Patent Infringement Monitoring

Antti Leinonen

Department of Commercial Law

Hanken School of Economics

Helsinki

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**Abstract:**

Patents are important assets for many companies. There are different ways of utilizing patents, but the basic function of a patent is to prevent others from using the patented invention. If a company uses patents for protecting its technology from copying, it needs to be able to detect possible patent infringements. For this purpose, infringement monitoring is needed.

This thesis comprises a literature review and an empirical part. In the literature review, different aspects affecting the detectability of patent infringements are presented. It is also discussed how the detectability of infringements should be taken into account when making patenting decisions. Other issues that are covered include the ways of detecting infringements, optimal monitoring effort, and who should have the responsibility for the infringement monitoring.

For the empirical part, representatives of eight Finnish stock listed companies were interviewed. Most of the interviewed companies use patents mainly for protecting their own production. The interviews revealed that the infringement monitoring is not very systematic in the interviewed companies, and the responsibilities have not been clearly defined. One reason for the lack of a systematic approach is that the interviewed companies believe that the most significant infringements will be detected even without particular monitoring effort. Some of the companies also utilize patents in a way that does not necessitate infringement monitoring. It was also mentioned by some of the interviewees that systematic monitoring would require too much resources.

Trade fairs and competitors' patents and marketing material were considered by many companies as important means for detecting patent infringements. Also customers and suppliers were mentioned as information sources. Some potential was also seen in the service business, but this has not been widely utilized yet. Employees working in the customer interface were generally considered as the people who are in the best position to detect infringements. For most of the companies, the ability to detect infringements is not an important factor when making patenting decisions. Patent knowledge in the interviewed companies seems to be quite poor, and many companies could pay more attention to the training of their employees. Patent training is at the moment mostly given to the R&D people.

**Keywords:** Patent, infringement, monitor, detect
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1 Introduction

For a private inventor, patenting may be just a way to get credit for his or her own ideas, but it could be reasonable to assume that companies usually aim at some financial benefit when filing patent applications. Although the number of new national patent applications filed in Finland has slightly decreased during the past few years, the number of applications filed every year is still almost 2000.\(^1\) In addition, there are nearly 5000 European patents validated in Finland annually.\(^2\) In the USA, the number of utility patent applications filed per year has more than doubled from year 1997 to 2009 and the increase has been similar both in applications with US origin and in applications with foreign origin.\(^3\)

Taking into account the high costs involved in the filing of patent applications and the maintenance of granted patents,\(^4\) it could be argued that many businesses see patents as an important means to make profit, in one way or another. In other words, patents are seen as an asset. To get the best benefit out of an asset, it must be managed properly. There are lots of textbooks with titles like “Managing Intellectual Property” or “Patent Strategy”. Some of them give very concrete instructions on topics such as how to draft license agreements or how to work with patent attorneys; some of them discuss more abstract issues such as how to develop a patent strategy. Many aspects of patenting are not very interesting from the business point of view. For instance, it is essential that inventions are kept secret at least until filing, and that the ownership belongs to the company, but these are purely legal issues.

What is interesting is that most textbooks concerning intellectual property rights pay little attention to how the profitability of patents is ensured. Most books dealing with

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patent management concentrate on describing how to build a patent portfolio. Methods of valuation and litigation strategies are also discussed to some extent, but the practical issues of patent valuation are given less emphasis. A topic that is even less discussed in most books is infringement monitoring of patents, i.e. how possible infringements of a company's own patents are detected.
2 Object of the thesis

The object of the thesis is to study issues relating to infringement monitoring of patents, i.e. to the activities for finding patent infringements. The thesis contains a literature review and an empirical part. At the beginning of the thesis, literature concerning the subject is presented. Topics covered in the literature review include, for instance, means that are available to patent owners for detecting patent infringements, difficulties of infringement monitoring, optimal monitoring effort and linking of patenting decisions to the ability to detect infringements. Previous research on the subject is also presented.

The empirical part follows the literature review. For the empirical part, eight Finnish stock listed companies were interviewed for finding out how the infringement monitoring works in practice and how the people working with intellectual property rights (IPR) see the challenges related to the topic. The empirical part can be described as a case study, but the focus of the study is not on analyzing of individual companies, but the aim is to rather explore different monitoring practices that can be found in the selected companies. Finally, the practices found in the interviews are compared to the practices suggested in the literature. The goal of the analysis is to find both weaknesses and best practices in the infringement monitoring of the interviewed companies, as well as reasons behind their behavior. It is hoped that the thesis could help companies to assess their monitoring practices and to find ways to improve their IPR culture and practices. Appropriate infringement monitoring as a part of a well-defined patent strategy can ensure that the profitability of patenting is maintained. The results of the empirical study could also serve as a basis for a more comprehensive survey concerning infringement monitoring.
3 Ways of utilizing patents

To be able to better understand the needs, challenges and possibilities of patent management, and more specifically of infringement monitoring, it is important to know how patents can be utilized, and how they are utilized in practice. As is well known, a patent gives an exclusive right to prevent others from using the patented invention commercially. The basic function of a patent is thus to protect one’s own technology allowing monopoly profit. However, there are many ways of using this monopoly power, as well as many other ways of utilizing patents, many of those not relying on the the exclusive right at all.

3.1 In theory

van Wijk states that the three main reasons to apply for patents are the following: patents can provide exclusive rights to prevent others from using one’s inventions, patents can be licensed to generate royalty income, and they can help to maintain the freedom of action or design, meaning that one’s own or cross-licensed technology can be used. An obvious alternative to licensing is of course selling of the patent.

When competitors are prevented from using a company’s inventions, it has also indirect effects on the competitors. If they have to design around, this might lead to more expensive and thus less competitive products. This could be the case when a company patents something that it is not going to use itself, but which might hinder the product development of a competitor. In addition to the objectives mentioned above, patents can also be a marketing tool; they might help to develop a reputation for being an innovative

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5 Section 3 of the Finnish Patents Act provides: “The exclusive right conferred by a patent shall imply, with the exceptions stated below, that no one may exploit an invention, without the proprietor’s consent, by: (1) making, offering, putting on the market or using a product protected by the patent, or importing or possessing such product for these purposes; (2) using a process protected by the patent, or offering such process for use in this country if he knows or if it is evident from the circumstances that the use of the process is prohibited without the consent of the proprietor of the patent; (3) offering, putting on the market or using a product obtained by a process protected by the patent or importing or possessing such product for these purposes. - - The exclusive right shall not apply to: (1) use which is not commercial;...” Unofficial translation is available from http://www.prh.fi/en/patentit/lainsaadantoa/patenttilaki.html, retrieved April 16, 2011.


company, which can be an advantage when recruiting new employees; or they can be seen as acknowledgment of good work and thus encourage employees to make inventions.\(^8\) More generally, patents can be used to demonstrate “a high level of professionalism, expertise and innovation, as well as the technological capacity” of a company, which helps to create business opportunities and to raise funds.\(^9\) Patents can also be used as a measure of R\&D productivity, as stated for instance by Grandstrand\(^10\) and Levin\(^11\). Levin also reports that some firms file patent applications to get access to certain emerging markets, where it is a condition of entry that the firm licenses technology to a host-country firm.\(^12\) According to Peeters and van Pottelsberghe de la Potterie, patents can be used to clarify who owns inventions that have been developed with R\&D partners and what is the prior knowledge of each partner.\(^13\) Still another way of utilizing patents, which is probably not so often highlighted by companies, is to use them to mislead competitors. Langinier claims that “[T]here is considerable evidence that firms use ‘decoy patents’ to direct competitors into unprofitable fields of research”.\(^14\) In a study by Barros, misleading of competitors was a factor behind 7.16 percent of patenting decisions.\(^15\)

Some authors bring out other benefits, such as patents forming a significant part of the company’s value in initial public offerings or mergers and acquisitions,\(^16\) but these are rather consequences of the different possibilities for utilizing patents than independent ways to utilize them.

However, the results may be difficult to measure. Licensing revenues can be seen directly under the bottom line, but if a patent is in own use and prevents competitors from copying a certain feature of a complicated product, how can it be determined what is the effect of the patent on the profit margin? Or who can measure how much is an inventor’s productivity improved due to the prestige that is gained through granted patents?

3.2 In practice

What does then research tell about the ways companies use their patents? Mansala has studied how Finnish companies utilize industrial property rights. The study was conducted in 1994 by interviewing representatives of 39 companies. The companies varied by size and the field of business and included domestic parent companies and subsidiaries of both foreign and domestic parent companies. The interviewed companies were chosen by utilizing the information provided by the National Board of Patents and Registration of Finland on companies that have applied for patents and trademarks. 37 of the interviewed companies utilized intellectual property (IP) in their own business and 25 of the companies utilized IP in marketing. However, since it was not specified whether all the companies had both patents and trademarks, it is probable that mostly trademarks were used in marketing. For 12 companies, licensing was part of their business, and another 13 companies sold licenses sporadically, or at least they stated they could consider it. One third of the companies considered that IP forms a significant part of their goodwill. Other uses of IP, such as cross-licensing, search for business partners or indirect significance, were mentioned by a few companies. Only 11 of the interviewed companies had a written IP strategy. Eight companies had an unwritten IP strategy.

In a Swedish study, patent management in 30 Japanese and 20 large Swedish companies

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18 Ibid., p. 213–217.
19 Ibid., p. 212.
20 Ibid., p. 240.
21 Ibid.
22 Ibid.
23 Ibid.
24 Ibid., p. 218.
25 Ibid.
was investigated. According to the study, the most important reasons for patenting were the protection of proprietary technology, creation of retaliatory power, and possibilities to access technology through cross-licensing.\textsuperscript{26} Possibilities for selling licenses, facilitation of R&D cooperation, better bargaining position in standard setting, motivating employees to invent, and use of patents as a measure of R&D activity were also given some importance. Swedish companies saw patenting also as a means for improving the corporate image.

In their extensive survey, Cohen et al. studied why U.S. manufacturing firms patent and what are the reasons behind their decisions to not patent.\textsuperscript{27} Table 3.1 shows the reasons behind the respondents' most recent decisions for patenting both product and process inventions. Almost all of the companies used patents for preventing copying of their products and processes. Another important goal of patenting was blocking, i.e. to prevent the competitors from patenting related inventions. Patents were also widely used for preventing infringement suits, achieving a better position in cross-licensing and other negotiations, and enhancing the firms reputation. Only one fourth of the firms was looking for license revenue, and the use of patents as a measure of the firms R&D performance had only a minor importance.

\textit{Table 3.1: Reasons to patent in U.S. manufacturing companies.}\textsuperscript{28}

\begin{center}
\begin{tabular}{|l|c|c|}
\hline
\textbf{Reasons to patent} & \textbf{Products} & \textbf{Processes} \\
& (Percentage of respondents) & (Percentage of respondents) \\
\hline
Prevent copying & 95.81 & 77.61 \\
Blocking & 81.81 & 63.58 \\
Prevent suits & 58.77 & 46.50 \\
Enhance reputation & 47.91 & 34.03 \\
For use in negotiations & 47.38 & 36.96 \\
Licensing revenue & 28.27 & 23.25 \\
Measure performance & 5.75 & 5.04 \\
\hline
\end{tabular}
\end{center}

\textsuperscript{26}Profit from Innovation: A Comparison of Swedish and Japanese Intellectual Property Management, Royal Swedish Academy of Engineering Sciences, Stockholm, 1993, p. 44.


\textsuperscript{28}Ibid.
Also in a study by Barros, the prevention of copying was the most important reason for patenting for the surveyed UK manufacturing firms.\textsuperscript{29} Prevention of copying had contributed to almost 70 percent of the decisions to patent. According to the survey, it was also important to prevent others from patenting variations of the invention or a similar invention. Barros gave more answering options than Cohen et al., and the survey also revealed that the firms wanted to increase the competitors' costs to invent around patents and to have access to a foreign market. Facilitation of co-operation with other inventors, giving incentives to researchers, signaling interest to others, and misleading of competitors had also some importance. The complete list of the reasons to patent in the survey by Barros is shown in Table 3.2.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|}
\hline
\textbf{Reasons to patent} & \textbf{Share of applications (\%)} \\
\hline
To prevent copying & 68.98 \\
To prevent patenting of similar inventions & 55.57 \\
To prevent patenting of variations of the invention & 53.98 \\
To increase competitors' costs to invent around patents & 36.93 \\
To enhance the reputation of firm & 34.89 \\
To obtain license revenue & 28.18 \\
To get a better bargaining position in standard-setting & 21.82 \\
To have access to a foreign market & 20.45 \\
To get a bargaining position to have access to another patent/technology & 19.89 \\
To avoid infringement trials & 17.95 \\
To facilitate R\&D co-operation with other inventors & 16.36 \\
To give incentives to researchers & 11.82 \\
To show the productivity of R\&D & 11.59 \\
To signal interest to others & 11.36 \\
To mislead competitors as to the true technological path & 7.16 \\
\hline
\end{tabular}
\caption{Reasons to patent in UK manufacturing companies.\textsuperscript{30}}
\end{table}

In a study by Giuri et al., based on a survey that was sent to the inventors of over 27000

\textsuperscript{29}Barros, p. 9.

\textsuperscript{30}Ibid.
European patents and responded to by over 9000 inventors, the respondents were asked how their patents are utilized. According to the study, approximately half of the patents were in internal use, i.e. used for protecting an own product or process, 6.4 percent were licensed, 3.0 percent cross-licensed, and 4.0 percent both licensed and used internally. 18.7 percent of the patents were neither in an internal use nor licensed, but were blocking competitors. 17.4 percent of the patents were “sleeping”, i.e. not used for any of the above mentioned purposes. Nagaoka refers to Japanese statistics, according to which only 36.1 % of all patents owned by Japanese manufacturing firms were either in internal use or licensed. The share of patents that were only in internal use was 34.7 %.

3.3 Classification

For the purpose of evaluating the need for infringement monitoring, the different ways of using patents could be divided for instance into the following four categories: internal use, signaling, use as an access provider, and blocking. The expression “internal use” is used here in a different meaning than in the studies by Nagaoka and Giuri et al. Also the term “blocking” is used in a wider sense than for instance in the study by Cohen et al.

