-depth discussions during the interviews. The table furthermore gives little insight into the complex nature of the developments. The subsequent part of this chapter is therefore used to present more in-depth findings and visions. It follows the structure of the earlier chapters of this thesis. The results are grouped in the Economics, Technology, Legal/institutional and Terminology view. In the end, one can find the overall conclusion of this section.

3.2.1 Economics view

Before we can discuss the economical rationales behind the strategies of non-practicing entities, we first need to determine whether our insights from literature concerning the changing market for intellectual property are in line with the experiences of our interviewees.

The perception of patent and the market for IP

Mr. Blue gave us a detailed description of the changes that the patent system underwent in the past twenty years. It used to be the case that manufacturers of technology did all their commercial and R&D activities in-house. This enabled them to build a patent portfolio. If a competitor owned a piece of intellectual property that you needed in order to produce a certain product, then you would handle this on a bilateral basis. This has changed. Mr. Blue regarded globalization, converging technologies within products and open innovation as drivers for companies to explore the opportunities of collaboration, acquisition of technology and acquisition of IP. These developments created a surplus of technology and IP which is not always used or commercialized by its owners. Other parties might be in a better situation to do so. This led to the emergence of patent transactions. Some intermediaries saw the possibility to add value to this process by building up a network and market knowledge. They offered their services to the buying and selling parties, based on a commission fee, success fee or a share in the transaction. They would never take a share in the IP though. These parties are still around and their services are very valuable in some situations. For some of the larger players, it might for instance be interesting to buy their patents via such non-practicing entities. It happens quite often, that a patent holder gets greedy as soon as he notices that a large player has an interesting in buying his patents.
Next to the intermediaries, Mr. Blue also experienced the emergence of NPEs, good and bad. The surplus of IP and technology made some parties wonder whether it would be interesting to invest and take a direct share in the IP. They carry the risk on their own and are no longer just an intermediary. Their goal is to sell or license the patents again to make a profit. The patent as such became the business model, not the underlying technology. These parties change the market for technology. They only invest in the property if it is highly likely that the industry is actively infringing upon it and they want to see a quick return on their investments. The IP is actively enforced in the realm of the uncertain and highly expensive US law system.

The rise of the various types of non-practicing entities was a direct result of the change in the role of patents within organizations. In literature, there seemed to be some consensus that the perceived goal of IP has shifted from a defensive business tool to a mere offensive business tool. Trolling is claimed to be the extreme embodiment of this change in perspective. The interviewees reacted in a variety of ways to this matter. Most argued that patents became a separate business asset. Mr. Orange argued that this holds just as strong for practicing entities as is does for non-practicing entities. A decent patent strategy is very important for parties inspiring to become a powerful market player. The recent patent war among the large players in the field of mobile telephony is a strong confirmation of this. Mr. Pink said that he did see a change in the mindset of companies that started to use patents in an offensive manner. He regarded trolling as a self-regulating mechanism that the market generated by itself. Mr. Blue and Mr. White continued on this route and argued that organizations with a professional attitude towards the role of patents will understand that this is fully dependant on the business case you are trying to pursue. Being defensive or offensive should not be the goal. You should determine how every single piece of intellectual property can add value to your organization. This process was initiated twenty years ago. Mr. Blonde explained that this was particularly clear in the telecom sector. This sector was fully in the hands of governments in the period between Bell and the 1990’s. It was a club of state owned companies that came along very nicely. Privatization changed the level playing field. Motorola and Nokia are considered to be early examples of companies that started to assert their patents against competitors. Their first licenses stem from 1992. These events lid a fuse that led to the complex situation we are in now. Nowadays, we even see (private) equity funds that step in the business of patent monetization by sponsoring non-practicing entities. We will also observe this change in the cases in the next chapter.

**The strategies of non-practicing entities**

The entire business case of NPEs is centered on economic risk assessment. Mr. White and Mr. Orange clearly explained that every accused infringer makes a straightforward analysis of the risks that are involved in resolving the accusation. In many cases, it is the cheapest and most practical solution to settle the issue before it reaches court, especially in the U.S. If infringement and patent validity are plausible, then it often already makes sense to dodge a potentially multimillion dollar court case with a settlement. This settlement might even involve a damages and licensing deal that reaches a million dollar and still be feasible. Mr. Orange regarded this as the most important driver behind the profitability of their business. They understand the threat it poses to its victims. Despite the frustration it brings forward, the presence of the various types of NPE seems to be an accepted fact of life among our interviewees. It became a normal business risk for those active in the market for technology, according to all interviewees.
The selection of the targets is of great (economic) importance for the success of the NPEs business model. Mr. Blonde, Mr. White, Mr. Orange and Mr. Green clearly agreed on this matter. The most straightforward strategy is to ‘follow the money’. The troll assesses whether it can identify the users, if they can assert their patent(s) against this party and the possible impact of the assertion. This usually forces them to focus their activities as far down the value chain as possible. They want to stay clear from patent exhaustion as long as possible. One does for instance not want to license a chipset manufacturer, but all the different OEM’s, such as Apple, Acer and the like. By granting a license very early in the value chain, you discard the possibility to assert it against (alleged) infringers further in the value chain. An attack early in the chain would impose a serious threat to the entire, but you can only collect royalties from a very small number of licensors. The OEM usually has a much broader customer base, which enables you to charge them a relatively small fee per sold item and still collect a serious amount of money. Mr. Orange stipulated the troll’s ability to recognize the possibility to strike. Their prey usually has the reputation of ‘having plenty of money’. They focus on large corporations that are known for their great financial strength and that are active in large volume industries.

The patents involved
The business model requires a specific type of patents. Every (opportunistic) licensor has a detailed wish list of patent characteristics. Mr. White presented that wish list to us. The patent(s) should be declared standard essential or it should have broad claims and therefore reading on many products. It should furthermore make a decent contribution to this product. If all these factors are in place, than they are happy. This will enable them to set up a profitable business model, which can last until the patent expires. [If the patent is declared standard essential, the possibilities for opportunistic enforcement are quite limited though.]

Mr. Blue commented on the common assumption that trolls use low-quality patents to fuel the uncertainty of most of their suspects. Some people claim that patent trolls buy these patents from small inventors or universities. Mr. Blue countered this opinion. He said that most of the IP stems from the large players that complain so hard about the presence of NPEs. The quality is therefore a matter that should be handled at the roots of the problem. The investment on R&D per patent filing is a point of discussion in this respect. It is claimed that the number of applications per invested monetary unit on R&D has risen. There are different possible explanations for this trend, which were already stipulated in section 2.1.2. Some claim, that the technological value of each patent decreased. It is namely unlikely that the R&D department became more innovative in such a short period of time. They might use more efficient working methods, have easier access to new knowledge due to ICT solutions and so forth, but this is not a realistic explanation for the steep increase in applications. The other explanation is that innovating companies developed a stronger focus on patenting their invention, instead of other protection methods, such as secrecy. Mr. Blue explained that it is hard to fight the first scenario. This would imply that the industry as such should stop applying for patents of low technological value. No party can change this mindset on its own, especially if the size of one’s portfolio is considered to be of high strategic value. If one individual party does no longer apply for low quality patents, then this would weaken their position in the market. Therefore, there has to be consensus and dedication by all parties involved.

Some of the larger players in the industry do claim that they are putting more effort in keeping or getting the investment per patent at a constant, realistic level. Mr. Pink explained that this
measurement does have some limitations though. You can only see the total expenditure on R&D, but you will never know what the balance is between expenditure on Research and the expenditure on Development. Much research is focused on product development. There simply are insufficient funds to do fundamental research. He claimed that the vast number of applications can therefore not represent truly new findings. [Others argue that the combined focus on product development and the emphasis on patenting are the main drivers for the rising number of applications. This does not automatically imply that the technological value of the patents decreased. It will result in more product claims tough.]

Mr. White has some further thoughts on this matter. He argued, that no manufacturing party benefits of low quality patents in the end. It does not only pose a threat on your own business, but it also puts pressure on the entire system. The patent offices run into problems, since they have to process a much greater amount of applications. It is not in their financial interest to raise the bar for granting patents though. This would just cannibalize their stream of revenue. Lesser applications would lead to lesser income. One must remember in case the offices claim that this would also benefit them. It is merely up to the market to create some form of clearing mechanism.

**Defense mechanisms**

Many of the larger industry players in Europe seem to have found their way to cope with the issue of patent trolling. There are examples of inter- and intra-industry risk pooling as well. RPX (see section 2.2.2) is the most prominent example of such efforts, as expressed by Mr. Blue and Mr. Blonde. These parties are the result of a pure economical assessment. It is very hard for individual companies to fight against opportunistic assertion, but it is in everyone’s benefit. This conflict of personal versus collective interest is called a prisoner’s dilemma. No individual party wants to spend effort (time and money) in prevention if it is uncertain whether its competitors will do the same. The only solution is to create consensus by means of cooperation. Since this is unlikely to happen naturally, it can be institutionalized in the form of an insurance company. By charging a yearly fee, a company is protected. The trust fund tries to find and buy publicly offered portfolios to keep them out of the hands potentially harmful parties. They do try to resell the patents to others again, but with the limitation that it cannot be asserted against its members. The big remaining question is though, who making the most money from this *status quo*. Parties such as RPX can only exist because of the phenomenon they try to fight. If there are no opportunists around, then there is nothing to protect the manufacturing parties from. Mr. Green, Mr. Blue and Mr. Pink expressed these critical side nodes. Mr. Green furthermore pointed our attention towards Intellectual Ventures (see section 2.4.2). This party also marketed itself as a patent aggregator and is (secretly) backed by large industry players. *[The hidden (but anticipated) agenda of IV became clear when it started to assert a part of its portfolio at December 8, 2010 against a number of parties active in the field of DRAM (Dynamic Random Access Memory) and Flash memory and antivirus and Internet security.][14]*

To overcome the issues that were discussed in this section, Mr. White was in favor of the establishment of cleaning houses for certain technologies. These parties could map who owns

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all the relevant patents in a certain technological domain. He argued that RPX could become such a player.

**Small and medium enterprises**

The current patent system makes it nearly impossible for SMEs and new entrants to use patents to add value to their business model. We did not devote that much attention to this matter in the preceding parts of this thesis, but Mr. White had some clear thoughts on this matter. He said:

> One of the lessons of thirty years experience with the patent system is that patent law in The Netherlands, and also internationally, works perfectly fine for big companies. It is a big problem for SMEs though. All what we discussed so far, does not cause any financial problems for companies such as Unilever, AkzoNobel, Philips and Siemens. If you on the other hand are a company with only 50 employees and you run into issues related to IP, you most likely have a problem.

Mr. Pink expressed the similar worry. Both interviewees argued that the system perfectly fits the needs of large companies. For SMEs, this is not really the case. A mix of IP ignorance and lack of IP related capabilities pushed them in the situation they are in now. It takes a lot of resources and experience to reap as much benefits from IP as some of the larger players are capable of. The level of ignorance should be dealt with anyways, since this is not a size-dependant matter. In the Netherlands and the rest of Western Europe, many practitioners still consider patents just as a right to exclude or even a hall pass to introduce your product to the market. There should be a much stronger focus on how patents can add value to the company. In this light, Mr. Green stipulated the importance of patents for SMEs, since it can be an important business tool to attract investors. With a decent patent portfolio, it is easier to demonstrate the strength of your business model to potential investors. Patent application and maintenance can be a relatively expensive undertaking for SMEs though, but they have to take this for granted in order to survive on the long run.

For SMEs, it is harder to write a freedom to operate report than it is for larger and often financially stronger enterprises. A full and comprehensive patent search has become a near impossible undertaking, since the amount of patent applications is immense and there is a lot of rubbish in the system. Their lack of expertise makes it even more challenging. Mr. Pink saw a role for institutes that act as knowledge sharing platforms where SMEs can share their experiences in the field of IP. DevLab is a Dutch example that already does this for other entrepreneurial matters, such as joined research programs and advice on financial matters, but this could be expanded to intellectual property management as well.

**Critical side notes of the interviewees**

Mr. White did have some problems with the current discussion on NPEs. He first of all claimed that is not that much of a discussion anymore in the U.S. There it is considered a given factor of life that there are non-practicing entities in the market for technology. In Europe, this does not seem to be the consensus yet. What people tend to oversee or ‘forget’ to discuss, according to White, is the direct impact of NPEs on innovation. He questioned whether this impact was as large as some people seem to take for granted. He even questioned the example of Tucker (2011). Tucker regarded the presence of an NPE in the medical imaging industry as the main driver for the manufactures to stop their investments and research efforts in that specific
domain. Mr. White questioned whether it was the NPE or the involved patents should be regarded as the cause for this. Perhaps he other companies just neglected the strong piece of IP and where confronted with it by an NPE. It could have been any other player though.

With respect to the notion of markets for technology (section 2.2.2), the interviewees were clearly not convinced that we reached a mature and sophisticated state of such a market. Some saw the presence of NPEs as a first step towards the creation of this state, but the inability to use patents to add value to one’s organization is still present, especially among SMEs.

### 3.2.2 Technology view

We learned from literature that the Information and Communications Technology industry shows the most patent trolling activity. Most of the larger and known cases focus on ICT and more specifically on software (in the U.S.) and mobile communication technology, such as mobile phones and network equipment. The interviewees, e.g. Mr. Green, regarded the complexity and non-proprietary nature of much ICT technology as the main driver behind the upsurge of opportunism in this industry. Mr. Green did emphasize that complexity as such does not per definition fosters patent trolling. There are many types of proprietary (made to the customer's specifications) technology that show a high degree of complexity. One could think of medical equipment such as CT-scanners and lithography systems for the production of semiconductors. Since they are usually made specifically for the customer, there is not much room for patent trolls to step in. The number of users is small and it is very difficult but moreover economically unattractive to put effort in reverse engineering.