As the name suggests, internal use of patents would include those ways of using patents that have no direct effect on competitors. Use of patents for motivating researchers or for measuring R&D performance would thus be internal use. Internal use of patents does not necessitate infringement monitoring. If a granted patent is an incentive for a researcher, the value of the incentive does not necessarily depend on whether the competitors are infringing the patent or not. The same applies to the R&D performance: the results of the R&D can be measured by the number of the granted patents and possibly by another indicator that takes into account the quality of the patents, such as patent citations. Detectability of infringements is not necessarily important for achieving the goal

33 Nagaoka and Giuri et al. use the term “internal use” to cover patents that are not licensed out but are used for protecting own products or processes. See chapter 3.2 above.
34 Cohen et al. use the term “blocking” to mean patenting that prevents competitors from patenting related inventions, see chapter 3.2 above and Cohen et al, p. 17.
that is aimed at with the patents. Of course, infringements could also be seen as an indication of a high value of a patent, and in that case infringement monitoring could complete the information provided by patent statistics.

Signaling would include the use of patents for enhancing the reputation of the firm or for misleading competitors, as well as the use for signaling competitors that the company is interested in a certain field of technology. Signaling is also an area where it is not necessary to be able to detect infringements. If patent applications are filed for being used in marketing, a patent can fulfill its purpose even in case it is infringed by the competitors.

Patents as an access provider would include the use of patents for getting a better position in standard-setting or in cross-licensing negotiations. Also the use of patents for getting access to a foreign market or for avoiding infringement trials would fall into this category. The use of patents for maintaining freedom-to-operate also belongs to this category, since the purpose of patenting in that case is to prevent competitors from patenting certain technology, and thus guarantee the freedom to access the market with own products. In this category, infringement monitoring is not necessary. For maintaining freedom-to-operate, it is enough to have the relevant technology published in a patent application or otherwise. In fact, for achieving this goal, it is even irrelevant whether the patent is granted or not. If the patents are maintained for avoiding infringement trials, they can be kept “sleeping” until being threatened by a competitor.

The fourth category, blocking, would consists of the more conventional ways of using patents. In this category, the main purpose is to prevent competitors from using the patented invention. The patents in this category can protect an existing product or process or something that is not used by the patent owner, but could possibly be used by a competitor. This category would also include the use of patents for getting license revenue, since the use of an invention in that case is allowed only against a license fee. In this category, the detectability of infringements has the greatest significance. If the purpose of a patent is to prevent competitors from using an invention, it is important to be able to detect infringements to guarantee that the goal is achieved. On the basis of the studies presented above, the use of patents for blocking is clearly the most important way to
utilize them. Consequently, it could be assumed that for most companies it is important to be able to detect infringements. One measure of the importance of infringement monitoring could be the average number of patents in a patent family. If a company uses patents only internally or for signaling, it is in most cases not necessary to obtain large patent families, but the priority application is enough for achieving the desired goal. If a company has large patent families, it could be assumed that an important function of the patents is to prevent others from using the inventions. However, there are also exceptions to this rule. For instance, if the patents are maintained for having a better bargaining position when being sued for a patent infringement, it might be reasonable to have large patent families even though the patents are not used actively against competitors. On the other hand, if a company operates only locally, it can patent in a single country although it uses patents for preventing copying.
4 Infringement monitoring

In this chapter, it is examined what the literature tells about infringement monitoring. Factors affecting a patent owners' ability to detect infringements are presented, and it is discussed how the ability to detect infringements affects or should affect patenting decisions of companies. This chapter also deals with the issue concerning who are the people responsible for infringement monitoring, and what are the means that can be used for detecting infringements. The optimal monitoring effort and the patent owner's duty to monitor the market place in order to be able to preserve his right to damages in case of an infringement are also discussed. Finally, some empirical research concerning infringement monitoring is presented.

4.1 Detectability of infringements

If a company has only a few patents and a small organization, it operates locally and manufactures consumer products having only visible features protected by patents, it might be very straightforward to detect any infringement. However, this is seldom the case, and in many cases things can be much more complicated. There are many things affecting the detectability of infringements, ranging from the field of business where the company operates to the type of the invention and the size of the company.

One thing that might affect the detectability of infringements is the type of the invention that is protected by the patent. For example Cotter suggests that infringements of certain types of inventions are more difficult to detect.\(^{35}\) An often used example is inventions concerning manufacturing methods. Also according to Cotter, process inventions may be utilized in secret, and even if the result of the process is a tangible product, it might be impossible or difficult to show that a certain process was used by a competitor.\(^{36}\) It should be noted, however, that sometimes reversed burden of proof may help the proprietor. For instance in Finland, if a patent has been granted for a method for manufacturing a new product, an identical product is considered as being manufactured by the patented method, if the alleged infringer cannot prove anything else.\(^{37}\)


\(^{36}\) Ibid.

\(^{37}\) Patents Act Section 57a: “If a patent has been granted for a process for obtaining a product, any identical product produced without the consent of the proprietor of the patent shall, in the absence of proof to the
also be more difficult to detect if the invention can be utilized in several fields of technology. Lanjouw and Schankerman suggest that patents with several classification terms, which can according to them be seen as an indication of a broad patent, are litigated less often than narrower patents. Lanjouw and Schankerman give as an potential explanation that if the invention is used in several technology areas, infringements are more difficult to detect, even if the number of potential infringers is higher.

Some fields of technology are more complex in terms of the ability to detect infringements. Horacio Gutierrez, the head of IP at Microsoft, points out problems relating to cloud computing. According to him, physical products can always be purchased and analyzed, but cloud computing takes place behind firewall, where infringements are very difficult to detect. Another example of type of patents of which infringements are nearly impossible to detect are medical process patents, which can be infringed by thousands of individual physicians, as Noonan states. Wild writes about challenges relating to nanotech patents. According to him, infringements of process and application patents are relatively easy to detect. In order to detect infringements of patents concerning chemical compositions and physical structures, companies need the ability to reverse-engineer products, which makes it much more difficult to find infringements. In a study by Olsson and McQueen, majority of the interviewed small software companies were of the opinion that infringements are difficult to detect.

Also the operational environment where the patent owner is doing business and the scale of operation might affect the ability to detect infringements. According to Cotter, also product patent infringements may be difficult to detect if the products are not sold in large scale. Polczynski suggests that infringements are relatively easy to detect in a contrary, be deemed to have been obtained by the patented process.”

38 J. O. Lanjouw, M. Schankerman, Protecting Intellectual Property Rights: Are Small Firms Handicapped, *Journal of Law and Economics*, Vol. 47, Issue 45, 2004, pp. 45–74., p. 63. However, the authors admit that also opposite results have been gotten in some studies.
42 Ibid.
44 Cotter, p. 315.
non-global environment, since the companies usually know their competitors and customers, who are also the most potential infringers.\textsuperscript{45} In a global environment, there are more competitors and customers and therefore also more potential infringers, which makes it more difficult to detect infringements.\textsuperscript{46} Polczynski mentions as one group of potential infringers in a global environment contract manufacturers, who can simply continue manufacturing of a product beyond a contract.

Galasso and Schankerman have studied the effect of the fragmentation of patent rights and the formation of the Court of Appeals for the Federal Circuit (CAFC) on the duration of patent disputes. They show that infringements are less likely to be detected and litigated when fragmentation of patent ownership is greater and complementarity of patents is weaker.\textsuperscript{47} This is explained by the fact that the patent holder has less incentive to invest in monitoring effort if the stakes are lower in the negotiation.\textsuperscript{48}

Since infringement monitoring might require in some cases quite a lot of resources, small companies may be in a worse position than larger companies. Davis and Kjær write about patent strategies of small high-tech companies.\textsuperscript{49} According to their study, small size of a high-tech firm makes it more difficult to detect infringements. The interviewed companies felt that they cannot use all the means in patent matters that are available to the larger companies.\textsuperscript{50} Davis and Kjær mention two general reasons why a patent infringement cannot be detected.\textsuperscript{51} Firstly, it can simply be impossible to detect infringement of a patented process because the premises of the possible infringer cannot be visited. Secondly, even infringements of product patents might be difficult to detect, since it is too expensive to monitor the international market. Also Tirole et al. believe that small firms without large patent portfolios and experienced IPR lawyers are handicapped what comes to the ability to detect infringements and litigate.\textsuperscript{52} According to Tirole et al. (2003), cooperative marketing agreements between competitors can allow firms to pool their patents and thus avoid the cost of monitoring the market. However, the effectiveness of such agreements depends on various factors, such as the size and market power of the firms involved. Overall, monitoring and detecting patent infringements can be a complex and costly process, particularly for small firms.\textsuperscript{53} Therefore, it is important for small firms to develop effective strategies and resources for monitoring and enforcing their patent rights.

\textsuperscript{46} Ibid.
\textsuperscript{48} Ibid.
\textsuperscript{50} Ibid.
\textsuperscript{51} Ibid., pp. 9–10.
ole et al., these firms will therefore benefit from the centralized enforcement of patent pools. According to Wild, since start-up nanotech companies cannot afford the equipment needed for reverse-engineering products, they have no way of detecting infringements of chemical composition or physical structure patents.\(^{53}\) Infringement monitoring might also be more difficult abroad. Lanjouw and Schankerman have found that domestic companies in the United States litigate more often than foreign companies, which can be seen according to them as an indication that the litigation is less expensive or at least not more expensive for domestic companies than for the foreign companies, and it is more difficult for the foreign companies to detect infringements.\(^{54}\)

### 4.2 Implications of the ability to detect infringements

The significance of the ability to detect infringements can vary from company to company. In some cases, a company may not patent if it is considered impossible or very difficult to detect infringements. Carson et al. suggest that before deciding to patent an invention, the company should also think how difficult it is to detect an infringement.\(^{55}\) According to the authors, this is important especially when the company's strategy is to actively prevent competitors from entering the technology field, or to generate revenue by aggressive attacks against all possible infringers. If the company uses patents as a passive deterrent and does not enforce patents actively, then the detectability is not as important.\(^{56}\)

The ability to detect infringements can also be considered as a factor affecting the value of a patent. DiGiammarino sees the ability to detect an infringement as part of the patent valuation process.\(^{57}\) Together with the breadth of the claims and the enforceability, the detectability of infringements determine the legal strength of the patent.\(^{58}\) Together with business and technical factors, the legal strength of the patent helps to assess which inventions are worth protection.\(^{59}\) In an example by DiGiammarino, inventions are classi-

\(^{53}\) Wild, p. 30.
\(^{54}\) Lanjouw and Schankerman, p. 64–65.
\(^{56}\) Ibid.
\(^{58}\) Ibid.
\(^{59}\) Ibid.
fied into six categories. In the first category, infringements are easy to detect. In the second category virtual, and in the third category actual product tear down is required. Fourth category requires external testing. In the fifth category, detection of infringements is not possible, and in the sixth category litigation is needed. Nutter and Troyer write about the drivers of patent value. 60 According to the authors, if access to proprietary production documents is needed to prove an infringement of a process patent, this has a negative impact on the patent value due to the difficulty of detecting infringements. Even if the patented technology is technically superior, the technical value is difficult to cash if there are no means available for proving infringements. 61

Kobler states that a company can have either a defensive or offensive patent strategy, or a combination of the both. 62 Defensive strategy means that patents are used for preventing others from making, using or selling the patented invention. 63 An offensive strategy means that the company tries to get more direct revenue from the patents, for instance by licensing patents or by utilizing cross-licensing to get access to certain technology. 64 A firm with an offensive strategy may also utilize patents in marketing to enhance its image as an innovative company. 65 According to Kobler, the ability to detect infringements has an effect on the patent value. 66 Although patents may deter some companies, intentional infringers may draw a conclusion that a certain patent is worth infringing because of the high value of the invention and small risk of getting caught. 67 If an infringement is difficult to detect, the cost of obtaining and enforcing a patent may be higher than the benefit for a company with a defensive patent strategy. 68 For a company with an offensive strategy, it might be more difficult to sell licenses to inventions of which use is difficult to detect, since the potential licensees do not value those inventions as high. 69

In some cases an invention may be worth patenting, even though a possible infringe-

61 Ibid. p. 50.
63 Ibid.
64 Ibid. p. 4.
65 Ibid.
66 Ibid.
67 Ibid. p. 4.
68 Ibid.
69 Ibid.
ment is difficult to detect. Sullivan states that issues to take into account when considering keeping something as a trade secret are whether competitors can come up with the same idea independently, or whether the subject matter can be detected. In both cases, the trade secret provides very little protection and there is a risk that a competitor patents the same invention, which prevents the company from using the invention that was kept as a trade secret. Wild advises start-up companies to focus on those kinds of patents they can defended. However, he also recommends that if those inventions of which infringements are difficult to detect are not patented, the company should publish the inventions to prevent the competitors from patenting them.

Patenting behavior of companies and the reasons behind the patenting decisions have been studied by several researchers. In some of the studies, also the detectability of infringements has been discussed. For instance Peeters and van Pottelsbergh de la Potterie suggest that companies which focus strongly on the development of processes are less likely to have patents and their patent portfolios are smaller. They base their assumption on the one hand on the more difficult imitation of the process inventions than product inventions, and on the other hand on the more difficult detection of infringements of process patents. Their empirical data indeed shows that firms concentrating on process development are more likely to lack a patent portfolio and the expected number of patents is smaller. However, the study does not confirm the actual reason for the different patenting rates of products and processes. Approximately half of the firms that took part in the survey stated that the inability to prevent copying was often a potential barrier to patenting. Secrecy was considered more efficient than patenting by 44 percent of the respondents, and approximately 46 percent of the respondents thought that patent protection is often inefficient. All these potential barriers could include the inability to detect infringements, but there can also be other explanations behind the answers.

71 Ibid.
72 Wild, p. 30.
74 Ibid.
75 Ibid., p. 125.
76 Ibid., p. 119.
77 Ibid.
In a survey by Barros, manufacturing firms in the UK were asked reasons for not filing patent applications. According to the study, difficulty in detecting infringements contributed to 30.22 percent of the decisions to not file a patent application for a product invention, and to 41.13 percent of the decisions to not file a patent application for a process invention.\(^78\) For process inventions, this was the most important reason to not patent. However, statistically there was no difference between the effect of the difficulty in detecting infringements and the ease of circumvention, prosecution costs, information disclosure, difficulty in demonstrating patentability, or difficulty in copying the invention.\(^79\) For product inventions, the ease of circumvention and the cost of application were slightly more important reasons to not patent, although not statistically different from the difficulty in detecting infringements.\(^80\)

According to the study by Davis and K. Kjær, telecommunication firms did not usually patent processes because of the difficulties in detecting infringements.\(^81\) However, another factor affecting their decision making was that they were not willing to disclose information. If the process was detectable in the final product, the firms most likely patented it. An important reason was to prevent others from patenting it. Only two of the software firms interviewed for the study had patents, and one of those stated that infringement monitoring is problematic.\(^82\) Biotechnology firms thought that it was easy to describe inventions and also to detect infringements.\(^83\) Another reason why the biotechnology firms were not concerned about the ability to detect infringements was that they thought that they could sell their patent rights to a larger firm before having to worry about how to find infringements.\(^84\)

It is confirmed by several studies that patents are generally regarded as less effective means for protecting process inventions than product inventions. In a survey by Levin et al., the respondents were asked to estimate how significant are certain limitations in reducing the effect of patents both for processes and products.\(^85\) One of the listed limita-

\(^{78}\) Barros, p.10.  
\(^{79}\) Ibid., p. 11.  
\(^{80}\) Ibid., p. 10.  
\(^{81}\) Davis and Kjær, p. 12.  
\(^{82}\) Ibid., p. 13.  
\(^{83}\) Ibid., p. 14.  
\(^{84}\) Ibid., p. 20.  
“Firms do not enforce patents” might have something to do with the detectability of infringements, and according to the respondents, this was more significant for process than product inventions. However, also the other constraints, such as inventing around, information disclosure and validity and patentability issues were considered more serious for process inventions. A later study by Cohen et al. confirmed the findings of Levin et al. Patents were considered as an effective appropriability mechanism for 34.83 percent of product innovations and 23.30 percent of process innovations. The firms were also asked to report the reasons that contributed to their latest decision to not patent. The list of choices given in the survey did not include the inability to detect infringements. However, the authors recognized that infringements of process patents are more difficult to detect than infringements of product patents. Also a study by Harabi reveals that patents are considered less effective in the protection of product inventions than in the protection of process inventions. The difference was explained by the fact that secrecy is more suitable for protecting process innovations. The most important reason limiting effectiveness of patents for both product and process inventions was the competitors’ ability to invent around, followed by the disclosure of information. The list of limiting factors contained one point that could also be related to the detectability of infringements, namely lack of attempts to enforce patents. This factor was considered almost as important for product inventions as for process inventions. Arundel and Kabla have studied empirically what percentage of innovations has been patented in European companies. According to their study, the sales-weighted share of patented product innovations was 35.9% and the share of patented process innovations was 24.8%. Unweighted rates were 33.0% for products and 20.1% for processes. These rates include also patent applications and the innovations include also non-patentable innovations.

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86 Ibid., p. 803.
88 Ibid., pp. 10 and 14.
90 Ibid., p. 988.
91 Ibid.
93 Ibid., p. 131.
4.3 People responsible for infringement monitoring

Who should be responsible for infringement monitoring? According to Manton, intellectual asset management belongs to almost everyone in the organization, although it is thought in many organizations that it is a task of a certain department without the need for contribution from other parts of the organization. Kivi-Koskinen writes that people who work at the market are in a key role in regard with the detection of infringements. According to him, good co-operation between the employees in the sales and marketing and product development and manufacturing is needed for fighting IPR infringements. Kivi-Koskinen states that competitor follow-up should be a task of every part of the organization. The better knowledge the organization has about the own industrial rights, the better the chances to detect infringements are. According to Kivi-Koskinen, in global companies also agents, importers and dealers form a part of a wide-ranging network. As an example of infringement monitoring in China, Weeks tells that since the local representatives are closest to the market, they have the best possibilities to monitor the distribution networks for finding infringements. Kaufman and Dinius mention scientists of the company as a resource for detecting infringements. However, Kaufman and Dinius advise that the scientists should only report their observations and not to try to make any infringement analysis. Crawford and Strasser seem to think that the main responsibility for monitoring belongs to an IPR team, since they classify waiting for reports concerning infringements as a passive monitoring method. However, they also indirectly suggest that other people in the organization and even outside it can be utilized by stating that the effect of the passive method can be improved by training the employees, customers and suppliers. According to Crawford and Strasser, when those people know the importance of IP for the company, they can detect malpractices and no-

96 Ibid.
97 Ibid.
98 Ibid.
Also Weeks is of the opinion that it is important to train the employees to identify infringing products and to understand the importance of IP. Also Manton believes that by training the personnel in IPR matters, intellectual asset management can be effectively improved. He gives as an example that marketing personnel should have some knowledge regarding the company's patent portfolio to be able to detect potential infringements when monitoring competitor's activities. Kivi-Koskinen suggests that employees could be motivated to communicate the detected infringements further, for instance in the same way as is the case with initiatives. Kivi-Koskinen also believes that infringements could be detected more effectively, if the employees in the marketing would have knowledge about the industrial rights communicated in an understandable way. In addition, there should be guidelines for how the infringements are without delay communicated to the management.

4.4 Ways of detecting infringements

What are then the ways a company can use for detecting infringements? According to Kaufman and Dinius, the first step in infringement monitoring is to identify the scope of protection of the patent portfolio. The next step is to see what the competitors that are active in the field protected by the patents are doing. The authors emphasize that it is not important whether the patent owner itself is doing business in that field. According to Kaufman and Dinius, one method for detecting infringements is to purchase products for analysis. If the patented product is for instance a chemical compound for therapeutic use, this should be easy due to the regulations concerning the pharmaceutical business and the ability to get product samples. Also Crawford and Strasser mention examination of the competitors' products as an active method for detecting infringements. Crawford and Strasser also suggest the use of nanotechnology markers for marking pro-

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102 Ibid.
103 Weeks, p. 30.
105 Kivi-Koskinen, p. 30.
106 Ibid.
107 Ibid.
109 Ibid.
110 Ibid.
111 Crawford and Strasser, p. 9.
proprietary products, or mass serialization, where each product is given a unique identifier. These methods help to identify counterfeit products. Wu classifies market investigations at shops and international trade fairs as external surveillance.

Weeks writes about infringement detection in China. She suggests that the minimum level of infringement monitoring involves that a company has assigned staff to monitor production facilities and distribution network in China. This is necessary to prevent overproduction and the use of authentic components in counterfeited products. The same employees can also help the company to identify those regions where counterfeiting is active. Weeks states that the company should also try to track the production and distribution networks that are involved in the illegal activity. Also Wu suggests monitoring of distribution and sales networks. According to Weeks, independent investigative firms or the owned employees can help the company to find those regions where problems are frequent. The data gathered by local representatives can be utilized by the business intelligence network of the company.

Kaufman and Dinius state that when certain inventions, such as genes and manufacturing methods are concerned, it may be more difficult to detect infringements. In those cases, one way to monitor is to go through the competitors' patent portfolios, which may describe the methods they use. According to the authors, scientists read technical journals and attend meetings, and both these sources may help to identify potential infringements. Also according to Kivi-Koskinen, it is possible to detect infringements from patent, utility model or design applications. Kivi-Koskinen states that an employee working in marketing may detect infringements in magazines, at trade fairs or when visiting customers. He or she should then communicate the observations to the

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112 Ibid., p. 10.
113 Ibid.
115 Weeks, p. 30.
116 Ibid.
117 Ibid.
118 Ibid.
119 Wu, p. 66.
120 Weeks, p. 30.
121 Ibid.
122 Kaufman and Dinius, p. 125.
123 Ibid.
124 Ibid.
125 Kivi-Koskinen, p. 30.
product development department or management. Since it is important to detect infringements early, companies should work actively at trade fairs and exhibitions to monitor and analyze competitors’ products. According to Kivi-Koskinen, employees who have been involved in product development, and are thus able to detect possible infringements, should also be sent to important trade fairs. Wu states that investigation of the competitors' business information can be used as a method for finding infringements. Crawford and Strasser mention different publicly available search technologies as a means for finding IP infringements. According to Weeks, consumers can also be used in the battle against counterfeit products. Weeks also states that customer complaints can help to find counterfeit goods. According to Weeks, some companies even have hotlines for getting tips regarding counterfeit products, and they may reward those who give valuable tips leading to seizures.

According to Rivette and Kline, a large number of patent applications citing a certain patent is an indication of importance of the patent, and this also means that is more difficult to design around the patent. Also, if a certain company cites a number of someone's patents, there is an increased likelihood of infringement. If the citing company is in a totally different business than the cited technology, they are more potential infringers. Also Porcari recognizes third party citation analysis as a way of identifying competitors who may use a protected invention. According to Porcari, patents that are frequently cited are also objects to potential infringements, and may be picked up for more thorough investigation.

The difficulty of detecting infringements has also been recognized by some inventors. US patent application No. US 2002165818 A1 with the title “Infringement reporting

126 Ibid.
127 Ibid.
128 Wu, p. 66.
129 Crawford and Strasser, p. 9. However, this is probably more applicable to copyright or trademark infringements or loss of trade secrets than to patent infringements.
130 Weeks, p. 30.
131 Ibid., p. 31.
132 Ibid., p. 31.
134 Ibid.
135 Ibid.
clearinghouse” states that although companies can usually detect blatant infringements, minor infringements are often not discovered, and this may lead to significant loss of potential revenue. The patent application discloses a technology for facilitating detection, reporting and resolution of infringements. The public can report infringements to the patent holder anonymously and receive rewards for their discoveries. Later patent applications, for example US patent application No. US 2004261011 A1 with the title “Patent infringement notification site”, have addressed the same problem. The above-mentioned application describes a method according to which patent holders can advertise their patents on a website, and users of the site can identify an infringement target and describe on an electronic form how the target meets the criteria for an infringement. As an example of the use of the invention, the patent application suggests an intranet site where a company can lists its patent, and an employee who reveals an infringement will get an award for his finding. US patent application 2005108172 A1 with the title “Detecting and reporting infringement of an intellectual property item” describes a similar method where the public can be used to help to find infringements against a reward. Companies may list on a website patents that they want to have monitored, and the users of the website may report potential infringements. There have also been attempts to automate the process of finding infringements. US patent application 2004158559 A1, “Apparatus and method for identifying potential patent infringement”, discloses a method where the claims of a patent are analyzed by a computer-based system for finding key terms and synonyms of them. After that, the Internet and commercial databases and other information sources are searched for creating a list of potentially infringing products.

4.5 Duty to monitor

In the litigation in the U.S., equitable defenses may help a defendant to reduce or escape liability, and these defenses are also available in patent litigation. One allowable de-

fense is the laches defense. In the case Aukerman Company v. R.L. Chaides Construction Co., the Court of Appeals for the Federal Circuit summarized that the laches defense is appropriate when “(a) the patentee's delay in bringing suit was unreasonable and inexcusable, and (b) the alleged infringer suffered material prejudice attributable to the delay.”\(^{142}\) The court also held that if the patentee files a suit against the infringer more than six years after the plaintiff knew or should have known of the infringement, there is a presumption of laches, which shifts to the plaintiff the burden of bringing out evidence against the presumption. If the defense is accepted, the patent holder may lose his rights to damages for the infringing activity that occurred prior to suit.

Although the equitable defenses are an enforcement issue, especially the laches defense may have implications for infringement monitoring as well. Craven L. Wanlass was granted a US patent in 1977 for a certain type of electric motor.\(^{143}\) He offered a license for General Electric (GE), but GE refused claiming that the invention was not new. Wanlass tested GE products between 1977 and 1982 finding no infringement. In 1995, he sued GE for patent infringement based on testing of GE air conditioners conducted in 1992. For detecting an infringement, it was necessary to purchase the product that cost approximately 200 dollars, but the testing itself required no special equipment and was easy. The District Court of Utah concluded that Wanlass knew or should have known of the potential infringement by March 1989, which was six years prior filing the suit. The court granted the defendant a summary judgment on the grounds of laches and estoppel, and this judgment was later affirmed by the Court of Appeals for the Federal Circuit. The Court of Appeals found it reasonable that patentees have the duty to search for infringements, since the patentees generally know better the scope of protection of their patents, and have therefore lower costs in investigating possible infringements than their competitors would have if they did comprehensive patent searches for avoiding infringements. Wanlass argued that it would have required too much work to test possibly infringing product, since there were as many as nine hundred different products containing a possibly infringing motor. The Court was not convinced by this argument, and stated that the patentee should have tested products from time to time, the appropriate frequency of the tests depending on the cost and difficulty of testing. One of the judges

\(^{142}\) A.C. Aukerman Company v. R.L. Chaides Construction Co., 960 F. 2d 1020.

dissented, holding that the Court imposed an unreasonable burden on the patentee to monitor the market for infringements.

In a similar case Wanlass v. Fedders two weeks later, concerning the same patent as the case Wanlass v. General Electric, the same judges vacated the districts court's summary judgment that had been granted to Fedders on the ground of laches, and remanded the case.\textsuperscript{144} Wanlass had tested the Fedders air conditioner that employed a motor that was assumed to infringe their patent for the first time in 1995, and determined that there is an infringement. They filed an infringement suit in the same year, and in 1997 Fedders was granted summary judgment. The Court of Appeals held that the issue could not be resolved on summary judgment. Although Wanlass knew that a certain type of motors used in room air-conditioning industry could infringe his patent, an infringement could only be detected by testing the motor. According to the Court of Appeals, it was unreasonable to require that Wanlass would monitor the air conditioning industry by periodically testing all products on the market. One fact contributing to the Court's decision was that Wanlass was not active in the air-conditioning industry and did not attend trade shows or receive publications concerning the air-conditioning industry. The Court held, however, that “Wanlass did have a duty to investigate a particular product if and when publicly available information about it should have led Wanlass to suspect that product of infringing”. According to the Court, in this particular case it was not shown that Wanlass would have had a reason to suspect that the motors used by Fedders would infringe his patent. One of the judges dissented, holding that Wanlass should have tested products from time to time to determine whether they infringe his patent. He also held that, taking into account how easy and important it was to test products for infringement, it was unreasonable that no motor was investigated for over ten years.