Although there seems to be a general consensus that the ICT industry is the main playground for trolls, Mr. Blue observes a diversification towards other sectors as well. The pharmaceutical industry will always be the odd one out in discussions on IP though. Mr. Pink explained that the large investments on R&D and long time-to-market create a high risk investment profile for pharmaceutical companies. The drug is usually relatively easy to reverse engineer. Without the monopoly that patents create, it is highly unlikely that the inventor will be able to reap the benefits from its investments. Since every drug is covered by one or a very small number of patents, it is highly unlikely that those patents will fall in the hands of patent trolls. The original assignee will not give away his valuable piece of protected knowledge.

**Standardization and trolling**

The procedure and consequences of standard setting is an interesting issue in our discussion. Mr. Pink shared his vision on this process. He argued that the primary goal of the members of standard setting organizations is to get their patents adopted in the standards. There is no sacred collective urge to agree on the best technology. It is all about the patents. The bigger your stack is, the stronger our position in the negotiations. If your IP gets implemented, then it is much easier to assert it later on. You just have to prove that the other party is implementing the standard and this is it. Qualcomm was able to generate a lot of revenue from this. There is therefore a lot at stake. There is a struggle between the beneficial effects of standardization and the individual interests of the patent holders. The process is thwarted by misuse of power and conflicts of interest. There just is no alternative yet to overcome these issues though. Standard setting is an industry initiative, so there will always be mixed interest at hand.
Mr. Blonde explained that this all can lead to gaps, mainly in the form of strong patents that are left out of the standard. Opportunists are able to find these gaps. If they are able to prove that their idea is adopted in the standard then this creates an interesting situation. Although non-practicing entities are never part of the negotiations, they do manage to get their hand on declared, but also non-declared standard essential patents. This enables them to assert their patents against products that are expected to have a large number of users, due to the standardization. Mr. Blue and Mr. Green explained that this is a non-issue in most situations. If you are a member of for instance ETSI and a newly asserted patent arrives at your doorstep, then you can ask the patent holder to become a member of the SSO and request them to grant licenses on FRAND terms. This thus seriously limits the possibilities of the patent holder. If it is not willing to become member or license on FRAND term, then ETSI will try to invent around the technology. [In case the standard is already implemented, this is near impossible and moreover highly costly undertaking, which was not mentioned by the interviewees]

Mr. Blonde clarified that a licensing-focused NPE does not want hold-up. It wants its licensees to sell as many products as possible, since this is their sole stream of revenue. Trolls are furthermore not capable of frustrating the standard setting process itself, since they are not part of it. Qualcomm is the only known member that tried to do this, according to Mr. Blonde. He explained that the company threatened not to participate in UMTS in case their CDMA-2000 was not part of the specification. ITU, which is a part of the UN, eventually forced them to cooperate. [This is a not an accurate description of the proceedings though. Bekkers (2001) presents a more accurate and in-depth analysis.]

Mr. Pink sees the recent patent wars as a sign of the decoupling of IP and the products it claims to protect. Especially in the field of software patents, he has a lot of difficulties with the situation as it now is. He claims that there is no link with the original rationale behind the patent system any longer. One can easily invent around something like ‘swiping to unlock to smartphone’. The disputes are driven by other factors than technological, such as market share, marketing and so forth. They should better invest their money in the development of even better products.

Contribution to the technology

The complex nature and incremental innovations related to many modern-day (standardized) technologies often leads to the discussion on what specific contribution every individual patent made. In an ideal world, all patent holders will only be capable of monetizing the actual contribution they made to a certain technology. It is nearly impossible to determine the individual contribution though. According to Mr. Blonde, this issue is even worsened by actors who still believe that their industry, for instance ICT, still is in a one patent per product era. Those parties take this for granted, and claim that this is the original rationale behind the patent system. This leads to impossible situations during (cross-)licensing negotiations. The individual value of every patent gets vastly overrated. It furthermore enables opportunists to reap greater or even inappropriate benefits. When several parties try to do that same thing, you end up with a royalty stacking situation with hold-up problems in the proximity. Mr. White agreed on this point, but he also made clear that this issue is addressed in the U.S. by means guidelines that help to assess the actual contribution of a small incremental improvement to the total value of the technology. [I believe this is a rather simplified picture though, since these discussions are still common practice in many patent disputes (e.g. the added value of UMTS in smartphones)]
3.2.3 Law and institutional view

Literature has taught us that NPEs seem to have a strong preference for specific jurisdictions. The interviewees claimed that this is actually the case for every asserting patent holder. The U.S. as such seems to be the most interesting geographic area for NPEs to operate. Within this country, they favor the district courts that are known for their preferences towards patent holders and fairly swift procedures. Prominent examples, based on the success rate, are the District Courts for the Eastern District of Texas and the District of Delaware. Mr. Blue agreed with literature on this point. He furthermore claimed that intensity of patent tolling on European soil is vastly outnumbered when compared to the U.S. The reasons are a mix of economic and legal arguments. Mr. Blonde echoed the arguments from literature, which states that the large internal market is a key feature which makes it so attractive for opportunists to be active in this region. First of all, the consequences of federal court decisions can go as high 350 million US dollar. Although the proceedings are very expensive, the rulings have such a great impact that it can still be feasible to pursue this route. Most NPEs try to stay out of the court room though, since a license negotiated outside the court room will always be much cheaper.

The overall attitude of judges did change tremendously over time in the past forty years. Prior to the establishment of the Court of Appeals for the Federal Circuit, say from the 1970s until the 1990s, there was a general negative attitude towards patent holder in court cases. The CAFC changed this in the 90s and created a very pro patent holder climate. This is still the case nowadays, but it is decreasing towards a more neutral level.

But why is selecting the right arena for a patent battle so important? Mr. White argued that this highly important behavior, but it is not unique for NPEs; every asserting patent holder does this. It might be even more important for a trolling NPE though. They want to capture a disproportionate share of the revenue of their pray. They make strategic use of a specific risk profile, in which there is a high discrepancy between the strong monopoly because of the patent and high uncertainty for the alleged infringer. The infringer faces much uncertainty, since it is often very hard to assess the validity of the patent given the highly complex and even ambiguous claims. It can furthermore be difficult to determine whether there really is infringement or not. Mr. Orange claimed that this risk profile is most attractive for opportunists in the U.S.

The threat of an injunction has been the main weapon of NPEs in the U.S. We learned from literature and U.S. jurisprudence that this option is no longer available to them, since they will not be able to pass the four-factor test (see section 2.1.3). An NPE will not be able to prove it is suffering from irreparable injury given the absence of production and sales. Mr. Blue confirmed this. Mr. Green was clearly in favor of equal measures in Dutch and other European jurisdictions. The reach of judges should be limited to the court room though. He spoke of observations that there was already an observable tendency in which judges wanted to influence pre-court negotiations. He considered this to be very alarming. Others, such as Mr. Orange, did not share the opinion that court measures are a good mechanism to fight opportunistic licensors. The problem should be tackled at its roots. Most prominent was the call for less patent applications and an urge to increase the quality (in both meanings of the word) of these applications. This would have the most direct impact on the working practices on the long run, since there will no longer be many ambiguous patents around.
In Europe, the context is perceived to be quite different, according to most of the interviewees. Given the absence of one unified patent, an asserting party has to pursue multiple legal actions in the different jurisdictions at the same time. Especially in the Western-European country, they have to face dedicated judges of an overall high quality and insight into the complex technological matters. The proceedings are furthermore relatively cheap and swift. One could consider Germany as the most attractive for a one-shot opportunist, given the fact that it’s the largest economy of the European region. The legal system is unique though, since validity and infringement are heard in different courts. Mr. White explained that this could play an important role in the strategy of an NPE. In Germany, validity cases are only heard in the Bundespatentgericht (German patent court). All other German (district) courts only rule on infringement cases. They will only refrain from ruling in case the involved patent is clearly invalid. Every patent owner therefore makes a deliberate decision where to file his case, especially since some courts are known for their tendency to prefer right owners over alleged infringers. Alleged infringers will on the other hand, next to their defense in the district court, file an invalidity complaint at the Bundespatentgericht.

3.2.4 Terminology view

The term troll seems to be pretty well embedded within jargon of the interviewees. Mr. Blue was the only one who made it very clear from the start that he would like to use the notion of ‘non-practicing entity’ throughout the interview instead of patent troll. This is in contrast with the definition that is used throughout this writing, since these terms are not interchangeable. The interviewee most likely did not want to make any (false) accusations by labeling others as a patent troll. All parties, including Mr. Blue, did understand that there is a wide variety parties around, which is very much in line with the various categorizations in literature.

One of the interviewees had a clear vision on this discussion. He claimed that there are roughly three types of parties. Type 1 NPEs acquires one or more patents with broad and questionable claims. It should furthermore be very likely that there potentially is a large amount of infringers around. He addresses Acacia as a prominent example of opportunistic NPEs. Such parties have no interest in the technological quality that is behind their patents. They assess the value of their portfolio in terms of the legal uncertainty that is related to it. This risk is used to extort their pray. This is a highly risky strategy in case you only have one patent in your repertoire, but it can be so in case you have access to a portfolio. With this portfolio, they try to establish long term commitments in the form of licensing deals. They knock on the door of their former pray over and over. Therefore, they cannot demand too extreme royalties, since their opponents will no longer take them serious after such harassments. Type 1 NPEs always want to settle instead of entering a court room, given their broad and vague claims. This brings us to Type 2 NPEs. Such parties do engage in a one shot, one opportunity strategy. They try to locate a high value patent and squeeze as much licenses and/or damages as possible. There is no interest to build a long term relationship. It does limit their risk assessment possibilities, since there are only a few iterations which forces them to find out about the strength of their position on the go. Mr. Blonde finally focused on Type 3 NPEs. They are serious players with serious funding from for instance private equity funds. It enables them to purchase high quality patent portfolios with a high likelihood of containing high quality patents, in legal and technological terms. IPCom could be considered as such a party, but this example will be discussed at great(er) length in the next chapter. One could label the three proposed types respectively as long-term-focused trolls, opportunistic trolls and serious NPEs. [Opportunism and reasonability are in the eye of the
Mr. Green was not even that interested in the whole discussion on typologies. He also thought that it would be far more interesting to focus on the bad acts, not on the bad actors. Every company can engage in behavior that shows a lot of resemblance to trolling. Practicing or non-practicing has little to do with that. Mr. Orange agreed on this point and saw little value in the name calling. People tend to use the term patent troll to point their finger at the alleged thieves in nice suits. They obviously aren’t thieves, but they manage to use a perfectly legal tool in their own advantage. The industry and all other interested parties should stop the finger pointing and start being frank and honest again. The ‘problem’ is the result of multiple factors initiated by the same parties that are complaining about it.

**Privateering**

A substantial part of the literature study was dedicated to the concept of patent privateering. Given the controversial nature of the topic, I felt a strong urge to find out what the visions of the interviewees would be on the matter. These visions were divers. Mr. Green, Mr. Blonde, Mr. Orange and Mr. Blue fully confirmed the presence of such constructions. Ewing (2010) analyzed a number of situations where it can be a highly strategic decision to use an anonymous subsidiary to fight a patent battle for you. The two interviewees agreed upon this. Mr. Blue did point out, that there are large corporations that have a strong public opinion against any form of patent trolling, but that simultaneously (secretly) sponsor incentives such as Intellectual Ventures. This is in strong conflict with each other and should therefore not happen. ‘If you are so openly against the phenomenon, please stop stimulating it yourself then’, he claimed.

The other two interviewees’ opinion differed quite a bit. Mr. Pink had a mere personal aversion against privateering. Although he did not fully specify it, he felt that is would be better if there was some sort of regulation to cope with this. Mr. White on the other hand did not believe in the concept. He could not think of any situation where it could be more attractive to let a third party fight your patent case. He regarded it as a rather childish maneuver and companies would be ill-advised if they would act like this. He first of all argued that you lost your balance of liability and thus your access to an injunction in U.S. court cases. You can no longer prove a direct irrevocable threat to your production and sales, since the non-practicing subsidiary does not produce. They also lose the ability to claim lost profits, since there weren’t any. The sponsorship will most likely present itself some day in the long run according to Mr. White.

The case between High Point and KPN was discussed with one of the respondents. In the court Dutch and U.S. court proceedings, you can clearly read the defendants’ arguments that there was some doubt whether the former practicing patent owner was as uninterested as the plaintiff claimed. They therefore asked the court to stay the proceedings in order to collect evidence to support their point. This could be a potential situation of privateering. Mr. White did not recognize this as a formal suspicion of privateering by the defendants tough. He regarded this as a pure legal trick to buy more time. A stay in the proceedings would enable them to devote more time on their efforts to show that the patent is invalid or that their technology is not infringing upon it. This has nothing to do with privateering. It is purely legal twaddle amongst lawyers. He could also not see how the practicing sponsor would collaborate in such discovery request.
Imagine you were a KPN lawyer. You ask for a discovery at Avaya in the United States. This includes a massive amount of questions, one of which is whether Avaya had a direct or indirect relation to the assertion of this patent. You ask for all the relevant documents related to this matter. They will most likely respond by asking you why this is related to the pending court cases. They will present many questions, but more over a very big pile of reports in return and it will be a very lengthy process.