According to Rabinowitz, district courts have come to different conclusions concerning the question whether the knowledge of the existence of a competitor imposes a patent holder an obligation to investigate the competitor's products.\textsuperscript{145} What comes to the depth of the investigation required to overcome a laches defense, Rabinowitz states that the

\textsuperscript{144} Cravens L. Wanlass, Energystics, Inc. and Wanlass International, Inc. v. Fedders Corporation and Rotorex Company, Inc. 145 F.3d 1461.

general rule is that the more complicated the product is, the less investigation is needed.\textsuperscript{146} According to Heyman, it remains unclear whether patentees with greater resources have a greater duty to monitor the market for finding infringements.\textsuperscript{147} Rabinowitz thinks that the duty depends only on the complexity of the allegedly infringing product, not the financial resources of the patentee.\textsuperscript{148} Regarding the frequency of investigation, Rabinowitz has found at least one district court case, where the court followed the approach of the Fedders case requiring re-testing of products only when there is new information that gives a reason to suspect an infringement.\textsuperscript{149}

Also in other countries, passivity may narrow down the rights of the patent owner. For instance, in Finland the patent owner is entitled to claim damages only for an infringement that has taken place during the last five years before filing the suit.\textsuperscript{150} Also, a delay in filing a motion for a preliminary injunction may affect the plaintiff's chances of getting an injunction for example in Germany, England and the United States, and possibly also in Denmark.\textsuperscript{151} What comes to the preliminary injunctions and legal usage in Finland, Norrgård recommends that the plaintiff's delay should be taken into account when assessing the harm caused by an infringement of an intellectual property right.\textsuperscript{152} The plaintiff's delay in filing a motion for a preliminary injunction would thus mean that the risk of harm is not very high, and the likelihood of an injunction should be diminished.\textsuperscript{153} In two recent Finnish cases, the exclusive licensee of a patent and two utility models for a fentanyl plaster had filed a motion for a preliminary injunction and requested the district court to forbid marketing, importing and other commercial use of infringing products.\textsuperscript{154} In one of the cases, the defendant's products had come on the market nearly two years before filing of the motion. In the other case, the defendant had launched the product over a year before the suit. The district court dismissed both cases because of a harm-benefit analysis and the passivity of the plaintiff. The plaintiff appealed in both cases, and the court of appeal vacated the judgments of the district court. The court of appeal held that the laboratory tests and other research that had been con-

\textsuperscript{146} Ibid., p. 203.
\textsuperscript{147} Heyman, p. 1181.
\textsuperscript{148} Rabinowitz, p. 203.
\textsuperscript{149} Ibid., pp. 204–205.
\textsuperscript{150} See Patents Act, Section 58.
\textsuperscript{152} Ibid., pp. 324–325.
\textsuperscript{153} Ibid.
\textsuperscript{154} Court of Appeal of Helsinki 19.3.2010 No. 740 (S09/1812) and 19.3.2010 No. 741 (S09/1706).
ducted for supporting the motion for the preliminary injunction justified the delay, and the plaintiff could thus not be considered passive.

4.6 Optimal monitoring effort

Crampes and Langinier have studied in the framework of game theory how much effort a patent owner should put on monitoring the market for patent infringements, and how he should react to infringements. The authors point out that a patent does not give a perfect protection, but only gives the proprietor the right to take legal action against infringers.\textsuperscript{155} If the patent owner is not able to detect an infringement or identify the infringer, or if litigation is too expensive, the value of the patent is diminished.\textsuperscript{156} In their model, Crampes and Langinier assume that the patent owner can always detect entry of an imitator due to his reduced profits.\textsuperscript{157} However, after that he has to identify the infringer, check whether the patent is valid and whether reasonable grounds can be found for an infringement suit, and these steps are called as the monitoring effort.\textsuperscript{158} The authors assumed that the patent owner has three different ways to react to an infringement. The first option is to accept the infringement without reacting to it, the second option is to settle, and the third option is to litigate.\textsuperscript{159} To determine the equilibria in the stage where the patent owner decides how much effort he will put on infringement monitoring, and the potential infringer decides whether he will enter the market, the authors first determined what is the best strategy for the patent owner when the infringer is identified.\textsuperscript{160} The choice depends basically on the monopoly and duopoly profits, the net compensation the patent owner would receive by litigating, and the settlement cost.\textsuperscript{161}

In the first game studied by Crampes and Langinier, the patent owner decides how much effort he puts on monitoring without knowing whether an infringer has entered the market.\textsuperscript{162} Similarly, the infringer enters the market without a knowledge of the patent owner's monitoring effort.\textsuperscript{163} Because of a basic assumption of the authors that in case of

\textsuperscript{156} Ibid.
\textsuperscript{157} Ibid., p. 260. In practice, this is probably not true, but maybe applies to significant infringements.
\textsuperscript{158} Ibid.
\textsuperscript{159} Ibid.
\textsuperscript{160} Ibid., p. 262.
\textsuperscript{161} Ibid., pp. 262–264.
\textsuperscript{162} Ibid., p. 264.
\textsuperscript{163} Ibid.
no entry by an imitator, the patent owner earns monopoly profit and the imitator's profit is zero, the best choice for the patent owner is to spend nothing on monitoring when there is no entry.164 In case the patent holder accepts the entry of imitators, the profit of an imitator is always higher in case he enters the market compared to the situation where he does not enter the market, and entry is thus a dominant strategy for the imitator.165 The patent owner's profit is duopoly profit less the monitoring effort, from which it can be deduced that it is a dominant strategy to spend nothing on monitoring.166 Crampes and Langinier conclude that if the patent owner considers for some reason that it is worthless to deter entry of imitators, there is an equilibrium in dominant strategies where the monitoring effort is zero and the imitator enters the market.167 According to the authors, reasons for the patent owner to consider it worthless to deter imitators are, for instance, that it is unlikely to get any positive net compensation as a result of litigation, or the patented invention is not valuable enough to result in license revenue that exceeds the costs of negotiating such an agreement.168

If it is assumed that the infringer will be sued if he is identified, the net profit of the entrant depends on the likelihood of being identified and the penalty the infringer will get in case of infringement.169 Since a basic assumption was that the infringer can be identified even with zero monitoring effort with a certain probability that exceeds zero, with a very high fine the entry is not profitable even in case there is no monitoring.170 On the other hand, with a very low fine the entry can be profitable even in case it is sure that the infringer will be identified.171 Knowing the penalty, the infringer will enter the market when the monitoring effort is below a certain level, otherwise not.172 The profit of the patent owner depends on the likelihood of being able to identify the infringer, the net compensation he will receive in case the infringer is punished, and the monitoring costs.173 What is the ideal monitoring effort depends on the infringer's choice.174 In case the infringer's profit is negative for any monitoring effort, no entry is a dominant

164 Ibid.
165 Ibid.
166 Ibid.
167 Ibid.
168 Ibid.
169 Ibid., p. 265.
170 Ibid.
171 Ibid.
172 Ibid.
173 Ibid.
174 Ibid.
strategy, and the patent owner should decide to spend nothing on monitoring.\textsuperscript{175} If the expected profit of the infringer is positive for any monitoring effort, there can be found a certain monitoring effort that is between zero and the value guaranteeing the identification, which maximizes the patent owner's profit.\textsuperscript{176} In case a threshold value that deters the infringer can be found for the monitoring effort, the situation is more complicated.\textsuperscript{177} If the patent owner's best choice for monitoring effort is below the threshold that deters entry, there is an equilibrium where the infringer enters the market and the patent owner chooses the optimal monitoring effort.\textsuperscript{178} In case the optimal monitoring effort deters entry, the best choice for the infringer is not to enter.\textsuperscript{179} However, in that case the best choice for the patent owner would be zero monitoring effort, which would lead to the entry of the infringer.\textsuperscript{180} This means that no Nash equilibrium can be found in pure strategies.\textsuperscript{181} However, equilibria in mixed strategies can be found.\textsuperscript{182} If the patent owner chooses a level of monitoring effort that is just enough to give zero profit for the infringer despite of his choice to enter or not, this is an equilibrium.\textsuperscript{183} If the patent owner chooses randomly either no monitoring or optimal monitoring in case of entry, there is an equilibrium where the infringer enters with a certain probability, and the patent owner chooses zero monitoring effort with a certain probability and the optimal level with the complementary probability.\textsuperscript{184}

In case of a settlement solution, similar equilibria can be found as in the trial solution discussed above.\textsuperscript{185} If the infringer's expected net profit is positive for any monitoring effort, the infringer will enter the market, and it can be found an optimal monitoring effort for the patent owner.\textsuperscript{186} If the infringer's net profit is negative even with zero monitoring effort, the infringer will not enter the market, and the patent owner's monitoring effort is zero.\textsuperscript{187} If the infringer's expected net profit is negative with a certain monitoring effort and positive otherwise and the optimal monitoring effort for the patent owner

\begin{itemize}
\item \textsuperscript{175} Ibid.
\item \textsuperscript{176} Ibid.
\item \textsuperscript{177} Ibid.
\item \textsuperscript{178} Ibid.
\item \textsuperscript{179} Ibid.
\item \textsuperscript{180} Ibid.
\item \textsuperscript{181} Ibid., p. 265–266.
\item \textsuperscript{182} Ibid., p. 266.
\item \textsuperscript{183} Ibid.
\item \textsuperscript{184} Ibid.
\item \textsuperscript{185} Ibid., p. 267.
\item \textsuperscript{186} Ibid.
\item \textsuperscript{187} Ibid.
\end{itemize}
is below the threshold, the patent owner will choose the optimal monitoring effort and the infringer will enter the market.\textsuperscript{188} If the optimal monitoring effort is above the threshold that deters entry, the patent owner monitors the market with a probability smaller or equal to 1, and the infringer enters with a probability smaller than 1.\textsuperscript{189}

Two kinds of equilibria can be found not depending on whether the patent owner wants to settle or litigate.\textsuperscript{190} In the first type of equilibrium, the patent owner cannot prevent an infringer from entering the market, since it is always profitable for the infringer to enter because of low fines or small probability of being identified.\textsuperscript{191} In the second type of equilibrium, it is not profitable for the imitator to enter because of high probability of being identified and high fines.\textsuperscript{192} In this case, the patent owner has no need for monitoring.\textsuperscript{193} The authors give as an example of the latter type of equilibrium a small infringer against a large and strong patent owner, or the pharmaceutical sector, where the infringements are easy to detect due the obligatory clinical testing and approval process.\textsuperscript{194} There is also a third type of cases, where the infringer has no dominant strategy.\textsuperscript{195} If the patent owner is not willing to use a lot of resources for monitoring, i.e. the monitoring effort does not exceed the threshold for deterring entry, it will lead in an equilibrium where the infringer will enter the market, and the patent owner uses the monitoring effort maximizing his profit.\textsuperscript{196} In case of random monitoring effort and entry strategy, the result is some of the non-equilibrium outcomes presented above.\textsuperscript{197}

Crampes and Langinier also studied two sequential games. In the first sequential game, the infringer knows the monitoring effort of the patent owner and bases his decisions on that.\textsuperscript{198} In the second sequential game, the patent owner decides the level of monitoring effort after detecting entry.\textsuperscript{199} In the first game, it is more likely that the patent owner will deter entry than in the simultaneous game.\textsuperscript{200} If there exists monitoring effort above

\textsuperscript{188} Ibid.
\textsuperscript{189} Ibid.
\textsuperscript{190} Ibid.
\textsuperscript{191} Ibid.
\textsuperscript{192} Ibid.
\textsuperscript{193} Ibid.
\textsuperscript{194} Ibid.
\textsuperscript{195} Ibid.
\textsuperscript{196} Ibid.
\textsuperscript{197} Ibid.
\textsuperscript{198} Ibid., p. 271.
\textsuperscript{199} Ibid.
\textsuperscript{200} Ibid.
zero that deters entry, the patent owner can deter entry only when the optimal monitoring effort happens to be above the threshold, but in the sequential game he can choose an effort that deters entry. 201

If the infringer is the one taking the first step and he decides to not enter, the monitoring effort of the patent owner is zero. 202 Otherwise the patent owner sets the monitoring effort at the level maximizing his profit. 203 If this level is below the threshold deterring entry, the infringer will enter the market, otherwise not. 204 This means that the infringer is less likely to enter the market than in the simultaneous game. 205 In a simultaneous game or in a game where the patent owner takes the first step, the monitoring has a deterring effect and a punitive effect. 206 In a game where the patent owner takes his decisions only after detecting entry, the only function of the monitoring is to guarantee the best possible compensation for the patent owner, which makes it more costly for the infringer to enter. 207 The patent owner can choose the level of monitoring effort to get the better position for negotiation and avoids monitoring in a situation where there is no entry. 208

4.7 Infringement monitoring in practice

Rutherford-Johnson writes about the IP department of the German company Webasto and their IP management. 209 According to the head of the IP department, the company's internal benchmarking team purchases and tests one of each new sunroof or roof system launched by the competitors. Based on the results, the IP department of Webasto determines whether any of their patents are infringed. Since there are only a small number of companies in the same business, they all know each other and there are always some negotiations concerning cross-licenses going on. 210

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201 Ibid.
202 Ibid., p. 272.
203 Ibid.
204 Ibid.
205 Ibid.
206 Ibid.
207 Ibid.
208 Ibid.
210 Ibid., p. 80.
In an Australian survey, prevalence of patent infringements was studied. The survey was sent to the inventors who had filed a patent application at the Australian Patent Office between 1986 and 2005. 211 28.3 percent of the inventors that responded stated that they were aware of copying of their invention. 212 Those inventors who claimed that their invention had been copied were asked further questions in a telephone survey. Table 4.1 shows from which sources of information the inventors found out that their invention had been copied. Approximately one third of the respondents reported that customers and suppliers, colleagues, or direct spotting of a sale had revealed copying. Different catalogs were also a relatively important source of information. Trade fairs had minor importance.

Table 4.1: Sources of information about copying. 213

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Responses (multiple responses permitted) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale by someone else</td>
<td>36.8</td>
</tr>
<tr>
<td>Someone else's catalog</td>
<td>23.0</td>
</tr>
<tr>
<td>From a colleague</td>
<td>34.6</td>
</tr>
<tr>
<td>See at a trade fair</td>
<td>8.8</td>
</tr>
<tr>
<td>From customers and suppliers</td>
<td>37.9</td>
</tr>
<tr>
<td>Other</td>
<td>27.0</td>
</tr>
</tbody>
</table>

The inventors were also asked what kind of practices their organizations had for detecting possible infringements. Table 4.2 shows that on average a little bit less than two different methods were used. Half of the organizations had used their own employees or customers or suppliers for monitoring patent infringements. Trade or technology journals, external patent attorneys, and the databases of the patent office were also utilized in monitoring. The authors propose a classification of these practices into passive and active strategies. Searching the patent office websites and employing patent attorneys would be active strategies, and the other three passive strategies. 214 However, the au-

212 Ibid., p. 11.
213 Ibid., p. 15.
214 Ibid., p. 16.
thors recognize that without knowing the internal practices of the companies, this classification may not be completely appropriate, since also monitoring that relies on employees may be active, if the employees are actively encouraged to monitor the IP rights.