3.3 Conclusion

The interviewees confirmed that the issue of opportunistic non-practicing entities it is not just a theoretical issue in scientific literature. Many of the views of the interviewees were in line with the insights from our literature study. Most of the driving factors behind the emergence of opportunistic NPE can directly be linked to the overall changes in the patent system. The perception of the role of IP changed globally in the end of the twentieth century. Legal sustainability became an important indicator for patent value, since one can generate a lot of revenues from a specific type of patents. The reputation of certain jurisdictions and the type of market is a strong indicator of where the trolling will take place. Especially in the field of ICT technology, for reasons explained at length, opportunists recognized the possibility to extract a lot of value from the market with IP monetization models that focused licensing and litigation instead of manufacturing. We not only need ways to deal with these opportunistic patent holders, but we need these changes to keep the system alive. Every company should be able to use intellectual property as an asset that can add value to their business model. No company can initiate and induce true change it on its own. Industry wide collaboration is needed for this. Mr. Blue and Mr. Orange shared this vision. Both regarded more transparency as an important factor. Public auctions and open innovation are clear examples of this revealing process.

We can conclude from the interviews, that it is highly unlikely that non-practicing entities will ever disappear from our society again. Our historic analysis already showed that they are already present for a long time. Mr. Blue and Mr. Green also didn't believe that they will be extinguished. It was very interesting to see, that nobody perceived the presence of non-practicing entities as the problem. The problem lies at the possible behavior they engage in. As soon as an NPE start to show signs of opportunism or trolling if you like, then it is a problem which should be dealt with. The same holds for many of the other aspects. If privateering is used for the bad, then this is worrisome. If patent aggregators have close ties with patent trolls (which is the phenomenon they claim to fight), then this is questionable situation. But if reasonability is the main business ethic and technology transfer the main purpose of the business, then it is a development we should embrace. In any way, manufacturing companies, small and large, have to cope with the status quo, since change will take a long time. Although NPEs and even patent trolling is sometimes regarded as a sign of the development of a more mature market for technology, it still has a very long road ahead. It could at best be a sign of the first baby steps in this direction.
4 Cases in the European Context

The need for the description of more real-life cases is already discussed at great length. I ran into four highly relevant and interesting cases in the European context during our interviews. The total number of cases involving NPEs in Europe is very limited though. This is very much in line with thoughts in literature, since the legal and economic environment is not very favorable for trolling. The small internal markets make the economic threat of injunctive relieve relatively small. It can be expected that NPEs focus their trolling activities on companies that are active in the ICT industry, given the high degree of interoperable standardized technologies in this industry. The first case in our study is a clear example of this. It covers the dispute between KPN, a Dutch telecom company, and High Point, which is a Luxembourg based subsidiary of Inpro Licensing. High Point is considered to be a troll, but this will be discussed in the case description. The second case description is about the highly interesting case of IPCOM in Germany. This particular NPE bought the patent portfolio of Bosch and now tries to assert it against, inter alia, Nokia. The conflict with Nokia reached the point where a German court is asked to determine the FRAND terms on which the parties should base their licensing agreements. This will generate a valuable piece of jurisprudence. Our third case covers the clash between Papst Licensing and Toll Collect. These parties were in conflict because Toll Collect installed a number of terminals for the collection of German road tolls in the Netherlands. I finish this sequence with the portfolio management and filtering activities of OTB IP. The project goal was to manage 2000 patent that formerly belonged to Philips.

The detailed description of the cases does not give a direct answer to our main research question. It much more serves as an in-depth demonstration into the working practices of NPEs in Europe. We will use these insights in our next chapter, in which the actual impact on the market as such is discussed. The European cases will be combined with the other recent cases from section 2.1.3. They together form the basis for our argument that the current patent system and practices do not stimulate innovation the way they should. This is a detrimental development and should be countered with the various countermeasures that were discussed in the previous chapters (see, among other, section 2.1.4, 2.2.3 and 2.3.3.).

Since the cases descriptions are merely input for further argumentation than analyses on their own, I try to steer clear from any personal normative arguments. In case there was a strong need to do so, I added the comments in italics and between brackets, as in the previous chapter. [This is an example.]

4.1 High Point v. KPN

The dispute between KPN and the Luxembourg based non-practicing entity High point was one of the main motives to start this study into NPEs in the European context. The result of the study into this case is presented here. There will be a company profile of both parties, a description of the patent and its legal history and a summary of the legal proceedings. The main sources regarding the process are two court publications related to the case, namely the rolbeslissing (order) (High Point SARL v. KPN B.V., 2009) and the final vonnis (verdict) (High Point SARL v. KPN B.V., 2010).
4.1.1 Case Description

Target Company - KPN

KPN is the largest Dutch provider of telecommunications and IT services. The formerly state-owned company was liberalized in 1989. When we take a look at the annual report over 2010 (KPN, Annual Report 2010, 2011) and the most recent corporate factsheet (KPN, 2012), we see it now holds a market share of over 45% in fixed line services, around 45% in mobile services and 40% in broadband. These numbers are in the same range as the number presented by the Dutch Independent Post and Telecommunications Authority (OPTA). The numbers represent 4.0 million wire line customers, 36.6 million mobile customers, 2.5 million internet customers and 1.4 television customers. The company has wide variety of telecom brands in its portfolio, such as KPN, Hi, Telfort and XS4ALL and provides capacity to a number of mobile virtual network operators, such as Hema and AH Mobiel. The philosophy behind this strategy is customer segmentation. Each brand tries to offer services that are best suited to the needs of particular types of customers. The brand KPN for instance profiles itself as a provider of fixed and mobile services for families, but Hi on the other hand merely focuses on young people. The company applies different types of versioning over the different brand as it was introduced by Shapiro and Varian (1999). The goal of this business strategy is to offer products in different versions to different market segments. The different versions can vary on for instance their speed of operation (internet connection) and methods for product support (online vs. offline customer support). A €13.40 billion revenue stream and the €5.45 billion EBITA as of 2010 show the strong financial position of the company.

Although their activities mainly focus on the Netherlands, KPN also operates internationally trough telecom companies that market a large number of brands. These countries are Belgium, Germany, France and Spain. The largest foreign brands, E-plus and BASE respectively hold a 15.9% and around 19% market share in their market. In the international arena, the company pursues a so called Challenger strategy. It is a four pillared strategy that targets specific customer groups with differentiated brands and offers by setting up local commercial partnerships to leverage capabilities. They furthermore invest in proven and standardized technology. All is geared towards generating strong margins, since this strategy results in the lowest costs while serving selective targets segments. The markets shares show the positive result of the strategy.

The case of E-plus is a good illustration of the international efforts of KPN. The company collaborated in 1999 with BellSouth to buy out the other shareholders. BellSouth already had a 22.5 percent stake in E-plus. In 2002 KPN bought the remaining shares of BellSouth which made them the full owner of E-Plus. BellSouth changed its stake in E-Plus into a 9.42 percent stake in KPN. There was a lot of controversy over the value of the shares in E-Plus. In the initial deal with BellSouth, KPN agreed to loan BellSouth $9.4 billion to acquire remaining E-Plus shares. In exchange, KPN would convert that loan into a 77.493 percent share of BellSouth GmbH, a new entity through which BellSouth and KPN will own and operate E-Plus. The agreement also gave

BellSouth the option to convert its E-Plus stake into a 19 percent stake in KPN.\textsuperscript{16} This stake corresponds to 200 million shares and was valued at NGD 17 billion. The deal also included the agreement that BellSouth would be allowed to buy another 90 million shares against a rate of 40 guilders. Both sides of the deal were no longer attractive at the time BellSouth decided to finalize their stake in E-Plus, since the shares of KPN lost a lot of their value.\textsuperscript{17} The companies eventually settled the deal and BellSouth acquired the 9.42 percent stake in KPN. It is highly interesting to see that both KPN and E-plus were attacked by High Point using the same patent that originated from AT&T. BellSouth was originally part of AT&T before it fell apart in the different regional operating companies and research labs.

The role of R&D and intellectual property has evolved tremendously over KPN's 150 year lifetime. In their time as the state owned national Postal Telephone and Telegraph Company most of the R&D took place under its own roof. It was common practice to generate patents. Most of the GSM related patents where therefore in the hands of the different national PTTs. In this period, 1980-1990, they ordered their network components according to their own specifications. The R&D is no longer part of the organization now, but is part of Dutch Organization for Applied Scientific Research (TNO) since 2003. KPN's patent portfolio evolved from 100 registered trademarks and 370 patent families in 2004 (KPN, 2005) to 13 registered trademarks and 350 patent families in 2010. KPN claims that approximately 50 of the patent families are declared essential for the commercial exploitation of telecom communication technology and services. (KPN, 2011) The notion of essentiality means that “it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, to make, sell, lease, otherwise dispose of, repair, use or operate EQUIPMENT or METHODS which comply with a STANDARD without infringing that IPR”\textsuperscript{18}.

KPN made a clear statement in their annual reports about the role of IP within the organization. The company is willing and able to invest resources in the protection of the rights and to generate value from the rights where possible. Although the IP department is of moderate size (~10 people), it seems to have a respected position in the company. Over the years, we see a growth in declared essential patent families (15 to 50) and a slight decrease in the total number of patent families (400-410 to 370). The latter is most likely the result of patent expiration. The increase in declared essential patents is a strong indicator of the better position the company can take in licensing negotiations. Every company has to notify ETSI about their essential patents on their own. KPN has so far made ten IPR information statement and licensing declarations ('ISLD') at ETSI since 1999, claiming that 10 of its patent families are relevant to a number of ETSI's standards.\textsuperscript{19} They furthermore made seven general IPR licensing declarations ('GD') in which the company informs ETSI that it:

\textsuperscript{16} BellSouth, KPN to acquire Germany's E-Plus - http://money.cnn.com/1999/12/09/deals/bellsouth/ (accessed at 02-16-2012)
\textsuperscript{17} KPN maakt geld uit lucht - http://retro.nrc.nl/W2/Lab/KPNTelecom/000923-a.html (accessed at 16-02-2012)
\textsuperscript{18} ETSI IPR policy FAQ: http://etsi.org/WebSite/AboutETSI/IPRInETSI/IPR_Policy_FAQ.aspx (accessed at 23-02-2012)
'irrevocably declares that it and its AFFILIATES are prepared to grant irrevocable licenses under its/their IPR(s) on terms and conditions which are in accordance with Clause 6.1 of the ETSI IPR Policy, in respect of the STANDARD(S), TECHNICAL SPECIFICATION(S), or the ETSI Project(s), as identified above, to the extent that the IPR(s) are or become, and remain ESSENTIAL to practice that/those STANDARD(S) or TECHNICAL SPECIFICATION(S) or, as applicable, any STANDARD or TECHNICAL SPECIFICATION resulting from proposals or Work Items within the current scope of the above identified ETSI Project(s), for the field of use of practice of such STANDARD or TECHNICAL SPECIFICATION.'

Although ETSI does not check the declarations on their essentiality, they are of high value. It first of all provides transparency to the market about who holds the essential IPR in certain standards. The ISLDs and GDs are an important signal to potential licensors that the patent owners are willing to comply with ETSI’s guidelines related to licensing. The single most important notion within this discussion is the provision of licenses on a FRAND (fair, reasonable and non-discriminatory (Bekkers & West, 2009)) basis.

Another indicator of the respected position of the IP department is the willingness to pursue legal action if needed. This could be to assert their rights against others or to defend against alleged infringement. Although legal action in the Netherlands is relatively cheap, there is still serious money involved. The company publishes little information on IP-related matters, but the annual reports, court decisions, press releases and online (patent) databases are publicly available for data gathering.

Let us analyze their portfolio a bit further. Using the EPO patent database of 2006, we analyzed the patenting behavior of KPN. Although this database is not fully up to date, it is possible to observe in which technology domains the company is active. The analysis resulted in total of 526 European applications. Since KPN claims it holds the rights of around 370-400 patent families (each family represents an individual invention that might patented in different countries), we must assume not every application turned in a patent grand. In Figure 4.1, one can find an overview of the most important fields of technology according to the first four digits of the International Patent Classification (IPC) subclasses with a threshold of 10 patents per class. In the subsequent Table 4.1, one can find a description of every subclass.

Figure 4.1: Number of applications per IPC class

<table>
<thead>
<tr>
<th>IPC Class</th>
<th>Number of patents</th>
<th>Class description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B07C</td>
<td>10</td>
<td>Postal sorting [...] e.g. by picking</td>
</tr>
<tr>
<td>G02B</td>
<td>37</td>
<td>Optical elements, systems or apparatus</td>
</tr>
<tr>
<td>G02F</td>
<td>11</td>
<td>Devices or arrangements, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements for the control [...].</td>
</tr>
<tr>
<td>G06F</td>
<td>41</td>
<td>Electric digital data processing</td>
</tr>
<tr>
<td>G06K</td>
<td>10</td>
<td>Recognition of data; presentation of data; record carriers; handling record carriers</td>
</tr>
<tr>
<td>G07F</td>
<td>43</td>
<td>Coin-feed or like apparatus</td>
</tr>
<tr>
<td>G10L</td>
<td>22</td>
<td>Speech analysis s or synthesis; speech recognition; audio analysis or processing.</td>
</tr>
<tr>
<td>H04B</td>
<td>31</td>
<td>Transmission [...] of information-carrying signals [...].</td>
</tr>
<tr>
<td>H04L</td>
<td>97</td>
<td>Transmission of digital information, e.g. telegraphic communication</td>
</tr>
<tr>
<td>H04M</td>
<td>50</td>
<td>Telephonic communication</td>
</tr>
<tr>
<td>H04N</td>
<td>24</td>
<td>Pictorial communication, e.g. television</td>
</tr>
<tr>
<td>H04Q</td>
<td>76</td>
<td>Selecting (switches, relays, selectors, [...])</td>
</tr>
<tr>
<td>Other</td>
<td>74</td>
<td>Various</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>526</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1: IPC classes in patent portfolio KPN (retrieved from: http://www.wipo.int/classifications/ipc/en/)

As expected we see a strong concentration in the G (physics) and H (electricity) classes. All ICT related technology is concentrated in these classes. We can still clearly see the traces of the earlier R&D efforts due to the link with the postal service (B07C). Another remarkable group, G07F - Coin-feed or like apparatus, is probably related to the rather obsolete technology of the phone booth. The omnipresence of mobile phones discarded this technology to a great extent.

**Non-practicing entity - High Point**

The plaintiff in our case is the Luxembourg based High Point. The company is founded at December 6 2007. It labels itself as an investment company active in the field of patent monetization. Their main activity is the establishment of licensing programs serving their own and their shareholder’s needs. It does produce any product, process or service based its patents. Inpro Licensing is the largest shareholder of the company. Inpro’s website\(^{21}\) teaches us that the company formerly was the Intellectual property division of Elenex plc. It spun-off and now exists as a group of spate, Luxembourg-based concerns. It not only owns and manages the former Elenex IP portfolio, but also acquires third party’s patents. It expresses this interest in the following manner:

*Inpro seeks technologies (1) mainly in the following areas: computing, display, electronics, internet, mobile/wireless, life science and nanotechnology; and (2) which are currently being and/or will increasingly be used by a multitude of companies and in a multitude of jurisdictions.*\(^{22}\)

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Chamber of commerce depots

High Point is formally registered in Luxembourg. It therefore has to report its activities to the chamber of commerce in that country; the Registre de Commerce et des Sociétés Luxembourg (RCSL). These depots are available for the public and can help us to better understand the company's history. One can find a chronological overview of all the published documents and a short description of the content in Appendix B - Chamber of commerce depots High Point.

We can draw several conclusions from the depots. We can first of all conclude that the company was solely founded for the exploitation of third parties patents. Given the first court publication of the 9th of December 2007, it is shown the company quickly started to approach its targets for licenses. It only used patents originating outside of their own walls. The online register of the Dutch patent office 23 shows that High Point is the owner of three patent families. Table 4.2 gives an overview of High Point's patents.

<table>
<thead>
<tr>
<th>Patent family</th>
<th>Region</th>
<th>Application Number</th>
<th>Date</th>
<th>Class</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wireless access telephone-to-telephone network interface architecture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP0522774</td>
<td>European</td>
<td>EP92306033</td>
<td>1996-12-11</td>
<td>H04Q 7/30</td>
<td>HIGH POINT SARL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adaptive synchronization arrangement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adaptive synchronization arrangement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Patents High Point

High Point asserted the Dutch part of European Patent 0522772 (EP 722 from here on) against KPN in the Netherlands. The other two patents should probably be regarded as one patent family, given the name of the two. The technology class is the only difference between the two. All classes are shown in Table 4.3.

<table>
<thead>
<tr>
<th>IPC Class</th>
<th>Class description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H04J 3/06</td>
<td>Time-division multiplex systems - Details - Synchronizing arrangements</td>
</tr>
<tr>
<td>H04Q 7/30</td>
<td>Selecting arrangements to which subscribers are connected via radio links or inductive links - in which the radio or inductive links are two-way links, e.g. mobile radio systems -Base station equipment</td>
</tr>
<tr>
<td>H04Q 7/24</td>
<td>Selecting arrangements to which subscribers are connected via radio links or inductive links - in which the radio or inductive links are two-way links, e.g. mobile radio systems -using public exchanges or networks with at least partially integrated mobile switching or mobile application</td>
</tr>
</tbody>
</table>

Table 4.3: Patent Classes High Point

Other observations from the SCSL documents are the names of the companies that have a direct or indirect share in High Point. We see the role of earlier mentioned Inpro Licensing, but the

23 In contrast to many other online registers, the Dutch office gives one the opportunity to use the current owner as a search query. Available at: http://register.octrooicentrum.nl/register/uitgebreid zoekformulier (accessed at 28-02-2012)
depots introduce more shareholders. The companies, which are a mix of trust funds (e.g. Citco) and financial service providers (e.g. RIT Partners and FA Global) are registered quite specific on- and offshore jurisdictions (e.g. Luxembourg, Guernsey and Bermuda). This is most likely because of the favorable legal and tax environment of such registrations, but might it also serve a nice shell to protect any anonymous party with an interest in the actions of High Point. This could be a private equity fund, but also a manufacturer of technology that does not want his identity linked to these efforts. More on this matter will follow in the section on privateering. It is also not without reason that High Point is registered in Luxembourg. Luxembourg is known for its favorable climate for different versions of asset management. The original address of High Point, 20 Rue de la Poste, is also the address where multiple (post box) subsidiaries of the financial service provider Citco are registered. Citco is the former employer of Doeke van der Molen, the first manager of High Point.

The available annual reports serve us the possibility to assess the financial performance of High Point. We will not go through all the numbers, but focus on those with relevance to our case. The 2010 annual report, which is the most recent one, shows that High Point's patent portfolio is valued at 2.1 million USD or 1.44 million euro. The 1.44 million euro most likely represents the original price that was paid for the portfolio. One can also observe the expenditures on legal matters and the financial loans from shareholders, as shown in Table 4.4: Other operating charges High Point.

<table>
<thead>
<tr>
<th>Year</th>
<th>Other operating charges - Corporate, strategy, negotiation and litigation costs related to patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>€1.75M</td>
</tr>
<tr>
<td>2009</td>
<td>€5.03M</td>
</tr>
<tr>
<td>2010</td>
<td>€7.26M</td>
</tr>
<tr>
<td>Total</td>
<td>€14.04M</td>
</tr>
</tbody>
</table>

Table 4.4: Other operating charges High Point

<table>
<thead>
<tr>
<th>Year</th>
<th>Loans from shareholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>€3.26M</td>
</tr>
<tr>
<td>2009</td>
<td>€12.56M</td>
</tr>
<tr>
<td>2010</td>
<td>€15.83M</td>
</tr>
<tr>
<td>Total</td>
<td>€31.66M</td>
</tr>
</tbody>
</table>

Table 4.5: Loans from shareholders High Point

One can conclude that the company has spent a lot of money since the day it was established. They most likely spent a large share of the 14 million of ‘other corporate charges’ on litigation related costs. Over its short lifetime, High Point had to loan a total of 31 million euro’s from its shareholders. These shareholders loans are reported as dept from the company to the shareholders. Gelter and Roth (2007) explain that such loans can generate a positive cash flow for a company in its start-up period (in which it is difficult to raise dept from a bank). It could furthermore prevent bankruptcy in later stages.

The patent

The patent-in-suit, EP 0522772 (EP 772), is related to mobile communication networks. Although it was not claimed essential by its former owner(s), High Point argued that it was reading on the Code-Division Multiple Access (CDMA) technology behind the Universal Mobile Telecommunications System (UMTS) standard. One can find the basic idea of a mobile telecommunication system in the box below.

Mobile telecommunication network

Mobile telecommunication network consists of two groups of functional elements, namely the air interface and the terrestrial infrastructure. The terrestrial infrastructure consists of all devices and installations that enable the connection between the air interface (data streams from mobile telephones) and the public switched telephone network (PSTN - fixed line telephones). Error! Reference source not found. 4.2 illustrates their relation.

![Diagram of Mobile Communication Network]

The communication between the terrestrial infrastructure and the air infrastructure takes place through so-called base stations or service nodes ('cell' in subsequent illustrations). Earlier generations of mobile networks, such as GSM, had some limitations. The issue that is addressed in EP 772 is the challenge of mobile devices that move during transmission of (speech) data. Every base station has a limited geographic range (cell zone) and the base stations are therefore equally spread over the service area of a mobile network. To guarantee service, the cell zones have some degree of overlap. In case a mobile device moves during data transmission, the network has to switch the conversation between two cells in the network. This was already possible in GSM. The mobile device connects to the new base station using a different frequency while the call is still 'live' via the old cell and its physical connection to the PSTN. At a certain point, the connection has to switch to the new cell, which is called the handoff. Using GSM technology, it was only possible to perform hard handoffs, meaning that there is a certain exact moment when the connection switches from one physical connection to another. If this handoff fails, then the user experiences a call drop, since there is no connection to the PSTN any longer. The CDMA technology behind UMTS overcomes, inter alia, this issue. It enables the startup of a new connection via a new cell while the data transmission is still live at the old cell. The simultaneous connections make it possible to have a soft handoff, where the old connection is only terminated when the new one is up and running. There is no 'threat' of a call drop. Figure 4.3 illustrates the differences.
Although the soft hand off in CDMA is considered to be a valuable feature, it does result in a much heavier load on the capacity and functionality of the terrestrial infrastructure. The capacity issue was already partially solved in GSM, using time division multiplexing (TMD). In TMD, every physical communication channel (e.g., a cable) is no longer assigned to just one individual connection. The channel is divided into a number of variable bit-rate digital channels.

CDMA introduced a new method to allow multiple accesses over one physical channel. It does not use time (TDMA) or frequency (FDMA) as a differentiation mechanism, but statistically multiplexed packages of data. Every channel communicates by using uniquely coded packages of data. A decoder in the switching arrangements is able to identify which data packet belong to which connection. Every physical connection is able to transfer multiple streams of (speech) data. This new method led to an increase in capacity with a factor of twenty.

As with many complex technologies, it is not covered by one single patent. EP 722 is part of a large patent thicket comprising of a large number of patent holders. This specific patent introduced:

*A new system architecture for wireless-access ... systems which uses packet-switching techniques to transport communications between the base station and the radio-telephone call-processing and switching equipment. While the wireless-access voice communication traffic is deterministic in nature when speech is taking place, the system architecture is uniquely configured to permit non-deterministic, statistically-distributed packet-switching, techniques to transport that traffic without degradation in voice quality. ... non-deterministic events are ones which may occur with irregularity ...* (American Telephone and Telegraph Company, 1992)
It thus adds the notion of non-deterministic package switching to further raise the capacity of CDMA based networks. The patent gives a detailed description of the architecture of the network components.

The patent family was originally assigned to the AT&T Corporation in February 1993 with a priority date of June 1992. In 1996, AT&T Corporation assigned the patent to Lucent Technology, Inc., a spin-off of AT&T. The Enterprise Networks Group of Lucent Technology spun off from Lucent on October 1, 2000. The spin-off was called Avaya. Avaya acquired a set of patents from its parent company and sold it to High Point in 2008 and 2009. The transfer of property of the European patents took place on the 19th of January 2009. There were a number of parties involved in the transaction. Table 4.6 shows which parties were involved in the transfer of property.

<table>
<thead>
<tr>
<th>Name of entity</th>
<th>Type of entity</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Avaya Technology Corporation</td>
<td>Manufacturing</td>
<td>United States</td>
</tr>
<tr>
<td>2. Alcatel Lucent USA Inc.</td>
<td>Manufacturing</td>
<td>United States</td>
</tr>
<tr>
<td>3. High Point (Guernsey) Ltd.</td>
<td>Non-practicing entity</td>
<td>Guernsey</td>
</tr>
<tr>
<td>4. High Point SARL</td>
<td>Non-practicing entity</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>5. Windward Corp.</td>
<td>Vehicle</td>
<td>Cayman Islands</td>
</tr>
</tbody>
</table>

Table 4.6: Involved parties in transfer of EP0522772

The Dutch patent office reveals that High Point SARL is the only current owner of the patents. The other parties are regarded as historic owners. We cannot assess whether they still have a (financial) interest in the patents though. These matters are organized in private contracts, not available to the public and therefore also not to us.

**The legal process**

High Point was not willing to negotiate prior to the court case. It sent an infringement notice to KPN stating that it was infringing upon patent EP 772 which is relevant or even essential to the UMTS standard. Although the patent was not a declared essential patent, High Point claimed that KPN was infringing since its network arrangements complied with the standard. Instead of setting up a meeting to discuss the issue and perhaps even to talk about a licensing deal, High Point brought KPN to court immediately. It summoned KPN in a *kort geding* (summary proceedings) on February 19, 2009. In this case, the court agreed with KPN on May 26 that the UMTS standard did not incorporate the switching arrangements as it is described in the patent. High Point was therefore the losing party in this case and had to compensate KPN for the costs of the procedure (219,000 euro). Ericsson, who delivered the network equipment to KPN, assisted KPN in its defense. They did not present how they calculated their claimed legal costs (123,000 euro), which were therefore set at 1088 euro. (High Point SARL v. KPN B.V., 2009)

High Point appealed to the decision in a *bodemprocedure* (main proceedings) on October 20, 2009. It started a specific type of proceedings, namely the *VRO procedure*. In such proceedings, the plaintiff or defendant asks the court for a decision on the merits in a relatively short time frame. It thus has the advantage of main proceedings, in terms of depth, and the advantage of summary proceedings, in terms of time.