Table 4.2: Monitoring activities by those who reported copying.215

<table>
<thead>
<tr>
<th>Monitoring activity</th>
<th>Responses (multiple responses permitted) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search patent office site</td>
<td>23.5</td>
</tr>
<tr>
<td>Employ patent attorney to monitor</td>
<td>25.0</td>
</tr>
<tr>
<td>Read trade or technology journals</td>
<td>39.0</td>
</tr>
<tr>
<td>Rely on employees</td>
<td>50.1</td>
</tr>
<tr>
<td>Rely on customers or suppliers</td>
<td>51.6</td>
</tr>
</tbody>
</table>

According to the Advisory Council on Industrial Property (ACIP) in Australia, most managers and companies have poor understanding of IP management.216 Seven percent of the Australian IP owners that responded to a survey thought that IP Australia monitored their rights for IP infringement, and would also enforce the rights on behalf of the proprietor.217

In a study by Kingston, a mail questionnaire was sent to over 4000 SMEs that had either a European or a United states patent or both in all member states of the European Union.218 This mail survey was complemented by telephone and personal interviews.219 67% of the respondents reported that someone had tried to copy their patented invention.220 Only 24% of the respondents reported that they had had problems in detecting the infringement.221 34% of the respondents stated that the infringer was of the same size as the firm itself. 26% reported an infringement by a larger firm and 11% by firms in both categories. 9% of the respondents considered that they had suffered only an unimport-

215 Ibid.
217 Ibid.
219 Ibid.
220 Ibid., p. 31.
221 Ibid., p. 32.
ant damage, while 37% suffered bearable damage and 21% very serious damage.
5 Empirical part

This chapter deals with the empirical study. The goals and methods of the empirical study, the criteria behind the selection of the companies for the interviews, the interviewed companies, and the topics discussed in the interviews are presented first. After that, the results of the interviews are presented.

5.1 Goals and methods of the empirical study

The goal of the empirical part was to find answers to questions relating to how the market is monitored for finding patent infringements. The study could have been implemented either as a survey or a case study. According to Yin, a survey may be used when questions “who”, “what”, “where”, “how many” or “how much” are asked.222 Case studies are relevant when questions “how” or “why” are asked.223 The object of the thesis was to answer both types of questions, and a survey would have provided wider coverage. However, since relatively little prior research concerning the topic of the thesis was found, a case study was considered more suitable for achieving the goals. It would have been difficult to list all the relevant questions for a survey. A case study with interviews gives the possibility to revise the interview questions on the basis of the answers of the interviewees, and it is thus possible to cover topics that did not come up when planning the study. In general, instead of structured queries, case study interviews are supposed to be guided conversations where the questions are asked in an unbiased manner.224 Also in this study, the aim of the interviews was to get the interviewed people to talk openly and to give answers also to those questions that were not asked. For the purpose of the study, the comparison of the interviewed companies was not important, but several companies were interviewed for covering better the different issues relating to infringement monitoring.

5.2 Selection of the companies

Only companies that are headquartered in Finland were selected for practical reasons. It

223 Ibid.
224 Ibid., p. 89–90.
was assumed that because the administration of patents is often centralized in the parent company, best knowledge regarding infringement monitoring can also be found there, and interviews are easy to arrange. The first substantive criterion for the companies to be interviewed was the number of patent families. It was assumed that the number of valid patent families has a significant effect on how the companies organize the infringement monitoring of their patents. In a company with only one or a few patent families, it should be relatively easy to inform the organization about the scope of protection of the patents. In an organization with a few dozen or more patent families, it is not self-evident that the employees know the patents. Therefore, it was decided that only companies with around 30 or more patent families are asked for interviews. It could also be assumed that in a company with a larger patent portfolio, issues relating to infringement monitoring have been thought through more thoroughly than in companies having only a few patents. Since one object of the thesis was to find best practices for infringement monitoring, the limitation to companies with larger patent portfolios can also be reasoned by this assumption. However, it should be noted that the number of patent families is not necessarily a very good measure of the importance of patents in the respective company, since the quality of the patents, the number of patents in one family, or the number of patents in relation to the revenue of the company is not taken into account. A small high-tech company might be totally dependent on a single patent family, whereas a large company with hundreds of patent families may rely on its business much more on other issues than patents.

Another criterion was that the company operates in business-to-business markets. It was assumed that business-to-business companies have different challenges than business-to-consumers companies. For instance, investment goods are often more complicated and expensive than consumer goods, which can make it more difficult to purchase goods for finding infringements. On the other hand, if the products are complicated, the market is likely to be less fragmented, which can make infringement monitoring easier. For companies making consumer goods, trademarks are probably more important than patents, whereas business-to-business companies may rely more on references. Of course, there are a lot of exceptions to all of these assumptions, but it is anyway a natural choice to limit the interviews to business-to-business companies.
The interviewed companies were also limited to companies that could be assumed *a priori* to utilize their patents mainly by using them to protect their own production, instead of using them for licensing out or for taking part in patent pools. Information technology companies were therefore left out. Preselection of suitable companies was done by going through the list of Finnish stock listed companies. Stock listing itself was not a criterion for the selection, but it was a natural limitation because of the generally large size of the stock listed companies. Also, by this selection companies that are headquartered in Finland could be easily found out. Since it was assumed that most Finnish companies file their priority applications in Finland, the database of the National Board of Patents and Registration of Finland was used for finding whether the firms meet the requirement for the minimum number of patent families.

### 5.3 Interviewed companies

Nine companies were asked for an interview. The companies were approached by phone and by e-mail at the beginning of year 2010. The representatives were told that the interview would take approximately an hour and a half. The companies were also promised that the names of the interviewed companies will not be published. One of the companies refused because of lack of time. The other eight companies were interviewed between February and June in 2010. Seven of the interviewed companies were parents of Finnish stock listed companies, whereas one of the companies was a subsidiary of a Finnish stock listed company. All the companies operate in business-to-business markets. The sizes of the companies in terms of the revenue and the number of employees were quite different, but all the interviewed companies could be characterized as leading companies in their own field of business in Finland, and most of them also one of the leading companies in the whole world.

All the companies had at least a middle-size patent portfolio. The number of patent families in the interviewed companies varied from approximately 50 to over 2000 according to the information given by the interviewees. Most of the companies had from one hundred to a few hundred patent families. Three of the companies had only one patent engineer or patent manager, while the other companies had a larger patent or IPR department. In one of the companies the interviewed person was the R&D manager because of the absence of the patent engineer. In one of the companies the interviewed person was
one of the several patent engineers, whereas in the six other companies the only patent engineer or the head of the patent or IPR department was interviewed.

The interviewed companies represent by no means average Finnish manufacturing companies. Rather, in terms of patenting, it is fair to assume that some of the best practices can be found among these companies. If weaknesses in infringement monitoring are found, it is reasonable to make the assumption that a large part of Finnish patent owners, as well as foreign ones, share these weaknesses.

5.4 Main topics of the interviews

The themes to be discussed during the interviews were listed beforehand, and some more precise questions were wrote down to be able to guide the discussions to the right direction, and to ensure that all the relevant topics are covered during the interviews.

5.4.1 Means for finding infringements

Maybe the most interesting topic of the interviews was what kind of means the companies use for finding infringements. The companies were asked to describe different ways of finding patent infringements. Some possible sources of information were listed before the interviews, and the companies were asked whether they use them. These means included trade fairs, product purchases, competitors' web pages, and service business that takes place at the customers' premises. Also the interviewees' opinion regarding external information sources, such as customers, subcontractors and dealers, was asked. The companies were also asked to name the most important source of information.

5.4.2 Focusing of infringement monitoring

Another area of interest was the focusing of the monitoring activities. The companies were asked whether they focus their infringement monitoring on some key patents or geographical areas, or on certain competitors. They were also asked whether they monitor the use of their patents outside their own business, and whether they are interested in reacting to infringements that are outside their own field of business.
5.4.3 Factors supporting the monitoring goals of the company

One goal of the interviews was to find out how the organizational culture supports detection of infringements. Presumably, an important factor is that the employees know what patents the company has. Therefore, it was asked how the employees get information regarding the company's own patents. Also some general knowledge regarding patents was thought to have some importance, and therefore one question was how the employees are trained in IPR matters. Another area that is assumed to support the infringement monitoring is how the responsibilities are determined and how the processes are described and instructed. Also, it was of interest how the top management is involved in decision making, and how interested they are in general in patent matters, since this might also tell something about the organizational culture and the resources that are available for IPR matters.

5.4.4 Importance of infringement monitoring

It was asked both directly and indirectly what is the importance of infringement monitoring of patents. The interviewees were asked to estimate how often their patents are infringed and who the potential infringers are. Another thing that was of interest was what is the importance of the right to forbid the use of an invention. It was assumed that if the companies for instance give an exclusive license to an invention, it is not necessary to monitor the market after licensing. One question was whether the company informs the main competitors about new patents in order to prevent infringements.

5.4.5 Other issues

Other topics handled, for instance, how the companies follow their competitors' patents, and what is their impression regarding their competitors' infringement monitoring activities. It was also asked whether the ability to monitor the patents affects the decisions on whether or not a certain invention is patented. The companies were also asked some background information concerning the number of patent families and the use of patents.
5.5 Documentation of the interviews

The initial purpose was the record the interviews. The first interviewees were asked whether the discussions could be recorded, but they were not willing to give a permission for that. For the rest of the interviewees recording was not even suggested. As a result of the reluctance of the interviewees to the recording, the discussions were documented by writing down the key points. Because of this, the accuracy of the documentation clearly suffered to some extent, but on the other hand, possibly a more relaxed atmosphere could be achieved during the interviews.

5.6 Results of the interviews

5.6.1 General

The planned structure of the interviews turned out to work with varying success. Some of the interviewed people had clearly thought issues relating to the subject before, and only a little guidance was therefore needed during the discussions, while some of the interviewees predominantly answered the questions that had been prepared before the interviews. In general, the interviewees seemed to be interested in discussing the topics and telling their experiences and thoughts about infringement monitoring.

5.6.2 Use of patents in the interviewed companies

Since the way a company uses their patents could be an important factor affecting their effort to find possible infringements, the companies were asked in which different ways they utilize patents. Most of the interviewed companies saw the protection of their own production as the main goal of their patenting activities. Company A told that their patenting practices are shaped by their aim to use patents to protect their own business. If they were an active licensor, they would probably monitor the market more actively for finding infringers, since the infringers are potential licensees. This was compared to the way the patent trolls behave. Company A has also used licensing to some extent in subcontracting to get price benefit from a patent, but according to the interviewee that is not a significant business and not the goal of their product development. Company B sells sometimes licenses, but licenses are not the main source of revenue. Patents are, however, part of the projects when technology is sold to the customers. The interviewee in
company C told that they might sell licenses to those inventions they are not able to manufacture themselves. Company D uses patents as a marketing tool to show that the company wants to be a forerunner. However, the main function of patents is to protect their own products on the main markets. Only very occasionally patents are licensed out. Company E tries to sell out licenses to those products that are outside their core business, and licenses can sometimes be a good source of revenue. Cross-licensing has also been used occasionally. The use of the licensing is to some extent limited by the fact that there is no one in the organization who would be interested in looking for licensing opportunities. There is no separate licensing organization, although a person hired for that purpose could earn his own salary. In company E, patents are used purposefully also in marketing. According to the interviewee, the significance of IPR has increased, and the marketing people have become interested in IPR issues. The interviewee thought that it could be useful to develop more systematic methods for using patents. In company G, patents are usually used to prevent the competitors from copying. However, licenses are sometimes given to the competitors in patent-dense technology areas when the customers demand that. Customers can be informed about patents to give a message that it is not possible to get a certain product from the competitors. Also competitors may be informed when a patent is published in order to market licensing opportunities. Some inventions have been licensed out, but infringements are difficult to find.

Companies F and H had a clearly different approach to patenting. In company F, freedom-to-operate was seen as the most important goal of patenting. When applications are filed, the patent authorities consider the novelty of the invention and look for similar technology and patents. According to the interviewee, this survey concerning the prior art is good, although not perfect. The exclusion of the competitors is only at the second or third place in the order of importance when patenting is concerned. According to the representative of company H, their portfolio is needed mainly as a guarantee for license contracts. Patents can be used to show the ownership of the technology. Competitors are not found as an important reason for maintaining the patent portfolio. Company H finds suppliers as potential infringers and patents are part of the transfer price discussions. Company H also uses patents sporadically in marketing.
5.6.3 Importance of infringement monitoring

An important question when thinking about infringement monitoring of patents is whether that is important at all. Several reasons can be found for arguing that when a patent is granted, it can be put into the portfolio and left to live its own life until the next portfolio evaluation. One possible reason for ignoring infringement monitoring could be that the patents in the portfolio are not used as they are “traditionally” thought to be used, i.e. for preventing competitors from using the patented inventions. A patent could, for instance, be used as a marketing tool, and in that case it might not be important whether a competitor uses the invention or not. Also, if a patent is licensed out, infringement monitoring can be left for the licensee, at least in case of an exclusive license. Another reason for arguing at least against systematic infringement monitoring of patents could be that the competitors can be trusted and they do not infringe patents, at least not intentionally. If it is believed that the competitors monitor actively new patent applications and play fair, it could be said that infringement monitoring is not that important. The competitors could also be informed about new patent applications to avoid unintentional infringements.

The reasons for omitting infringement monitoring could be divided into company related factors, which would include the ways of using patents, and into factors that affect the likelihood of infringements.

Company related factors

As it was told above, the interviewed companies use patents mainly to protect their own products. It could thus be assumed that the companies would have some interest in infringement monitoring. All the interviewed companies agreed that infringement monitoring of patents has some importance. Company A stated that the infringement monitoring make the patents stronger. Visible monitoring prevents infringements, and when competitors hear about court cases, that also works as a deterrent. Once or twice they have given a press release regarding an infringement case, but since there is cooperation within the business, rumors concerning actions against infringements reach the competitors anyway. The interviewee in company B answered the question regarding the importance of infringement monitoring with a counter question: “What could be more important than monitoring of patents?”. It was, however, added that it is not particularly
emphasized. According to the interviewee, their business is driven by technology, not by patents. It is neither feasible to react to all infringements. According to company C, monitoring has a big significance. Patent applications are not filed because of the joy of patenting, since they give information to the competitors. Patenting is only used for getting the advantage to oneself. Company E told that infringements can have a huge effect on the business. Infringements might even end the manufacturing of a certain product totally.

**Likelihood of infringements and potential infringers**

It seems that most of the interviewed companies trust in fair play. Intentional infringements were not found very likely to occur. The interviewee in company D said that those infringements that have caused some actions have been intentional. It was added, however, that the infringers might not have the purpose to infringe a patent, although their purpose is definitely to copy a product. According to the interviewee, there might be also unintentional infringements, but those are not detected. The representative of company C was of the opinion that some companies are driving their business in every possible way, and believed that it is possible that even a major part of the infringements are intentional. The interviewee in company B did not have a clear view on the number of intentional and unintentional infringements, but said that both occur. Other five companies thought that most of the infringements are unintentional. The interviewee in company A stated, however, that competitors are fair when they have different design options and can thus circumvent the patent. Company G told that it is the basic assumption that the competitors follow the patents and avoid infringements. However, sometimes several consecutive infringements make one suspect that the infringements are intentional. According to company F, the competitors are respected, and it is believed that they follow publication of new patents. According to the interviewee, many firms infringe unintentionally because of lack of knowledge. The interviewee was of the opinion that the harsher the competition is, the more important it is to monitor. If the competition is tough, all the means should be used for infringement monitoring, and resources should be focused on the worst competitors.

The view on who the infringers are and how they behave varied from company to company. Most of the interviewed companies thought that large companies know the risks
of infringements and do not infringe intentionally. They also have better resources for monitoring competitors' patents. The representative of company C thought that small competitors are small likely to infringe unintentionally, while larger competitors more probably infringe intentionally. The same interviewee also believed that smaller competitors usually stop infringing when they are warned, while with larger companies harder actions are needed. In contrast, the interviewee in company A thought that large companies are more rational than the smaller firms, and try to solve infringement cases outside the courts. Company A mentioned as one group of infringers “the bad guys” who steal concepts and sell them to manufacturers who then become negligent infringers.

The interviewee in company F said that in the U.S., it could be possible that a large company infringes a patent intentionally. Since the parties usually carry their own litigation costs, more harm may be caused to the small company, of which patent is infringed, than to the infringer. Also the inventor is tied to the case and kept away from inventing. In Europe, this kind of approach would not work. In addition, the interviewee thought that it would be a “suicide” for a CEO of a stock listed company to give an order to infringe something intentionally. Also the interviewee in company H said that a company with a large patent portfolio may weigh the costs and benefits of an infringement, and then infringe intentionally.

Some of the interviewees mentioned that unintentional infringements may occur both because of insufficient monitoring of the competitors' patents, and due to the misinterpretation of the scope of protection. The interviewee in company G pointed out that especially small firms have problems in following the competitors' patents. According to the interviewee in company H, in densely patented areas it might be difficult to avoid infringements. There are also patents that should not exist because of lack of novelty or inventive step.

Company A has had less than ten court cases over the years. However, new cases come on a continuous basis. Company C told that there have not been many infringements. There have been some cases where a competitor has announced beforehand that they are going to manufacture something that might be within the scope of protection of some patent. According to the interviewee, maybe once in five years there has been a bigger
case, and warning letters have been sent occasionally. Some cases have been handled in
courts. According to company D, potential infringements are detected annually, but they
are not very common. Often the infringements have been found outside the Western
countries. In company G, infringements are not found very often, but only a few times
per year. Company H has had altogether five cases during the last three years, and ac-
cording to the interviewee, all of them have been easy to solve out.

Besides the risks involved in infringing activities, there might also be other reasons ex-
plaining why infringements are not so common. One potential reason is that the benefits
of copying are sometimes limited. The representative of company G stated that patents
concerning individual components that are easy to copy are infringed most often. Sales
of large systems is based largely on references, and therefore copying of the system
does not necessarily help in selling them. According to company F, infringements are
also a question of reputation. They can infringe a patent intentionally only when there is
a killer-publication, on the basis of which it can be proved that the patent is invalid.
Sometimes an internal analysis has been done and an outside opinion has been bought
in order to have the courage to use technology that is close to a patent of a competitor.

5.6.4 IPR policy and responsibilities regarding monitoring

An interesting question is who is responsible for the infringement monitoring. It could
be assumed that clearly defined responsibilities are important in order to be able to con-
struct a working system for detecting patent infringements. A related issue is how these
responsibilities are documented in the interviewed companies. In company A, the patent
and law departments are responsible for the use of patents, and other parts of the organ-
ization provide information. The sales and local units are not allowed to make their own
decisions regarding any infringement case. In some countries, the local units have or-
ganized systems for competitor follow-up and also some knowledge regarding patents.
With regard to the key patents of company A, all the employees have a responsibility to
act if they have a suspicion of a patent infringement. However, the patent department is
always responsible for the concrete actions. For avoiding excessive reaction, the law de-
partment is involved when for instance warning letters are sent.

In company B, decisions relating to possible infringements are taken by the business
unit concerned or by the corporate management. Also the law department is involved. In company C, it is not defined who is responsible for the infringement monitoring of patents, but the interviewee could tell that the salespeople have no formal responsibility. In company D, no one has clear responsibility for infringement monitoring. However, patents are earmarked for a certain product, and the product manager is the one who benefits from the patent. The interviewee of company D also stated that the patent engineer has a very limited capability for monitoring the market. The patent engineer is involved in interpreting the patent when a possible infringement is detected. In company E, the IPR portfolio is divided into segments that are administered by R&D managers. It was stated that the IPR department has no resources for monitoring. The representative of company F told that the responsibility for infringement monitoring of patents does not clearly belong to anyone. The patent department follows competitors’ patents, which are sent to the R&D department. Some people in the organization are active in monitoring, and personal relationships are in an important role. There are people in sales and R&D who know each other and also communicate with each other. In company G, the R&D manager is responsible for patents. However, there are no particular instructions for the infringement monitoring. The patent department does not have plenty of resources for investigating what the competitors are doing, and therefore cooperation with those working with the customers is needed. According to the representative of company H, the IPR department organizes the monitoring and is also responsible for that. However, cooperation is important, and the detection of infringements is mainly the job of the sales and marketing.

None of the interviewed companies told that they have guidelines for infringement monitoring of patents. However, all the interviewed companies stated that they have some kind of an IPR policy in a written form. Company A told that they have an IPR strategy, which states that their own products are protected, monitoring is part of the protection, and infringements are not tolerated. Subsidiaries of the company have sometimes been instructed concerning monitoring. Certain principles for monitoring exist, and there is a short strategy statement concerning monitoring. However, since the company is still a relatively small player in terms of patenting, it has not been considered necessary to write detailed instructions. Employees have been advised to report all possible infringements to the patent or law department. Those who are in charge in local
companies have received instructions, and the local companies have their own reporting practices. Company B told that the infringement monitoring practices are guided by the IPR policy, which also tells how infringements are handled. Patent department has also defined the processes concerning patenting, but there are no detailed guidelines for infringement monitoring. Also the IPR policy of company C simply states that patents are defended. There are instructions for how to deal with infringements, but not for the monitoring. According to the knowledge of the interviewee in company D, there are no detailed instructions for infringement monitoring. Because of the low organization, there are no difficulties in the information flow. In company F, there is no strategy statement concerning infringement monitoring. According to the interviewee in company G, there are no instructions for infringement monitoring, and the actions are guided by the organizational culture. Company H told that employees have been instructed for reporting similarities. There are also instructions for the reporting.

5.6.5 Infringement monitoring in practice

Key persons
As was revealed by the answers to the question concerning responsibilities regarding infringement monitoring of patents, the patent department or the patent engineer has only limited possibilities for monitoring. The practical work is thus carried out by other people in the organization. Company C told that monitoring is done most effectively through those employees who work at the customer interface. According to company D, it is the marketing organization that usually detects a possible infringement and brings the case to the R&D or law department, which then investigates the case. Company E told that those people that are close to the markets must know what is protected. They also need to know what the competitors are doing and what they have patented. Product line managers are those people who are in a key position. The messages concerning infringements come from the marketing people who have detected possibly infringing products on the market. According to company F, monitoring is largely based on the activity of certain people. Often these people are very experienced. Suspicions regarding infringements come usually from the businesses to the patent department. The information goes then to the law department, product line, and divisions. According to the interviewee, the understanding of the sales is a key question. If the competitor’s product
is analyzed, who is the one detecting the infringement? Company F told that the most important source of information is the field personnel, since they are involved in the bidding and sales processes. The interviewee of company G told that there are only few people who both visit the places where infringements could be detected and know the patents of the company. The members of the patent teams know the portfolio, and they are in touch with the people on the field. They also inform the patent department, which is responsible for the possible actions if something is detected. According to the interviewee of company H, monitoring is always based on the knowledge of people knowing their own technology area. Those people notice when they see a product that is similar to a patented product.

Ways of detecting infringements

One way of finding infringements is to attend trade fairs. Also conference presentations might reveal something. According to company A, trade fairs are a good place to detect infringements. The interviewee was of the opinion that also people from the patent department should attend fairs. At trade fairs, new products are presented, and according to the interviewee, competitors are often careless. However, sometimes it might be wise to work “under cover” or use dummies. In company A, people who attend trade fairs have been advised to keep their eyes open, and also people from the patent department occasionally attend fairs. Some kind of a problem has been that competitors start to know those who attend fairs often. Photographing has also been forbidden at many trade fairs. However, good evidence has been gotten from trade fairs. For company B, trade fairs are one place among others for finding infringements. In company C, the patent engineer has not attended fairs or conferences. However, they have found an infringement even through a conference presentation. In company D, the field organization attend trade fairs. Company E also mentioned trade fairs and conferences as one source of information. According to company F, there is no systematic monitoring at trade fairs. However, people working in the R&D know their own products, and may react to infringements when attending fairs. Some active people may go thoroughly through the competitors’ products at fairs. Brochures and photographs may be taken, and possible infringements are investigated. It has even happened that a competitor has withdrawn a product at a trade fair due to an apparent infringement. Company G stated that trade fairs are places for seeing new products, and also the patent engineer has sometimes vis-
ited them. However, according to the interviewee, competitors are usually quite careful. Sometimes a dummy, such as a student, has been used. Trade fairs are also seen as a good place for networking. Also company H told that it is possible to detect infringements at fairs and conferences.

Another possible channel for detecting infringements is the Internet. According to company A, the Internet is a good source of information. For instance the web pages of system providers or component manufacturers can be used for collecting information. Both open pages and customer pages can be used, and even drawings are sometimes available. According to the interviewee, especially small players are often very careless on the Internet. Company B stated that the Internet and other public information sources may be used after losing a contract to find out more information. In company C, the Internet is used occasionally for looking for possible infringements. Web pages are followed also in company D. According to company G, web pages do not give detailed information.

For many business-to-business companies product purchases may not be a practical means for systematic infringement monitoring. However, in some cases they could be at least a way for getting evidence. Company A has sometimes ordered components for investigation. However, they think that it is an undesirable situation that a competitor's product needs to be dismounted for finding infringements. It requires a lot of resources, and therefore a big sales volume or harmful effect on competition is needed for doing that. Company D stated that if there is a suspicion of an infringement, a competitor's product can be bought if it is possible and reasonable. Also Companies E and F told that competitors' products can be purchased if needed. Company H stated that if needed, components may be purchased for investigation without revealing the buyer.

Service business can be a significant source of revenue for many companies that sell investment goods. Sometimes even competitors' products are serviced and repaired, or can at least be seen when own products are serviced. Service business could therefore provide a company with access to the competitors' products. According to company A, service business is not necessarily an effective means for the monitoring activities, but it can be used for collecting evidence. The assemblers are not as educated in many coun-
tries as in Finland, and often they have learned their skills at work. Therefore, the service organization is not necessarily capable of searching for infringements. Servicemen are generally more skilled, but they lack the interest for monitoring. However, if something suspicious is found, the information will reach the management. According to company H, service business could be a significant source of information, since also the competitors' products are serviced. However, the knowledge that is needed for the monitoring is missing. Company C told that they have had a case where a serviceman, who was servicing a machine, saw a competitor's device and detected an infringement. In company D, the service business could be a channel for detecting infringements. However, the interviewee told that no infringements have been detected in that way. Company G told that the service organization is informed if there is a suspicion regarding a possible infringement.

Competitor's patent may concern an improvement to existing technology, and could therefore give an indication of a potential infringement. Competitors' marketing material and technical information could also reveal infringements. Company A mentions competitors' patents as a source of information. According to the interviewee, it can be seen from the patent documents what kind of problems the competitors have been working on, and potentially similar products can be detected. Sometimes more detailed information can be gotten from patents than through other channels. However, a patent does not necessarily tell about the real product, but the information is only guiding. In the same way, also the marketing brochures are only guiding. The interviewee added, however, that it should be noted that even a brochure can infringe a patent in many countries. In company B, the follow-up of competitors' patents is systematic, but it was stated that the information can also be misleading. Company C mentions patent follow-up even as a main source of information. Researchers of company C follow also literature in their field of technology. Also in company D, competitors' patents are followed. Sometimes hints concerning possible infringements are found, but because patents become public so late, it is often difficult to get essential information in time. The field organization and also the patent engineer read journals. For company D, possibly the most effective way of finding infringements is to go through the competitors' marketing material. Company F told that Thomson Innovation is used for following technology trends. References to own patent applications can be seen there, and also potential infringers can be
found. If there are a lot of references to a certain patent, the patent is probably harmful for the competitor. Also licensing opportunities can be found through the same channel. Mapping of the technology in this way is systematic in company F. In company G, the patent department follows competitors' patents and marketing material. Also some people working in the R&D follow actively the patents of the competitors. Citations of patents are also followed in the patent department, but there is no time for more thorough investigation.