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26 Legal Status EP0522772 Dutch Patent Office:
The main proceedings consisted, as usual, of two simultaneous cases. High Point sued KPN in case number 352544 for patent infringement (High Point SARL v. KPN B.V., 2010). KPN on the other hand sued High Point for the invalidation of patent EP0522772 in case number 340411 (KPN B.V. v. High Point SARL, 2010). In case 352544, High Point claims that the court should order KPN to compensate for the profits made on behalf of the infringement. KPN defends itself against this claim. In case 340411, KPN claims that the court should, primarily, invalidate the Dutch part of the patent-in-suit. It subsidiary commands High Point to license the patent on FRAND terms determined by court, but only if the patent is found to be valid and infringed. It should furthermore be proven that KPN did not have permission to use the patent given of the licenses of Ericsson and it should be shown that the patent is still enforceable. Both parties ordered the other to pay all costs related to these proceedings.

The case could have delivered a lot of interesting material in the light of standard essentiality and FRAND term determination. The impact of the role of prior patent owners could also have generated valuable documentation. It did not reach this point though. In first instance, during summary proceedings, the judge decided that the patent was not infringed. The court agreed with KPN that the patent was not enforceable due to invalidity. Not because of prior art, but because of flaws during the assignment and grant history of the patent. The first claim of the original application consisted of five features (A-E), two of which (D and E) were in the characteristics of the claim. Other important claims are:

- Claim 14: independent method claim with correspondence to claim 1;
- Claim 6 and 19: similar (to claim 14) method claims for speech traffic;
- Claim 11 and 24: further features to enable soft handoffs.

Features D and E of claim 1 explain the use of non-deterministic traffic between the service nodes (cells) and the rest of the switching system. This increases the efficiency of the network as was explained earlier. The examiner concluded that this idea lacked novelty because of earlier granted patents and thus in the light of prior art. The assignee, AT&T, therefore amended its application. It not only took feature D and E out of the conclusion, but also added two new features (F and G). The problem is that these new features were, according to KPN, and later the court, not possible to conclude from the original application. Features F and G described an arrangement for the timing of signals, not specifically speech traffic. They could be interpreted for any other signal, such as data traffic. The court concluded that conclusion 1 was granted to broad. A person skilled in the art could not have concluded this claim from the original application. There was, as it is called in legal terms, an extension of subject-matter. The court therefore invalidated claim one and corresponding method claim 14. This also meant the end for all other (dependant) claims. High Point is considered to be the losing party in both the validity and infringement case and is ordered to compensate for the costs of the procedure (144,341 euro). The court ordered at September 15, 2010. (High Point SARL v. KPN B.V., 2010).

**International route**

High Point did not limit its litigation efforts to the Netherlands only. It simultaneously sued E-Plus in Germany, Sprint Nextel in the United States and KDDI in Japan. The U.S. case is still pending. It is quite difficult to stay up to date with the Japanese case due to language barriers. There is a reference to the case in the U.S. court documents related to High Point v. Sprint Nextel though. It states:
At the same time High Point commenced this action, it also brought suit for patent infringement against KDDI Corporation ("KDDI") before the Tokyo District Court, alleging that KDDI's wireless telecommunications system infringes its Japanese Patent No. 2588498. High Point's Japanese patent is a foreign counterpart to one of the patents-in-suit. (High Point SARL v. Sprint Nextel, 2012)

The Japanese telecommunication company asserted a non-infringement defense. KDDI used a declaration of its technology supplier, Motorola, to prove its point. The formal ruling on this matter was not yet available or publically accessible. The German ruling was fortunately already available. High Point asserted the German part of EP 772 against the telecom operator E-Plus. This is not a big surprise, given the rather close relationship of KPN and E-Plus. By asserting the patent against both, High Point was able to threaten a serious part of the European telecom market given the combined size of the internal markets. The results in Germany differed from the Dutch proceedings though. The Bundespatentgericht (National Patent Court) upheld the patent at November 17, 2010 (E-Plus et al v. High Point SARL, 2010). This is thus in contrast with the Dutch invalidation order a month later. Ericsson and Nokia Siemens Networks accompanied E-Plus in the defense. The district court of Düsseldorf heard the infringement case in December 2010, but I was not able to trace the ruling as of the time of this writing.27

Selection of target
In the end, it seems likely that High Point underestimated the strength of KPN. High Point probably selected KPN because it is big enough to act as a precedent to the other potential targets but small enough to run over them in court. This was a deliberate and known strategy, since trolls are after as large as possible settlements. One does not want to take the hardest challenge(s) first (read: T-mobile Germany etc.). Winning the KPN and E-Plus cases would have served a strong leverage power in future negotiations with other (bigger) players. Now the patent is invalidated in the Netherlands, their business model is probably dead for this region. The patent will furthermore expire in June 2012. High point can only pursue damages for past infringement. It will no longer be possible to negotiate a long term licensing deal.

One might wonder how was it possible that KPN was strong enough to challenge the attack. It is most likely the result of hard and decent work. We already saw the respectable position of the IP-department within the total organization. It has strong technological insight and their patent attorneys are good at what their do. This enables them to assess the threat of any accusation they receive. Furthermore, they have a good network all over Europe. Suppliers were contacted and involved in the preparation for the court case. This enabled them to understand whether to accusation was serious and likely to prevail.

Privateering
Analyzing the court proceedings I ran into a very interesting event. Prior to the final verdict, there was already was a rolbeslissing related to an incident (High Point SARL v. KPN B.V., 2009). In this incident, KPN requested the US District Court of New Jersey to perform a discovery

search at Avaya, the former owner of the patent in dispute. KPN request encompassed the
generation of documents to show:

1. If, and if so; under which circumstances, Avaya eventually transferred the patent to High
   Point;
2. Whether Avaya still holds any financial interests in (the assertion) of the patent, something
   which could be interpreted from a statement of one of High Point’s lawyers during the
   summary proceedings;
3. Information related to licenses granted by an earlier owner, AT&T, to suppliers of KPN's
   equipment, such as Ericsson;
4. The knowledge and insight of Avaya and earlier owners, such as AT&T, about the
   presumed essentiality of the patent with regard to the UMTS standard.

The goal of a discovery search is usually to assess whether the original owner of the patent still
holds any (financial) interest in the patent and thus the proceedings. It could furthermore
question whether the plaintiff holds the position to assert the patent against others. One could
also consider the request for such measures a strategy purely aimed to win more time in trial.
The extra time gives the defendant more freedom to spend more time and effort to prepare its
defense. It could help them to strengthen them in their efforts to show the invalidity of the
plaintiff’s patent. The Dutch judge decided to stay his decision on suspending the main
proceedings, since KPN’s main defense was aimed at proving invalidity. Proving this meant that
the issues related to the discovery where no longer of interest. Since KPN won the main
proceedings, there was no longer an interest in the requested documents. Therefore, KPN is the
losing party in the incident and has to compensate High Point for its legal expenses on the
matter (48.114 euro).

Although High Point’s international efforts were only briefly mentioned, there was a similar
event in the U.S. based case between High Point and Sprint Nexel et al. In case document 538,
Sprint:

... alleges that Avaya is not a wholly uninterested subpoenaed non-party, but instead has an association with and financial interest in High Point. More specifically, Sprint alleges that Avaya facilitated the creation of High Point for the purpose of pursuing companies suspected of infringing upon patents previously owned by Avaya and later conveyed through other entities to High Point'. They requested similar documents as KPN. Avaya of course ‘served its objections. ... It asserted objections to all nineteen document requests. It objected on the grounds and to the extent the requests are overbroad, vague, ambiguous and/or unduly burdensome as to time and/or subject matter. It also objected that the requests seek information that is irrelevant, proprietary, confidential and/or trade secret, or outside of Avaya’s possession, custody, control or knowledge. (High Point SARL v. Sprint Nextel Corporation, 2011)

The request was made at the 2th of February, 2011 and put a lengthy procedure into motion
which hasn’t been closed as of this writing. Avaya is ordered to answer forty interrogatories,
which are unfortunately not in the public domain. There were no rulings on this matter yet. It
formally remains in the dark whether High Point secretly has a practicing sponsor. It is
somewhat remarkable that a former AT&T patent is used in a court case against KPN and E-Plus.
It is furthermore interesting, that Avaya on the one hand ‘facilitates’ trolling by selling its patent and on the other hand ‘fights’ trolling by being a member of the Allied Security Trust (AST). AST acts as a patent aggregator. They try to keep available patent portfolios out of the hand of potential trolls. It is a risk sharing arrangement where the members have to pay an annual fee. The fees are used to buy the threatening patents and AST therefore serves as a form of insurance company against trolling. The members are furthermore excluded from possible assertion and litigation efforts by AST.

4.1.2 Conclusion
There is a variety of conclusions that we can draw from this case. Looking into the behavior and characteristics of High Point, we can conclude that it is an opportunistic non-practicing entity. It engaged in a one shot, one opportunity strategy, with a variety of success in the different jurisdictions. The case furthermore clearly demonstrates the differences in the legal landscapes, even within the European Union. A more delicate and reasonable strategy might have resulted in a more sustainable business for High Point, since the (alleged) infringers might have been willing to pay a licensing deal to overcome the uncertainty related to a court case.

It was not possible to get full closure on several of our topics of interest. Since most of the case outside the Netherlands did not reach their final verdict, it was possible to write an international comparison. The same holds for the suspicion of privateering. The selection of the targets, type of industry, company profiles and so forth did meet the characteristics that were present in literature though.

The attack of High Point did not impose a serious threat to KPN and the services it provides. The consequences could have been very serious though in case High Point would have been able to prove validity and infringement. It would have led to direct negative economic effect for KPN, but also in indirect and long-term negative effects to society as a whole. Not only for the shareholders of KPN, but also due to the potential lack of 3G service in the Dutch economy. Such services are an important facilitator of economic exchange. This will most likely increase even further in the future.

4.2 IPCOM

4.2.1 Case Description
One of the best known cases involving an NPE on European soil is the case of IPCom. One of our interviewees gave us an introduction into the case. His description was pretty much in line with the description of Pohlman and Opitz (2011). Both consider IPCom to be a serious player in the market for technology. The company has strong financial backing from the U.S.-based investment management company Fortress. This enabled them to purchase the high quality portfolio formerly owned and developed by Bosch. The portfolio was the result of a multimillion Deutsche Mark investment in R&D. The company was a pioneer in the early stages of the mobile telecommunication era; the 1980’s until 2000. Of the total portfolio of 160 patent families, roughly a fourth was in the field of standardized technologies like GSM, GPRS and UMTS. ETSI indeed shows four ISLD’s made by Bosch in which it declares 14 patents to be essential for the
GSM standard. The company tried to develop in-car telephony, but failed to produce a commercially viable working solution. The portfolio therefore is a result of serious investment and was generated by a company with a strong market position and an in-house prosecution department. These are fairly strong indicators of the potential legal and technological value/quality of the involved patents. Despite of this, it still is a mix of diamonds and scratch and therefore required some serious filtering. The high(er) quality did have the very strategic feature of being positioned at the core of their representative technology space. This resulted in an excellent negotiation position, since there it is very hard for the alleged infringers to work around such component. They are too locked-in in terms of sunk investments.

Pohlman and Opitz (2011) explain how the transfer of the portfolio eventually led to the confrontation with Nokia. Bosch terminated its position in the mobile telecommunication market in 2000 and sold the department to Siemens. Bosch decided not to sell the patents in first instance. It tried to negotiate a licensing deal with Nokia, but it led to a nasty clash between the two. Nokia threatened with countersuing and even cancellation of all computer chip orders. The latter was too strategic for Bosch and the company thus decided to stop its effort. IPCom stepped in and took the risk out of their hands in 2007. This move seemed to surprise Nokia, since Nokia could also have decided to purchase the portfolio.

There has been a long discussion on whether the original FRAND declaration of Bosch transferred to IPCom along with the transfer of ownership of the patents. There is no strict policy by ETSI or any legal foundation for this matter (yet). IPCom ‘voluntarily’ declared to comply with the FRAND commitments though. Nokia was not convinced with IPCom’s FRAND statements and considered it to be window-dressing. It therefore filed an anti-trust complaint at the European Commission. IPCom was able to show to the Commission that it was committed to grant irrevocable licenses on FRAND terms. The commission considers it be important that transfer of ownership also means transfer of FRAND declarations in case of standard-essential patents. It claims that unlimited access to the underlying proprietary technology fosters and safeguards pro-competitive economic efforts of the standard setting. This would no longer hold in case the commitments disappear during transfer of property. (European Commission, 2009)

Nokia still did not want to settle a licensing deal and IPCom therefore decided to sue them before the Mannheim District Court in Germany and later on in the United Kingdom. Pohlman and Opitz (2011) and Dorn (2011) explain that the discussion was not related to IPCom’s willingness to grant FRAND licenses, because it declared this earlier. The discussion was on the interpretation of FRAND. IPCom argued the requested amount in the licensing proposal was within the boundaries of reasonable, Nokia did not agree. Dorn (2011) and Mueller (2011b) referred to a court document in which Nokia stated that IPCom demanded a 12 billion euro licensing deal. According to Pohlman and Opitz (2011), this number is based on an earlier report by Nokia in the light of another court case where Nokia was the plaintiff. The report describes a method to calculate licenses which is based on the importance of the patents for the

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whole product. The report states that one can demand 1-1.5% revenue share per essential patent, with a flattening toward the top. It results in a 4-5% share with 4 to 5 essential patents. [It was not explained how the method handles royalty stacking. The large number of essential patents eventually leads to an unworkable amount of claimed royalties.] IPCom based the 12 billion Euro licensing proposal on this method. Nokia argued that this is no longer within the boundaries of FRAND. The parties therefore asked the court to interpret the matter. This is a fairly unique situation, since this is usually negotiated outside of the court room. It requires disclosure of a lot of financial and strategic matters, such as market shares and internal costs, which many companies try to keep out of the public domain due to competition issues.

The legal environment of Germany is quite unique when it comes to FRAND. The Orange Book Standard case between Philips (patent holder) and SK Casetten (alleged infringer) is crucial in this respect. (Orange-Book-Standard, 2009) The jurisprudence that was generated from this case explains the situations in which a patent holder of a standard essential patent has access to a (preliminary) injunction or not. The Orange Book case explains that an infringer is entitled to a compulsory license in case it acted as a true license. The patent holder loses the access to a (preliminary) injunction is this situation. The infringer should have made an unconditional FRAND offer to the patent holder based on objective determination of reasonable royalties. It should pay these royalties to the patent holder (in case he accepted the offer) or the royalties should be rendered to an escrow account (in case the patent holder neglected the offer or did not agree with the royalty rate). The infringer should just act as a true licensee. If the offered license was indeed FRAND based and rendered in the escrow account, than the holder is no longer entitled to a (preliminary) injunction. Nokia did not act like a true licensee in German terms, so IPCom still had access to an injunction. The final verdict will be another piece of valuable jurisprudence for future disputes in Germany.

IPCom did not limit rigorous litigation efforts to Nokia. It pursued the same legal actions against HTC, which is also a large player in the telecom market. IPCom won the proceedings in first instance, meaning that they could enforce an injunction. HTC appealed to the decision, so IPCOM could not enforce the injunction directly. Besides, the German Federal Patent Court eventually (partially) invalidated the main patent-in-suit, EP1186189. IPCom appealed to this decision. While both proceedings were expected to run for two more years, HTC made the following statement:

On November 25, 2011, HTC withdrew its appeal in the IPCom EP1186189 case, finding that the appeal had become redundant since the German Federal Patent Court had previously held the relevant claim of the patent to be invalid. IPCom’s original injunction covered only one HTC handset, which is now no longer sold in Germany. Furthermore, HTC has modified its implementation of the UMTS standards, so even in the unlikely case that the Mannheim court reinstates an injunction; it will have no impact on HTC’s sales in Germany. HTC hereby clarifies that this does not have any impact on HTC business in Germany. (Mueller, 2011b)

30 The same case was heard in Dutch court. It came to a different conclusion tough. It concluded that acting as a licensee is still different from actually being a licensee. The infringement is fraudulent as long as the patent holder does not write out the license, with a potential injunction within reach of the patent holder. (Koninklijke Philips Electronics N.V. v. SK Casetten GmbH & CO. KG, 2010)
Mueller (2011b) analyzed this action and statement in great detail. He mainly concluded that HTC was probably not confident enough that it would win its appeal. This is interesting, since the original patent was already invalidated by the German Federal Patent Court. The main expectation was though, that IPCom was expected to include more patents in the trial, leaving HTC in an even more challenging position. Walking away from the proceedings most likely served as a good starting point for new negotiations with IPCom outside of the court room.

One of our interviewees explained that the case of IPCom is a good example of an NPE that is capable of finding an opportunity space in the complex world of telecom. These spaces are left open in the process of creating standards. These difficult procedures require cooperation between many firms, which makes it nearly impossible to create a fully protected system. There will always be loop holes (read: left-out patents) that are left open for others to fill. A dedicated NPE might be able to find such relevant IP and pursue an opportunistic career with it.

4.2.2 Conclusion
The most important issue in this case is the FRAND related discussion. One could argue that IPCom is following an opportunistic strategy, but they do so with a highly valuable patent portfolio. The patents are the result of serious R&D investments. It is hard to assess whether the IP represents so much value, or that IPCom is will be able to extract much value from the market because of their aggressive enforcement. It is clear that they selected the most interesting European market. With 82 million inhabitants, it represents the greatest internal market. This opens a lot of opportunities for a license seeker. The potential loss of welfare due to decreasing investments in R&D and loss of company value is therefore also a high threat to this market. The dispute with Nokia shows the potential impact of a change in ownership of other parties IP. Nokia seemed to have underestimated this; otherwise the company would most likely have purchased the portfolio itself. It is a prominent example in line with literature where a harmless set of patents can become a threat in the hands of a new company or a new strategy by the original owner.

4.3 Toll Collect vs. Papst Licensing.

4.3.1 Case Description
High Point v. KPN is not the only known Dutch court case between involving a non-practicing entity. The Germany-based Papst Licensing brought Toll Collect before the Dutch court in 2011 because of alleged infringement upon a patent related to electronic road pricing systems. Pohlman and Opitz (2011) already introduced Papst Licensing in one of their case studies. They describe Papst Licensing is a globally operating patent licensing company. It dealt with property rights since 1993 and has signed up more than 130 licensing agreements with a variety of parties. With a multi-disciplinary team of 15, they assess the legal sustainability and technological quality of the patents that they are about to purchase. The patents originate from patents auctions or near-defunct companies. It also offers its services to mid-sized patent owners in case of potential patent infringement or overall monetization strategies. The mixed background of its employees enables them to assess the technological aspects (prior art, reverse engineering and the like), the legal aspects (flaws in the application, strength of the claims, etc.) as well the economical aspects (due diligence, marketability and so forth). As we have seen more often recently, Papst Licensing takes a direct share in the IP in case it is interesting enough.
for their business case. It takes the (financial) risk out of the hand of the former owners. The latter is rewarded with a fixed and/or success-based variable fee.

The patent-in-suit, EP802513, protects a Vorrichtung zur Erhebung von Strassenbenutzungsgebühren (a device for charging road tolls). The ‘Gesellschaft für Systemtechnik und Informatik GmbH’ applied for the European patent at April 17, 1997, with a priority date of April 20, 1996. Papst Licensing bought the patent in 2009. The original 38 claims were partially abandoned in 2010 and made place for the current 43 claims.

Toll Collect was assigned by the German government to develop such a system for trucks on the German roads. The system uses terminals as a supplement to automatic toll collection via onboard GPS-units or online registration. The parties already signed a Lizenzbereitschaftserklärung (willingness to license declaration) for the German part of the patent. The parties did not reach such understanding for Switzerland and the Netherlands. Toll Collect did install terminals in the border regions to enable truck with German destinations to plan and pay for their journey beforehand. The parties were involved in proceedings in Germany, Switzerland and the Netherlands. The discussion was on the alleged infringement, the validity of the patent and damages regarding infringement before the licensing declaration. Toll Collect used the The Hague district court as one of the arena’s to fight out the validity discussion.

(Toll Collect GmbH v. Papst Licensing GmbH & Co, 2011) It is interesting to see the European efforts of Papst Licensing. This seems to be in contrast to the mere U.S. focused litigation strategy of the company, as Pohlman and Opitz (2011) described.

The patent was partially invalidated the Dutch part of the European. Claim 1 to 24 and 43 are no longer valid due to prior art. Toll Collect did infringe upon the remaining claims. Toll Collect is therefore the losing party in the case and is ordered to stop the infringement within a fourteen day period after the ruling. It is furthermore ordered to pay the legal charges related to the case. (Toll Collect GmbH v. Papst Licensing GmbH & Co, 2011)

4.3.2 Conclusion

The case is a clear demonstration of the European patent system at work, since the German licensing agreement is of no value in Dutch proceedings. A European patent is not an enforceable unit; it is just a bundle of national patents. The license for the German counterpart of the patent family does not permit Toll Collect to use the technology in the Netherlands as well. The Netherlands is not a part of the German territory.

The main lesson from this case is related to the discussion on typologies. There is no ground to assume that Papst acted as an opportunist with this action. The German license shows their willingness to license the technology. Perhaps the defendant was not aware of the territorial nature of such IP related matters. It could also be the case that the legal proceedings were the result of failed licensing negotiations. Papst should be regarded non-practicing entity that engages in a reasonable assertion strategy. Albeit the case is fairly small, it is interesting in

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terms of the field of technology. The technology of toll collection devices was never mentioned as a prominent playing ground for NPEs before.

4.4 OTB IP

Next the two foregoing confrontations that led to court cases, there is also patent brokerage activity in the Netherlands. An example of a successful project was the joint efforts of OTB IP Management and Collar Capital to market and monetize a patent portfolio of approximately 2000 patents and patent applications of Royal Philips Electronics.

4.4.1 Case Description

The portfolio was the result of R&D efforts by Philips and represented about 700 patent families. Collar Capital wanted to allocate a certain part of their funds into IP and therefore bought the set of dormant patents. They found a partner in OTB to extract the hidden value of this portfolio. The main assumption behind their strategy is that there are always valuable patents hidden in larger portfolios, even if they lay dormant at the original assignee. If thirty percent of the portfolio is of (some) value, then those patents can compensate for the other seventy percent of lesser or no value. The latter are considered to be pure losses. (Wit, Pennings, & Witte, 2009)

On April 2009, OTB presented their monetization strategy to the world. OTB is a mere vehicle in which a network of experts binds together. The team is a mix of former Philips employees and people with specific technological, economical or managerial experience. The team found their technical expertise in ten full time engineers from the University of Novi Sad (Republic of Serbia). They furthermore involved external experts from IPEG Consultancy B.V.

Although there is no publicly available list of patents in the portfolio, OTB does give an overview of the fields of technology that is covered by the portfolio. These fields are as follows:

1. Video Chip Sets - Video processing in consumer electronics products, Chip sets for video processing;
2. Mobile handsets - Mobile phones, wireless networks;
4. LCD Plasma & TV Sets - LCD TV-sets, Plasma TV-sets, Rear projection TV-sets;
5. Digital Cameras - Digital cameras, High end mobile phones, Software;
6. Video Servers ; Media servers, Digital head ends, Video-on-demand servers;
7. Video Search engines - Online TV and advertising, related services;
8. Video Conferencing - Videoconferencing via ISDN or via IP networks;

The monetization strategy shows an aversion of a pure litigation strategy that other NPEs seem to pursue. Instead, the project has a much stronger focus towards licensing and selling the patents. The options are presented as a continuum. The first option is to grant licenses. This takes place trough a license only vehicle and on reasonable terms. The next option is the sale of individual patents. The added value of OTB lays in the fact that they provide the customer with extra valuable information such as future license opportunities. The third option is finding clients for medium sized (8-15) patent clusters. OTB tried to create comprehensible clusters that cover a specific technology domain. They claim that this enables the buyer to go after 'low-
hanging fruit’, which means that the customer always acquired a strong set of assertable patents. A potential customer of licenses or patents could also very well be an (alleged) infringer of OTB’s intellectual capital. In case this party is not interested or willing to accept the offered deal, than the final option of OTB is to pursue legal action. The primary goal is to tailor the offerings to the specific needs of the customers. It is of little value for the customer to offer large bulk of patents, since this makes it very hard to assess the value of the patents. It is of great strategic value to add information related to which patents read on the products of their competitor. The selling party could also give projections of future developments of certain fields of technology in which the customer is active. Assuring early patent protection might help to gain early competitive advantage in these blue oceans. The main mechanisms are the analysis of technical trends, patent landscaping and infringement analyses.

The project strategy proved to be successful. Although there are no official public financial results on the project’s profits, there a rumor during one of the congresses that were attended for this research. According to this rumor, there was a 3 million euro investment related to the project. In its three year lifetime, the company was able to collect revenues worth two to three times that investment via licenses and patent sales. That is a return on investment we not see much often in other markets anymore.

4.4.2 Conclusions

As with the case of Papst Licensing, this case can be a strong contribution in the discussion on typologies. OTB IP clearly was a non-practicing entity. Their activity differs from the early intermediaries, since they took a direct share in the property. This is in line with the observations of Mr. Blue, as discussed in 3.2.1. The goal of OTB was to make a positive return on investment in a short time span. There are no traces of opportunistic behavior in their actions, since their efforts were focused adding value to the portfolio and exploiting the value that already was present in the portfolio. One might say that they took the role of a real estate agent that renovates a street of houses. A renovation usually leads to a steep increase in the value of the property, but it requires investment. The increase in value is used to cover these expenses and hopefully more. The positive return on the initial investment is the sole reason to invest in such projects. The same can thus hold for intellectual property. OTB ‘renovated’ the portfolio and fitted it to current market needs. They subsequently offered packages that can help manufacturing entities to strengthen their position in the market. The analysis in the following chapter will show the value of this activity.

4.5 Conclusion

The four cases showed us a variety of NPEs that are active in the European market. Their behavior proved to be a reaction to recent market changes, such as the upsurge of complex, interconnected and standardized technology and the inability of some (small) market players to monetize there IP in an efficient way. The role of IP in these developments is, just as in the United States, worrisome. The cases did not show signs of a maturing market for technology with transparent transfer of (future) technologies and ideas. NPEs are definitely in an upsurge, but they need to find their proper role in the market. Some understand how they can contribute to economic growth in the long run. For now, opportunists will act as parasites and try to extract as much value as the system allows them to do. The quest into understanding this complex relation between the behavior of NPEs and their impact on innovation comes to its conclusion in the final analysis in the next chapter.
5 Revisiting the system

The initial goal and research question of this thesis was to identify the driving factors behind the emergence of trolling. The observations in chapter three and four cover this quest to a great extend. This should not be the end of this thesis though. Throughout this writing, the reader must have stumbled upon a second (often quite prominently expressed) agenda behind this research. It is not just a research into the origins of patent trolling, but it is much more an essay to demonstrate the current state of affairs in the patent system as such. The opportunistic behavior of trolling NPEs shows that the system is at risk. A mature market for technology is a concept that should be embraced, but it seems we did not reach this point yet by far. In this chapter, one can find an explanation why the system is at risk by combining the insights from our empirical findings with the basic rationales (Mazzoleni & Nelson, 1998) and IP strategies (Abril & Plant, 2007) that were presented in the literature section and number of times later on in the report.