Other sources of information where thought to be for example customers and dealers. Company D told that in some cases it might be possible to visit the customers' premises. For company C, customer visits are the main means for infringement monitoring together with the patent follow-up. Company A mentioned that if it is found that a certain product infringes a patent, also the other patents can be checked. The most important way of detecting infringements is the competitor follow-up: it is followed what the competitors are doing on the market. Also company B told that if there is a suspicion of an infringement, patents of both parties are investigated. Initiatives for investigations come from businesses, and patent department works as a supporting function in those cases. For company H, customers are also a significant source of information. They are both able and willing to tell about differences, working as product development encouragers. Companies B and H told that infringements are often found when a contract is lost. According to company B, the technology of the competitor is revealed in the bidding process. The interviewee in company H stated that a failed salesman is an effective tool for detecting infringements, since he needs a reason for the failure. Company H also told that competitor follow-up includes some technology follow-up, and if someone makes similar products, the whole firm can be investigated. Company A stated that if an infringement is detected in some country, infringements may be looked for in other countries as well. For instance, it is desirable to be able to litigate in Germany, where the legal security is good. Company A told that so called trap patents are sometimes used. Those patents are not actively followed, but they have been drafted so that infringements can be detected easily. Those patents are directly linked to the copying of a product. Single patents are easy to circumvent, but a plurality of patents prevent copying. According to the interviewee in company G, airports are also a place where it is possible to hear something, since some people are careless when speaking on the phone.
Company G also told that companies supplying components to their customers are a source of information, as well as the old contacts, such as fellow students. Company E mentioned raw material suppliers as a good source of information. In company D, products are also sold to others than the end customers. The contract customers who use the products in their own products also follow the market. In company F, business intelligence follows competitors, and through this activity something may be found.

**Focusing of infringement monitoring**

Since the resources that are available for infringement monitoring are limited, it was assumed that infringement monitoring is focused in some way. The monitoring could be focused for example on certain key patents, the most important market areas, or the most significant competitors.

In company A, focus is on the valuable patents. As valuable patents are considered those patents that enable lower costs, better price for the product or, sometimes, better market share. According to the interviewee, if a patent protects a method that makes it possible to offer products at a lower price, the patent can be easily monitored. The own organization can detect cheaper products for instance in connection with a competitive bidding process. After that, evidence must be collected. Company B told that it is difficult to focus monitoring effort on certain patents, since what is a key patent depends on the market situation, which may change rapidly. Company C told that key patents are monitored more actively. Also the marketing people know the key technologies. In company D, there is no focused monitoring for the key patents. However, often the inventions protected by the key patents can be seen in the appearance of the product, and can thus be monitored easily. In company E, those patents that concern products that are already on the market are the most important ones, and those patents are also monitored more closely. Company F told that it is difficult to determine which patent could be a potentially infringed patent, since major part of the infringements are unintentional. In company G, everything is monitored, but monitoring is also focused. If a competitor puts a lot of effort on a certain technology area, or if there is a leap in technology, that is a reason for more effective monitoring.

According to company A, monitoring in general is global, but the actions are taken
where reasonable results can be expected. Information concerning competitors’ products is collected also from such countries where the own products are not protected by patents, but those countries are not objects for active monitoring. A large part of the world is not monitored at all. No single competitor is chased, but certain competitors are followed more closely. According to the interviewee, there is a certain competitor that is a target for more detailed monitoring, but that is an exceptional case. According to company C, patenting and also monitoring takes place where the competitors are. It is easy to say who are the main competitors and they are also monitored more closely. In company D, there is no focused monitoring on the main competitors. Company F has focus on a few companies, and samples of the products of those companies are taken frequently. In company G, China is one area that is more closely followed.

**Difficulties in infringement monitoring**

Although all the interviewed companies were of the opinion that infringement monitoring is not a particular problem, it nevertheless involves some difficulties. Company A mentioned that business-to-business brings with it some difficulties. If the patents of the company go through the whole range of products, they are deep in the products and infringements are usually detected by chance. This makes business-to-business different from business-to-consumers, where infringements could be detected by investigating products. A large number of patents leads to infringements that are not detected. It is also very difficult to make a perfect matching between the patents and the competitors’ products. According to the interviewee, extensive monitoring requires a lot of resources and the marginal utility therefore easily escapes in monitoring. Also companies B and G were of the opinion that business-to-business makes monitoring more problematic. Company B referred to the problem that for example an industrial process or device is not as “public” as a consumer product, such as a car. If the competitor's plant cannot be visited, it is difficult to monitor. Another problem is that litigation is expensive, and it is therefore only used when absolutely necessary. According to the interviewee, also “snooping” takes resources. Company C stated that the main problem in monitoring is the patent knowledge of the people in the organization. Another problem is that it is not possible to let the customers see systematic monitoring. If they saw that visits to their premises are used for infringement monitoring, they would not let the company in anymore. Company D stated that the intelligence integrated into the products is a challenge.
The patented features are difficult to detect in products, and patents are difficult to analyze. It was added, however, that most of their patents still concern structural features of the products. Another problem that was mentioned was that products are sold in a small scale, and it is difficult to arrange systematic monitoring. According to company E, the problem is in analyzing the competitors’ products and in proving that a patent has been infringed. Even if there is a suspicion of an infringement, it is time consuming and expensive to take further actions. According to company F, the internal flow of information and the lack of systematic operation are the biggest problems. The interviewee told that the R&D, patent and law departments work well together, but it is more problematic to get the people from the marketing department involved. Another problem is that those patents that are not utilized by the patent owner are difficult to monitor. According to the interviewee, in those cases it is worth considering licensing. One problem is that if there is a huge number of competitors, it is impossible to monitor. Company F used to have a few larger competitors before, but the situation has changed. According to company G, the biggest problem is monitoring of those products that can be seen only when the machine involving the patented products is not operated. Often the technical details are also difficult to see. Another problem is that sometimes the time limits might be exceeded when intervening single infringements. In company H, a problem is to communicate the scope of protection to the organization.

**Factors facilitating infringement monitoring**

There are also factors explaining why infringement monitoring is not considered problematic in general, or why it is not necessary to pay special attention to it. According to company A, it is not even desirable to reach a level where a perfect matching between own patents and competitors’ products can be made. Company B told that clear infringement usually come up. According to the interviewee, finding information is not the biggest problem nowadays. It is neither feasible to react to all infringements, since business is driven by technology, not by patents. Company C told that patents have little importance for the revenue. According to company D, the most blatant infringements are always detected. Company E told that there is only a limited amount of the core technology, which makes the monitoring easier. People also know the core products well. One factor facilitating infringement monitoring is the global organization, since the operating principles are the same everywhere. Company H told that if an infringement is
harmful for the business, it will be detected. According to the interviewee, if something is really significant, it cannot be kept secret. Also, in a large organization different people detect different things.

**Geographical differences**

It was assumed that differences in the legislation and culture might affect infringement monitoring in different countries. According to company A, collection of evidence may be more difficult in some countries. For instance in Germany, evidence can be collected quite freely, sometimes even invading the privacy, and it is not asked at courts how the information was gathered. In some other countries, unauthorized encroachment is more questionable. According to the interviewee, information collection is different in different countries. For instance in China, it feels that one should be accompanied by a notary who verifies evidence when something is detected at a trade fair. Culture and the practices for taking of evidence lead to differences. In China, it might be easy to get information, but presentation of evidence is more difficult. On the other hand, the courts are more willing to hold inspections. According to company B, infringements are taken differently in different countries. For instance in China, they do not feel guilty because of copying, since copying is generally considered as a virtue. Company B also told that Russia and China are considered the most problematic countries with regard the infringement monitoring. According to company C, legislation might affect the ability to monitor in some countries. The interviewee in company E told that in the USA one has to be careful with patents. According to the interviewee, there are geographical differences also in Europe. A problem is that the local legislation must be known, for instance how the scope of protection is interpreted. Company F told that China is an interesting country. The legislation is good, but the legal usage is problematic. According to company G, those areas are easier to follow where there is own commercial activity. China is considered as an easy country to monitor, since the Chinese think only the price and talk about competitors’ products. Also the interviewee in company G told that those countries are difficult to monitor where there is only little own commercial activity. Personal contacts are also a factor affecting how the infringement monitoring works in different countries. According to company H, there are no geographical differences in infringement monitoring and finding evidence is not a problem.
Changes over time

The companies were also asked whether there have been changes over time in the ability to detect infringements. According to company A, it could be argued that monitoring has become more difficult, because for instance construction places are better guarded nowadays. The interviewee told that they could be visited quite freely before. In contrast, company B was of the opinion that nowadays the companies cannot be as closed as before, and therefore it is more difficult to keep infringements secret. According to company F, nowadays there is a huge number of competitors. Before there used to be only a few competing companies, which meant “a balance of terror”. The interviewee in company D was looking into the future and told that present competitors are known well, but new ones might come for instance from China.

Triggers for intensified infringement monitoring

Some of the interviewees brought up things that give a reason for being more alert. According to company E, a lost customer is a trigger for monitoring. The interviewee told that it also seems to apply vice versa, since warning letters are often received after a won contract. For company F, if a patent has been opposed and kept in force, the opponent is a potential infringer. It was added, however, that a rational firm considers options and tries to avoid infringements. Company G told that if a competitor sells their product at a lower price, that is a reason for being suspicious. Also launching of a new product is a reason for being alert. If there is an indication of an infringement, the own personnel is informed.

Infringements in other fields of business

The scope of protection of some patents might extend to technology that is outside the business of the patent owner. The companies where therefore asked whether they are interested in infringements that take place outside their core business. The interviewee in company A stated that if there are infringements in other areas of business than the own core business, infringements are detected only by chance. It is possible that some of the inventions may be utilized in other areas, but that kind of infringements and license revenue are not actively searched. The representative of company B told that they are not interested in utilizing patents outside the own business, since patents are not meant for braking development. Company C would be interested in infringements in other fields.
of technology, if they had that kind of patents. However, at the moment there are no that kind of inventions patented. Company D stated that they have not had any cases where actions have been taken against infringements in other fields of business. Company F would take actions also against infringements in other fields of business, if such infringements were just detected. Company H does not monitor other fields of business, but if something is detected, it is investigated whether it is possible to benefit from the infringement.

5.6.6 IPR knowledge in the interviewed companies

It seems obvious that knowledge of the own patents is an essential part of the infringement monitoring of patents. Besides that, at least some basic knowledge regarding the patent system is needed to be able to understand what a patent protects. The interviewees were therefore asked to describe how the new patent applications and granted patents are reported to those who are involved in the infringement monitoring, and what kind of training in IPR matters is given to the employees.

General IPR knowledge and training

In company A, some training in patent matters is given to the employees. A very cursory training is given to the project managers. Some contact persons in the subsidiaries may have a reasonably good understanding of patent matters. In company B, the IPR department can give training to anyone, but with different content. According to the interviewee in company C, patent knowledge in the organization is relatively weak. This has been noticed in the form of simple questions. Training in patent matters is given to those who are interested, since it is not considered meaningful to force anyone who is not interested to participate in training. Only a small part of the organization has gotten training in patent matters. According to the interviewee, teleconferences will be considered as a means for giving training in the future. In company D, training is mainly given to young product developers who are potential inventors. Also the representative of company D thought that the patent knowledge in the organization is relatively weak. Only a small percentage of the personnel knows even the basics about patents. It was estimated that there are a few people in each product segment that have some patent knowledge. Inventors form one group of people who knows patents well, and there are also a few people in the top management with a better patent knowledge. Since patents are also
used in marketing, also the marketing people have some knowledge about patents.

In company E, researchers and sales and marketing people are trained in IPR issues. IPR training is given according to the need, and the marketing people also ask for training. They are told about the necessary agreements, about patents and patent applications, and about what can be revealed at each stage of the patenting process. Also strategic thinking regarding for instance where to file is taught. R&D employees of company E are mainly told about the internal processes, how patents are read, and what does a patent protect. Training is not so often offered, but it is rather given when being asked for. Patent applications are often thought to be granted patents, which shows that the level of patent knowledge is in general not very high. In company F, IP seminars are arranged for the employees. The previous one was five years ago, but the aim is to arrange one on alternate years in the USA and in Europe. The participants of these IP seminars are mainly people that are responsible for the R&D or product lines, but there are also participants from the sales. The seminar takes one and a half days, the R&D and product line managers taking part in the whole seminar, and the sales being obliged to take part to half of the seminar. In company G, there is no formal system for IPR training, but general information is given to the employees. Training is given at those locations where the R&D activity is high. The employees of the R&D can usually read patent documents, but in the sales the understanding is not that high. According to the interviewee, there are a lot of false alarms regarding infringement suspicions. According to the interviewee in company H, patent knowledge in the organization is poor. There is some training that is mainly aimed at those who work in the R&D, but to some extent, training is also given to other employees of the organization.

**Knowledge regarding own patents**

In company A, the employees have been advised to look for own patents at the Espacenet service. In company B, there is an internal patent database, which is also used by the key persons. According to the interviewee, however, the employees report infringement suspicions that relate to lapsed patents. Also in company C, all patents are in a public internal database. In company D, the patent database can only be accessed by a few people. Company E has had a public internal patent database, but after the implementation of a new patent management program, only some people can access the data-
base. However, implementation of a web access to the patent database has been planned. Also in company F, a public patent database has been planned and will be implemented in the future. Certain parts of the database will be accessible to everyone in the organization. In company G, all public patent applications and granted patents can be found on the intranet. Company H have patent lists and links on the intranet, but according to the interviewee, only few people in the organization are aware of that.

The representative of company C mentioned that there is no systematic informing regarding own patents, but active inventors may be informed about new patents. Also the interviewee in company D stated that there is no active informing regarding own patents. Company F uses printed patent cards that contain the basic information about one patent family on a single sheet of paper. Those cards are copied to the salespeople, who also have some knowledge regarding own patents, although not very good. According to the interviewee, it is an important issue in infringement monitoring that things are made easy, and the patent cards serve that purpose. The business units are always informed about new patents, but it is unclear how this information is communicated further. Company G circulates patent publications to product managers and people working in the R&D.

Company E stated that the decision making process in the patent matters has an important role in making those people that are involved in the infringement monitoring of patents to know the patents. The owners of the patent portfolios are senior R&D managers, and they take part in the decisions concerning patenting. There is also a product line manager from the marketing and a technology specialist from the R&D in each team. The portfolios are evaluated annually, and the people who are members of the evaluation teams know the patents in their own portfolio. Also company G has patent teams including members from product development and product management. Portfolios are evaluated annually, and the team members have good knowledge of the patents in their portfolio. The interviewee in company H told that they have paid attention to the decision making process. Before there used to be no systematic way of doing patenting decisions. Nowadays there are technology teams that evaluate their own portfolios, and some effort is thus required from the team members. The maintenance of the patent portfolios is an important part of the infringement monitoring, since that reminds the
members of the patent teams for what patents there are in the portfolios. At first, there
where only people working with technology issues in the teams, but nowadays also the
purchasing department is involved. According to the interviewee, the next step is to try
to get the sales into the teams.