5.1 Rationales and strategies

The four theories of Mazzoleni and Nelson (1998) cover the basic rationales why we need a patent system (see section 2.1.1). They argued that innovation and commercialization of these inventions are drivers for economic growth and are followed by more technological change. The authors furthermore claim that patents can induce technology transfer, which is much in line with the arguments of Arora and Gambardella (1994). Another important observation is that patents are of great importance for SMEs. Large established parties identified a head start, the establishment of effective production sales and service facilities, and rapid movement down the learning curve as highly important, but moreover more efficient than patents in enabling them to profit from their R&D. SMEs do not (yet) have all the required complementary assets to commercialize the result from their R&D in that same fashion. They need patents to give them this opportunity. The strong uncertainty that is discussed at length in the preceding sections of this thesis, put a lot of pressure on this highly needed safety mechanism that protects vulnerable (but also the strong) inventors.

As discussed in section 2.2.2, a patent holder has a variety of options or strategies. Abril and Plant (2007) identified four. Let us briefly run through the options again. The patent owner could first of all decide to manufacture the technology. The second option is to license the technology to other parties. Another option is to sell the piece of intellectual property. Their final presented strategy is to litigate those who are infringing upon your invention. I would like to add two more. A patent holder could, because of strategic arguments, decide not to use the patent. It could for instance be part of a larger portfolio to impress opponents. Our second observed strategy is related to voluntary standard setting, which is discussed in 2.3.2. It could namely be of great interest for a patent holder to engage in such practices. The patent(s) is/are eventually licensed to others and Abril and Plant thus captured this route, but it should be considered as a strategy on its own. We therefore end up with roughly six strategies. To conclude the story, we need to add the notions of reasonability and opportunism. Both are widely used in literature and in the professional language of our interviews. Both are prone to subjectivity, but it describes the overall working ethic of patent holders. It could be placed on a continuous scale that ranges from reasonable to opportunistic. Trolls seem to gather on the
opportunistic end of the continuum. It is important to understand that these notions can be applied to practicing and non-practicing entities.

The current patent system gives room for opportunistic behavior, but it is highly questionable whether this is desirable from an innovation point of view. To question this, we would like to test whether the six different strategies and styles are in line with the four rationales. This test (see Table 5.1) shows us whether there are any incompatibility problems.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Rationale</th>
<th>Innovation motivation</th>
<th>Induce Commercialization</th>
<th>Information disclosure</th>
<th>Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-use</td>
<td></td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Use</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Reasonable Licensing</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Opportunistic Licensing</td>
<td></td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Sell</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Litigation</td>
<td></td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Opportunistic Litigation</td>
<td></td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Standardize</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 5.1: Compatibility test (+ = in line with, 0 = depends, - = in conflict with)

One can conclude that some strategies, but moreover styles (opportunism) are in strong conflict with the original rationales of innovation motivation, inducing commercialization and exploration. The presence of opportunistic patent holders (including NPEs) is a strong negative signal to other market players and most likely influences their investment and innovation decisions. Information disclosure is theoretically never an issue, since the information in the patent is always publicly accessible. All strategies are therefore in line with this strategy and labeled with a ‘+’. It is only true in theory though, since the increase in applications and grants created a landscape in which individual owners are no longer capable to monitor all patents. Some of the larger companies even have a hard time to determine what is present in their own portfolio.

As said before, the notions of reasonability and opportunism are subject to subjectivity and therefore hard to assess. In hindsight, it is often more easy to do so, since unreasonable licenses and damage awards can be compared to industry averages. In case of licensing, the size of the license is an important indicator of the motives of the patent holder. If the rewards represent the initial R&D investments, and the revenues are furthermore used for future developments, then this behavior is fully justified. In case of opportunism, the owner just wants to collect as many licensing revenues as possible. The main mechanisms to achieve this are widely discussed in the foregoing chapters of this thesis (cf. section 2.2.2., especially the model of Reitzig, Henkel and Heath (2007)). The negative economic impact of such behavior (cf. Bessen, Ford, & Meurer (2011)) put a lot of stress on the system and is therefore threatening for the future of patenting and innovation.

In the case of litigation, the (un)reasonability of the litigation is mostly related to factors such as timing and motives. Every patent holder should have access to litigation, since the absence to this right would make IPR’s a fairly useless business tool. The timing and motives behind the litigation are important indicators. Every holder, practicing or not, might need litigation to force an alleged infringer to stop the infringement and/or pay for the violation of the patent right. It
therefore does not have to be in conflict with the four rationales. As soon as hold-up and excessive monetary rewards are the sole goal of the litigation, then it should be labeled as opportunism and therefore as a threat to technological and economic progress. This teaches us, that this behavior is a potential threat to innovation and therefore society as a whole. This insight is of importance in the analysis into patent trolling. If we can group certain types of patent holders according to their behavior, then we can show their potential threat with much more accuracy. Categorization by behavior is much stronger than for instance categorization on (the absence of) manufacturing facilities. One can find a demonstration of this test in Table 5.2.

The different cases from this thesis served as the input for the test.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Case</th>
<th>Merc-Exchange</th>
<th>NTP</th>
<th>Eolas</th>
<th>High Point</th>
<th>IPCOM</th>
<th>Papst Licensing</th>
<th>OTB IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-use</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Use</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Reasonable Licensing</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Opportunistic Licensing</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td>Sell</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Litigate</td>
<td>-</td>
<td>+</td>
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<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Opportunistic Litigation</td>
<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>?</td>
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<tr>
<td>Standardize</td>
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<td>-</td>
</tr>
</tbody>
</table>

Table 5.2: Case analysis. (+ = shows behavior, ? = unknown, - = does not show behavior)

All but one of the actions of the NPEs in our cases show some or more degree of non-usage, since they own more patents then the ones that are used in the described cases. They have a small or large portfolio that can still be used in future. Opportunistic licensing and opportunistic litigation are often combined, since the NPE uses the litigation to extort the alleged infringer to take a license and pay for damages. [I purely focused on the behavior as it was shown in our specific cases. The NPE might have shown other (more opportunistic/reasonable) behavior before.]

NTP is often labeled as a notorious troll throughout the media. It was discussed in section 2.1.3 though, that it did send the alleged infringers a letter prior to the world famous court cases. It could very well be that they offered a reasonable licensing deal, but that it was neglected by, inter alia, Research in Motion. This would demonstrate the difficulty of a small patent holder to collect its rightful revenues from large industry players. In the final damage award is no longer in the order of reasonability. Practitioners should analyze the actions of NPEs in a more detailed fashion based on the behavior (as shown above). This enables one to better assess whether these NPEs are actually a threat to them and society as a whole. Our analysis for instance shows that initiatives such as OTB IP could be considered as a forecast of a more mature market for technology.

5.1.1 Mapping behavior

There is a call in literature and in the preceding analyses to focus on trolling/opportunistic behavior instead of labeling certain actors as a patent troll. Reasonability proved to be an important indicator in such cases. One should be aware that manufacturing entities are just as likely to show this behavior as NPEs. I therefore propose a graph in which it is possible to map the actions of entities that are active in the market for technology. This map is presented in Figure 5.1.
The behavior map that was presented in Figure 5.1 can serve as an extra monitoring tool, for instance for practitioners that want assess the threat of opportunistic NPEs in their freedom to operate reports. Figure 5.2 shows a possible outcome of such an undertaking. The size of the circle represents the size of the entity (this could for instance be based on financial strength or patent portfolio size). The position on the vertical axle stands for the ratio between the revenues from manufacturing and sales, and the revenues from licensing and other IP monetization strategies. The position on the horizontal axle is a mere subjective measure (as discussed before), but it helps to identify the potential threat that every dot represents. It is of great importance to eliminate such threats (red and orange circles) before entering the market place. This could for instance be done by negotiating with these parties prior to the product launch, or invent around the technology the opportunist appropriated. The test could also be performed multiple times over a period of time to map changes in the landscape. [*The map in is purely illustrative, not based on a real case.*]
5.2 Conclusion

The main goal of this chapter was to show what kind of stress the trolling behavior of opportunistic NPEs puts on the patent system. The first, more theoretical, analysis in this chapter explained how and why this problematic clash arises. The analysis showed that the four rationales for the establishment of a patent system are most challenged in the case of opportunistic licensing and opportunistic litigation. The direct and indirect costs of this behavior have a negative effect on the innovation and commercialization of technology. This is a threat to society on the long run and should therefore be limited by implementing the countermeasures as were discussed in the theory chapter (see section 2.1.4, 2.2.3 and 2.3.3.). I subsequently used these insights to analyze our cases of section 2.1.3 and chapter 4. It was shown, that most of the cases shown behavior with a negative impact on innovation. It merely frustrates it. To fight this threat, one can use the behavior map in which a practitioner can identify the entities that might challenge the position of his company in the market place. It serves as a stimulation to assess the impact of (competitive) IPRs on one’s business practice, which is important, since overall IP ignorance and the inability to use IP to add value to an organization were considered to be important problems among many (European) practitioners.
6 Conclusion and discussion

6.1 Conclusions

The goal of this master thesis research was to (partially) fill the problematic ‘empirical’ gap in the debate on patent trolls. The empirical part of this study had a strong focus on the European context, since this was most lacking in other studies in this field. The findings were used to explain what the driving factors were behind the emergence of the patent trolling strategy of non-producing entities in the European market for technology. The research moreover showed why the current patent system and the behavior of its practitioners are a potential threat to innovation at large. A comprehensive literature study was performed to distill the most important factors behind the recent changes in the system and the upsurge of new business models for patent monetization. The discussion in literature was captured in a set of thirteen statements and questions. This set was used to interview European practitioners. Next to the interviews, four cases were studied in detail to understand the working practices of NPEs in Europe.

This research showed that patent trolling is mainly a reaction to the recent changes of the patent system. These changes were initiated in the late 1990's. Patents are no longer just a business tool to protect a product in the market space, but they turned into a business asset on their own. Institutional changes and changes in the overall mind-set towards IP had a serious impact on the patent behavior of many practitioners. Many scholars identify a steep increase in the number of patent applications, but moreover an increase in patents applications that represent decreasing technological value. In the ICT industry, which is known for its focus on complex, interconnected and standardized technologies, this led to a situation where opportunism could flourish. Specific types of patents (broad and vague, or reading on standardized technology) can be used for assertion against manufacturing entities and may generate a serious revenue stream. Some identified a new business model in this and created non-practicing entities. These parties used to focus on the United States, due to the high risk profile their business model imposes on manufacturers of technology. Fighting them in court is a costly and uncertain undertaking, which results in a preference of alleged infringers to settle the issue before entering a courtroom. Their strategic and often aggressive enforcement resulted in the pejorative label patent trolls.

Changes in the U.S. context, such changes in as the legal landscape (see section 2.1.4), were the reason for trolling NPEs to change their battle ground from the U.S. to Europe. They seem to adopt their behavior to the new context quite easily. There are clear differences in for instance the national legal landscapes and overall business ethic, but the case studies confirm the presence of a variety of NPEs in Europe. The variety of parties and their behavior is very similar to the situation in the U.S. The interviews and cases made clear that their presence in Europe is still in an upsurge. The research also showed a change in the type of parties that engage in patent monetization. The realm changed over time from incumbents that try to monetize their R&D investments and protect their product portfolio into a world of (aggressive contingency fee) lawyers and financial service providers. The latter saw their changes shrink in other playgrounds, such as real estate and high risk start-ups. They recognized their chances in the world of IP. The newly created non-practicing entities do not assess the value of a patent on the technology or idea it tries to protect, but they focus on the likelihood that it will sustain
licensing negotiations and/or court cases. This led to a decoupling of the technological value and the legal sustainability of patents. It is a serious change in the mindset of practitioners.

The research finally showed that non-practicing is not the issue. The opportunistic behavior that some practicing and non-practicing entities show, that is the issue. There are many examples where it is highly interesting for patent owners to follow a strategy that does not (yet) include manufacturing. This can be the case for start-ups that aim to monetize their R&D investments early in their business development process, but also for established firms that license-out a dormant part of their portfolio to other industries to create a greater revenue stream. NPEs can be vehicles though which innovations and technological knowledge can disseminate. These parties can contribute to a more fluid and transparent patent system that can be beneficial for innovation. This would be a true mature market for technology. In this process, there should be a much stronger link between the monetary rewards and the technological value or scientific contribution though. FRAND should not just be a measure in licenses for standardized technologies. It should be an overall business ethic.

6.2 Implications

Albeit the results of this study are highly interesting from an epistemological point of view, I urge the reader to focus on the mere practical implementations of the presented matters. It was explained at length and in detail why the current situation is worrisome, but the reader was also pointed towards the changes that might (partially) solve the problems at hand (cf. sections 2.1.4, 2.2.3. and 2.3.3. and the statements and questions that captured these changes).

Large corporations

Large corporations are most likely in the best situation to use their patent portfolio to add value to their business model. These practitioners should change their mindset about the role of IP though. Reasonable monetization should be the standard. Patents with little technological value are bad for large parties in the end as well, since they proved to be possible powerful weapons in the hands of opportunists. All parties should stop filing on innovations of little technological value. Privateering, which is considered to be an accepted and well understood strategic tool for larger corporation, should not be used for the bad. Engaging in this strategy can be justified, but it should lose its questionable reputation. Large corporations can furthermore put more effort in creating more flexible and open standards. This will prevent potential hold-up, since conflicting IP can be excluded from standard with less effort and costs.

The most important lesson to remember is that changing the mindset of an entire industry is not a one man job. The current perception of the role of IP is strongly embedded in various layers of an organization. Limiting the possibilities for trolling NPEs can only be fought when the problem is fought at its roots. It needs commitment from all employees, not only from the IP-department and high(er) levels of management.

SMEs and start-ups

SMEs should fight IP ignorance. They should aim for valuable patents of high technological value and legal sustainability just as the large(r) corporations. Patents should always add value to the organization. An IP strategy should be an important part of initial business model, independent of the industry. It can be focused on copyrights in the service industry or on patents in a (high) tech start-up. It should be taken serious from the start. That is most important. If there is no
internal experience related to these matters, then this expertise should be looked for outside the company walls. It could for instance be bounded to strategy advice from a venture capitalist or other provider of the start-up capital.

A founder or employee of an SME might wonder what to do with this advice when he or she goes to work after reading this report. The overall advice is to focus on the role of IP within the organization. This role and importance might not be clear yet. It will pay itself back in the future though. Once your valuable idea has been introduced to the world without any protection, you immediately lose your access to a patent grant. Every patent portfolio, as small as it might be, can help to strengthen a business case and will help to attract more investors when needed.

**Policy makers and institutions**

This research showed, but moreover confirmed the claims by many others, that the current patent system is at risk. The system should promote innovation and dissemination of technological knowledge. That is sole *raison d’être* and we should all fight to protect this humble goal. The industry is best served with a well functioning patent system, so it should take the foregoing advices into strong consideration. In case the industry is not able to solve the problem on its own, then policy makers and the important institutions should step in. There were interventions and court cases with serious impact in the U.S. with, inter alia, the four-factor-test and recent America Invents Act. There are discussions in Europe as well. An important and long-lasting discussion is on the establishment of a European Patent Office and a European patent (which is now just a bundle of national patents). I will dive into this discussion here, since this would deserve a master thesis on its own, but it does show that the system is subject of debate. This is a positive observation, since this research showed that there is room for improvements. The findings from this study can act as an input for the discussions on a policy level.

### 6.3 Further research

Given the young age of the phenomenon, I advise future researchers to keep track of any future cases involving NPEs in Europe. There should be a focus on the behavior of these entities, since their role could convert into facilitating the transfer of future technologies and ideas. A case-study based approach is best served for this purpose. It serves as a monitoring tool for the emergence of the desired mature market for technology. Studies in other national settings also help to better understand the working practices and overall opportunities for (trolling) NPEs. It might show the importance of international forum shopping and it might show that this is even more important for opportunists than it is for ‘the average’ patent holder.

This study did not address the need for research on a micro level. Future research could focus on the impact of the changing world of IP on the working practices and (investment) decision making in the daily life of practitioners. NPEs and patent trolling is a part of this changing market. The micro level impact was discussed with the interviewees at some points, but other research strategies might be better suited for this. One could think of a research based on questionnaires among IP managers. It would be interesting to assess whether the change in the landscape directly resulted in divestment or investments in certain areas. This follows the route of Tucker (2011).

On a policy level, one could make a stronger international comparison on the institutional changes that influenced the freedom to operate of NPEs. It would be of interest to assess the link
between new policy decisions and for instance data related to the number of lawsuits and the number of NPEs present in a certain geographic area. The latter data is provided by PatentFreedom and PriceWaterhouseCooper.

6.4 Limitations

The generalizability of our empirical findings is limited given the small number of interviewees and discussed cases. This limitation was clear from the start. Given the infant stage of development, there was is a stringent need for more real life case studies. This study served the need. It did not exhaust the need though. In an ideal world, there will be many more similar studies like this. This process would generate a much stronger basis for comprehensible conceptualization of the phenomenon. To guarantee that this study does make a strong contribution to the debate, the rules of conducting qualitative research were followed as close as possible, such as making transcripts of the interviews and analyzing them by using labels to group the responses. The transcripts were also analyzed with text analysis software, but the results did not add much to the earlier manual analysis.

Questionnaires could have solved our problem of a fairly limited number of respondents. This strategy has the tendency to generate a higher number of observations. It would have enabled us to strengthen our findings with more quantitative analyses. This was not expected to be a fruitful strategy though. The main reason is the strategic and complex nature of the topic at hand. It would be easy for recipients to leave us without response or responses with little depth. Furthermore, there are not that many direct confrontations on in Europe. Without direct experiences, the responses would at best echo earlier (scientific) publications or statements from others.

There finally is a fairly strong sampling bias. Discussing the ‘problem’ of trolling NPEs with parties that directly encountered these parties might lead to a rather biased view on the state of affairs. In the final selection of interviewees and cases it was inevitable to pick biased persons though. The goal was to analyze the behavior of NPEs and the impact on their victims, which is rather difficult without the direct observation of those who were involved. The effect proved to be rather limited in the end. Not all of the interviewees perceived the phenomenon to be problematic, even those who directly encountered them. It was nevertheless important to keep a neutral stance if the responses were colored.

6.5 Personal Reflection

‘Between you and me: Nuke them. Nuke them all before they set foot on European soil.’

This quote clearly shows how emotionally fed the debate on NPEs really is. Given the qualitative nature of this research, it is a challenge for any researcher to steer clear of any subjectivity when confronted with highly passionate statements against the phenomenon one tries to analyze. The NPE is often portrayed as the bad guy and there is much evidence (for instance in popular media) to confirm this stance. It is of great importance for future researchers to keep a neutral stance.

The role of the initial research proposal is another point of consideration. The goals and research questions were not watertight from the very start of this research. This can lead to quite some delay later on in the process. Before any real-life observations are made, it must be
crystal clear what goals one tries to achieve. It does not mean that there is a need for strict hypotheses as is the case with a more positivistic approach, but the final interpretation is only possible with good observations earlier on. The role of iterations is important, since every observation might force the researcher back to the drawing table. This was clearly the case with the interviews, since the experiences from earlier interviewees proved to be of value in the following interviews. This lead to more in-depth discussions and therefore to higher value observations.

Linking the empirical observations back to the reviewed literature proved to be a greater challenge than anticipated. Despite a history of bachelor and master courses and projects, it will always be a challenge to perform independent research. Being a perfectionist myself, I can advice future (master thesis) researchers not to drown themselves in too many (unimportant) details. It will only lead to delays in the generation of final results and conclusions. Although the support of supervisors is usually always available, it is the responsibility of the student to initiate the contact. Close collaboration and transparency result in a more fluent work flow. Following this advice would have been highly beneficial for this research project as well.

Any future researcher should be aware of the valuable experiences one gains with every new piece of research. Whether it is of a quantitative or a qualitative nature, the research will always lead to new or improved competences and experiences. One should select a topic of interest and a research strategy that contributes the most to this learning process, especially in the case of a master thesis research. Doing the research and writing a master thesis is not just an act of competence, it is also an important mile stone in one’s life. It is therefore important to enjoy and learn as much as possible while doing it.
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Appendix A - Interview format

Interview on NPE/patent trolling (M.Sc. research)

Meeting details

Date: Month Day, Year
Time: xx:xx – xx:xx hours
Place: T.B.A.
Interviewee: T.B.A.
Topic: Master thesis research into patent strategies of ‘non-practicing entities’

Goal and structure

For my master thesis at the TU/e, I am studying the patent strategies of ‘non-practicing entities’ in Europe, and in particular the extreme strategies known as ‘trolling’. The goal of this meeting/interview is twofold. On the one hand, I would like to discuss a set of mere general statements concerning NPEs and patent trolling. On the other hand, it is to gain insight into actual empiric evidence. I will use this set-up in other interviews as well.

The outline below is a suggestion; please feel free to add topics.

Interview outline

Introduction

1. Introduction of the research, the researcher and the interviewees (background, position, etc.).
2. Possible issues of confidentiality of the information provided.
3. Context of interviewee’s company (role and strategy of patents and other IP, court cases, ...).

Statements

1. Trolling as a highly profitable business model – The threat of (preliminary) injunction in the hands of non-practicing entities is a threatening combination. For them, ex post determined damages are a far better pay off than ex ante negotiated licensing deals.

2. Normal business risk - Being a subject of trolling is just a normal business risk when involved in the world of patents.

3. Perception of patents – Should patents be seen as offensive or defensive business tools? Did this perception change over time? Does the emergence of open innovation, public auctions and the like signal a change?

4. Selecting their targets – What kind of strategies do trolls use in their quest for possible targets? Where do they usually focus in the value chain of the technology?
5. **Trolling in standardization settings** - Hold-up in standardization is a serious issue. Are current standardization practices well enough armed against trolling?

6. **Trolling in a time perspective** - Is it just a recent phenomenon? Is there an upsurge in trolling? Is it here to stay?

7. **Legal context** - Differences in national legal systems result in international ‘forum shopping’ by patent holders.

8. **Field of technology** - Some fields of technology are better suited for trolling than others. The accumulative nature of some technologies results in many patents on incremental improvements. These patent thickets are an incubation environment for trolls.

9. **Privateering** – What if the presupposed troll (secretly) has practicing sponsors?

10. **Counter strategies** - Can the market counter trolls by creating smarter and simpler standards, design modular components, early cooperation between competitors, share information internally and externally, and stop filing for patents on minor innovations?

11. **Defensive patent aggregation** – A desirable reaction?

12. **Classifications** – Is it possible to create a more elegant classification for non-practicing entities? ‘Trolls’ is a catch-all expression and should maybe be used more subtle in literature and popular media. Moreover, perhaps it doesn't even make that much sense to focus on identifying bad actors. We should shift the focus to bad act and try to prevent them.

13. **Trolls as market makers** – With their role as patent dealers, trolls create a legitimate threat of litigation, their acts make patents more liquid (commodities), and they clear the market by risk pooling and equalizing pricing. In short, they stimulate the proliferation of markets for technology.

**Actual trolling cases**

The objective is to discuss the empiric case and way it unwinded (factual). Topics of interest are:

- **The involved companies**: type, size, history, role of IP, etc.
- **The industry**: the nature, size, role of IP, important players, etc.
- **The process**: the initial accusation (if any), negotiations, court case (if any), etc.
- **The patent(s)**: technology, claims, assignment history, possible relation to technical standards etc.
- **The jurisdiction**: characteristics of the legal system, reasons to start the case here, etc.
- **Third party involvement**: shareholders, popular media, reactions from the public, etc.
- **The impact**: learning processes, new perception of involved aspects, more court cases, etc.
### Appendix B - Chamber of commerce depots High Point

<table>
<thead>
<tr>
<th>Date</th>
<th>Depot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11-12-2007</strong></td>
<td>Foundation of High Point SARL. The company address is 20 Rue de la Poste, 2346 Luxembourg. The Luxembourg Corporation Company SARL is the only shareholder of the company. Date of establishment: 27-11-2007.</td>
</tr>
<tr>
<td><strong>05-03-2008</strong></td>
<td>The only shareholder of the company decided to dismiss Luxembourg Corporation Company as manager of the High Point. Doeke van der Molen will hold this position from now on.</td>
</tr>
<tr>
<td><strong>05-03-2008</strong></td>
<td>Luxembourg Corporation Company takes his share out of High Point. The Cyprus-based Inpro Licensing buys all shares against a rate of 125 euro per share.</td>
</tr>
</tbody>
</table>
| **22-12-2009** | Report of a shareholder meeting. The company's capital stock is increased from 12,500 euro to 25,000 euro. This creates 100 extra shares. Inpro (Cyprus) keeps its original shares. The new shares are distributed as follows:  
- 62 shares go to RIT Capital Partners PLC (UK) - total value: €6200.  
- 13 shares go to FA Global (BVI) Limited (British Virgin Islands – Guernsey) - total value: €1300.  
- 25 shares go to The Bat Hanadiv Foundation (Bermuda) - total value: €2500.  
Doeke van der Molen resigns. Christelle Ferry (managing director – Rue de la Poste, Luxembourg), Mr. Yona Shoham (managing director – Israel), David Morrison (Manager - UK) are the new managers. |
| **22-12-2009** | Publication of High Point's Corporate By-laws |
| **13-09-2010** | Change of address of Inpro Licensing at Cyprus.  
The document is signed by Citco C&T Luxembourg. |
| **13-09-2010** | Annual report 27-11-2007 (date of establishment) until 31-12-2008 |
| **14-12-2010** | 1. Christelle Ferry resigns from her position as managing director;  
2. Cedric M. Carnoy now permanently holds the position of managing director;  
3. The head office moves from L-2346 Luxembourg, 20 rue de la Poste to L-1331 Luxembourg, 65 Boulevard Grande-Duchesse Charlotte.  
The document is signed by Intertrust. |
| **22-06-2011** | M. Cédric Carnoye resigns from his position as managing director. M. Jean-Christophe Dauphin now permanently holds the position of managing.  
The document is signed by Intertrust. |