5.6.7 Ability to detect infringements and patenting decisions

The companies were asked how the ability to detect infringements affect their decisions
regarding patenting. Company A stated that the ability to monitor a patent is sometimes
discussed when patenting decisions are made, but it is not always an important issue.
Sometimes it affects the decisions, but patenting is mainly dominated by the markets.
Patents are applied for at large or forthcoming market areas, and sometimes also in
those countries where manufacturing takes place. According to company B, it is always
difficult a decision whether something is kept as a business secret or patented. Monitor-
ing issues are sometimes discussed when deciding whether to patent some invention,
but it would be “phlegmatic” to not patent because of difficult monitoring. In company
C, the ability to monitor affects to a certain extent patenting decisions. However, patent-
ing is usually important because there are production plants in several countries. Al-
though the employees in Finland do not frequently change their employer, in many
countries that is more frequent. It is not possible to keep things secret, and therefore
most inventions are worth patenting. In that way, competitors can be prevented from
patenting when an employee “defects”. Company D considers the ability to monitor
when making patenting decisions. If it is difficult to monitor, the invention is not neces-
sarily patented. Often these kind of inventions are difficult to copy, such as computer
programs and methods. Also in company E, monitoring is considered when patenting
decisions are made. The basic principle is to not file if it is not possible to analyze the
competitor's product for discovering the infringement. The aim is to formulate the
claims so that infringements can be detected. Company F stated that also processes are
patented, even though they might be difficult to monitor. According to the interviewee,
the possible infringer has a huge risk if the infringement is revealed. Also, the employ-
ees might change their employer, and in those cases there is a risk of the competitor pat-
enting the invention. In some cases the reversed burden of proof may be advantageous
and favors patenting of a manufacturing method, even if it is not possible to see which
method is used by a competitor. In company G, the basic principle is that an invention is
not patented if an infringement cannot be detected. Manufacturing methods and components inside a machine are that kind of inventions. Often inventions are kept secret, but in practice there are no secrets, since the inventions become public when a machine is delivered. The aim is to formulate the scope of a patent so that infringements can be detected. In company H, monitoring has little significance on the patenting decisions due to the purpose of the patent portfolio. The interviewee of company H was of the opinion that infringements are always detected through some channel. Inventions can neither be kept secret, since they are always revealed if products are delivered. Manufacturing methods are important to patent, since they are often transferred to other countries for use. The main question to consider when patenting decisions are made is whether the invention will be used and transferred to somewhere.

5.6.8 Involvement of top management

The involvement of the top management in the decision making concerning patents could potentially tell something about the IPR culture in the company. Therefore, the interviewed companies were asked to tell how the management is involved in the decision making. In company A, the top management is interested in patents. Even at the level reporting directly to the CEO, there are people who know about patents. Infringements are reported to that level, and even instructions are sometimes asked from there. Also in company B, top management is committed to patenting, and there are enough resources to use for the IPRs. In company C, the top management is involved in patenting issues. The company has a council where patent issues are presented, and the chairman of that council is also a member of the executive group. In company D, the final decisions on patenting issues are taken by a technology management team, which is chaired by the CEO. According to the interviewee in company E, the top management is involved in patenting decision, and sometimes even from a too high level. The IPR issues are under the R&D manager who reports to the CEO. Typically the R&D managers of segments are involved in the decision making. In company F, the top management is interested in patents, and innovation is a function of its own. The importance of patents has grown. The interviewee in company G told that the top management is involved in decision making if infringements are threatening sales. Also in company H, the top management is interested in patents. The significance of patents is understood, and there is a will for growing the patent portfolio.
5.6.9 Monitoring of competitors’ patents

To find out what the interviewed companies do to avoid infringing of the patents of their competitors, they were asked how they monitor their competitors' patents. All the interviewed companies have some kind of system for monitoring the competitors' patents. In company C, results of the competitor follow-up go to the researchers and to some people on the business side. This information goes also further via these people. Company F uses a data mining application for patent searches. The interviewee stated that unlike the search for infringements, avoiding of infringements is always active. The patents found by the patent department are sent to the R&D department. In company G, patent lists are sent to the patent teams and also to project managers, if the patents relate to an on-going R&D project. In company H, patents found in competitor follow-ups are sent to the technology areas concerned, and different search profiles can also be made for interested people.

5.6.10 Competitors’ monitoring activities

The companies were asked what they believe their competitors are doing for detecting patent infringements. Company A believed that competitors are relatively active in following their own patents and patenting activity is also increasing. Because of being a forerunner and having original technology, the company has been able to avoid patent thickets. In general, it is assumed that those firms that are active in licensing are also more active in the monitoring of their patents. The interviewee believed that systematic monitoring is possible only in few businesses. According to the interviewee, possibly a pharmaceutical product development firm that licenses patents could be able to do this. The interviewee found it likely that only very few firms have a dedicated network of people specialized in infringement monitoring. Company B told that it would be nice to know what the competitors do. The interviewee believed that also the competitors use common sense in their infringement monitoring. Company C had a feeling that competitors monitor their patents. As an indication of this was that the competitors file oppositions. The representative of company D was sure that the competitors follow their patents, but the company had not been approached in that regard. The competitors of company E seem to monitor actively, and oppositions are filed on both sides. Company F assumed that in many firms it is common to do mainly freedom-to-operate investigations,
and passive monitoring is enough for most of the players. The interviewee believed that in some companies the owners might put pressure on the firm to monitor their patents. For instance, a bank as an owner in a firm that licenses its patents could require active monitoring. According to the interviewee, a firm that is an active licensor should also be active in monitoring. The experience of company G was that the Americans are eager to send warning letters, meaning that they also monitor their patents. However, the cases are often not that strong. Company G has not yet experience of the Chinese. The representative of company H thought that the competitors are as bad in monitoring as themselves, and there is no active monitoring. However, warning letters are sporadically received from the competitors.
6 Discussion

6.1 Use of patents and importance of infringement monitoring

As it was assumed already when selecting the companies for the interviews, the main purpose of patenting for most of the interviewed companies was protection of their own production. This is well in line with the results of the surveys that were presented in the literature review.\(^{225}\) Licenses were sold only sporadically. Half of the interviewees also mentioned that they use patents in marketing. What was surprising was that one of the companies saw the maintenance of freedom-to-operate as the main goal of patenting, and one of the companies used patents mainly for showing the ownership of their technology in subcontracting. However, the company that claimed they are using patents mainly to ensure that the freedom-to-operate is maintained, seems to have a lot of patent families that include several family members. That indicates that the freedom-to-operate cannot be the only goal for most of their patents, since even one published patent application is sufficient for that purpose. One of the companies mentioned that if they were an active licensor, they would probably monitor the market more actively to find potential licensees. The interviewee did not explain what is the reason for not doing that. Possible explanations could be that there is no effective market for the inventions, or the value of the patents is so low that it does not justify intensive monitoring. Since the use of patents in the interviewed companies is mostly based on the right to prevent others from using the patented technology, it could be expected that all the interviewed companies, except for companies F and H, should be relatively active in their infringement monitoring to be able to secure the benefit from their patents. However, none of the interviewed companies seemed to have a systematic approach to infringement monitoring. What was not asked during the interviews was which portion of the inventions protected by the patents are in use. Earlier studies suggest that a large portion of the granted patents is not in use,\(^ {226}\) and if that is the case also with the interviewed companies, that could be a factor explaining the behavior of the companies.

Majority of the interviewed companies thought that most infringements are unintentional, but also opposite answers were gotten. Since there is no way to find the absolute

\(^{225}\) See chapter 3.2.

\(^{226}\) See chapter 3.2 for details.
truth about whether a detected infringement has been intentional or unintentional, let alone those infringements that have not even been detected, it is impossible to say whether the estimates of the interviewees were correct. It is possible that the differences in the answers of different interviewees might reflect rather their personal views than differences between different fields of technology. The trust of the interviewees in fair play is likely to be an explaining factor for the lack of infringement monitoring. If it is believed that most competitors do not infringe intentionally, it might not be reasonable to put a lot of resources in infringement monitoring. Most of the interviewed firms were also of the opinion that smaller companies are more likely to infringe patents than larger companies, both intentionally and unintentionally. This is also a factor that speaks for lower optimal monitoring effort. If infringements take place in a small scale, the recoverable damages are small, whereas the costs of settlement or litigation do not necessarily depend on the extent of the infringement. The number of detected infringements has been surprisingly low taking into account the large number of patents owned by the interviewed companies. Again, it is very difficult to say whether this is the truth, or have there been a lot of infringements that have not been noticed. The result is very different from that reported by the Australian survey. One explaining factor is definitely that in the Australian survey inventors - rather than patent professionals - were interviewed, and their knowledge regarding what constitutes an infringement was probably very weak.

The interviewed companies were not very concerned about the difficulty of detecting infringements when doing patenting decisions. Two different approaches could be found: some of the companies had a principle that if an infringement cannot be detected, then a patent application will not be filed, and some of the companies had a principle that if the invention is important, application is filed despite of assumed difficulties in the detection of infringements. In practice, the difference is probably not very big, since only a small share of all inventions fall into this category. The ways of using patents may have some influence on which of the two approaches is used, since those companies that told they use patents mainly to maintain freedom-to-operate or to protect themselves against subcontractors paid little attention to the ability to detect infringements.

227 See supra note 211. Over 28 percent of the Australian inventors that responded to the survey reported that their invention has been copied.
6.2 Responsibilities and ways of monitoring

What is very interesting is that the responsibilities regarding infringement monitoring were very poorly defined in the interviewed companies. Only companies A and H gave an impression that the responsibility for the infringement monitoring clearly belongs to the IPR department. In company C, it seemed to be clear for the interviewee that business units are responsible for any actions, but it remains unclear whether the people in the business units know their responsibilities. All the interviewed companies claimed that they have some kind of a written IPR policy, which can be seen as an indication that patent management is somehow taken into account in the companies. However, none of the companies had any written guidelines for infringement monitoring. This is an interesting finding when taking into account that all the interviewed companies recognized the importance of infringement monitoring. Possible explanations are that the companies find infringement monitoring so straightforward that no guidelines are needed, or then the importance of infringement monitoring is in reality not considered as high as was claimed by the interviewees. Interestingly, despite of being one of the top patent filers in Finland, one of the companies found themselves as such a small player that there is no need for any written instructions. The interviewed companies seemed to be quite unanimous in that the patent department has very limited resources for infringement monitoring. As a consequence, they believed that the people who work in the customer interface are in a key position regarding the detection of infringements. Whether those people are salespersons or product managers, depends probably on the organizational structure of the company and the field of business.

Although all the interviewed companies confirmed that trade fairs can be a place for detecting infringements, the importance of trade fairs varied from company to company. Company A pointed out the trade fairs as a way of detecting infringements more clearly than the other interviewed companies. Also company F reported some good results, but they admitted that it is more because of some active people, not because of systematic monitoring. The importance of trade fairs may depend on the field of technology and the culture in that particular business, but one factor explaining differences may be that in company A also people from the patent department had attended fairs, and other people attending fairs had been advised to keep their eyes open. The monitoring at the trade fairs was thus more systematic than in the other companies. A problem with fairs
may be that competitors become cautious if they see someone actively investigating their products, as two of the companies mentioned. Conferences were not considered as important as fairs. This is an expected result, since at trade fairs concrete products, which may directly infringe a patent, are presented. A conference presentation cannot infringe a patent as such, but can only give an indication that a product or process that has been developed by a competitor might infringe a patent.

What comes to the Internet, the views of the companies seemed to vary. One of the companies told that even very detailed information can be found, whereas one of the companies stated as a problem that the information on the Internet is not detailed enough. This is probably related to different ways of doing business in different fields of technology, or to the carelessness of certain companies. The Internet could also be assumed to be more useful for those companies that can easily identify their most important competitors. If there are only a few significant competitors, more systematic monitoring on the Internet is possible.

Product purchases were mentioned by most of the companies as a means for finding infringements. For many of the interviewed companies, it is in practice not possible to buy a whole product from a competitor. Therefore, it is understandable that there is no systematic program for buying products from the market for finding infringements, but product purchases are rather used for confirming an existing suspicion. The costs of purchases were not mentioned as a problem, but the need for resources was considered as a problem by at least one of the interviewed companies. The price of a single component is probably seldom a problem, if it is likely that an infringement can be found. The price of a whole product could in many cases be too high, but in that case also the amount of work needed for analyzing the product and for verifying the infringement would be a significant problem.

As the service business is a significant source of revenue for many of the interviewed companies, it was a little bit surprising to notice that the service personnel was not very actively used for finding infringements. Many of the companies saw there a lot of potential, but it seems to be a problem that the servicemen lack the training and motivation for detecting infringements. The service business is utilized in some of the companies
for collecting evidence, which is probably more easier, since at that stage it is known what is looked for. If a serviceman was doing more general monitoring, he should possibly know tens or hundreds of different patents, which is probably not reasonable to expect. However, it could be possible to choose some key patents and use the service personnel for monitoring those patents.

Competitors' patents seem to be widely followed in the interviewed companies. The advantage of patents is that they often contain more detailed information than for instance marketing material. It was considered as a problem that a patent does not necessarily reveal the actual design. This is understandable when taking into account earlier studies, according to which a large part of patents is not actually used for protecting any real existing products. In addition to that, some patents are even used for misleading competitors. However, patents probably give a good overall picture of the competitors' activities. One of the companies utilized citation analysis to find patents that are most likely infringed. Both patents and competitors' marketing material were mentioned even as the main sources of information. One reason for the importance of patent information is probably the easiness of using the data. Patent information is easily available through both official and commercial channels. Also, the form of a patent document is well standardized, which makes them easy to read. Especially for a patent engineer, patents are probably the most natural source of information. In fact, it is possible that the views of the interviewees are biased due to their background, and in the other parts of the organizations the value of patent documents as an information source is maybe not considered as high as in the patent departments. One of the interviewees stated as a problem that patents are published so late that it is often difficult to get the essential information in time. This comment is a bit difficult to understand, since patents are in most cases published 18 months after filing. The maximum gap between the launching of a product and a published patent is thus one and a half years, and in many cases a patent can be published even before the product. If a competitor's patent concerns a modification of an infringing product, and the patent application is filed after the launching of the original product, the infringement may continue for years before being revealed by the patent document. However, since the damages can also be collected retroactively in most cases, it is difficult to see any particular problem in the publishing time of patent docu-

See chapter 3.2.
The use of other sources of information varies from company to company. The means that are available for monitoring depend both on the operational environment of the company and the personal relationships. Whether the customers are willing to tell about infringements is probably much dependent on the ways of doing business in that particular field of technology. It seems that lost contracts are an important trigger and motivator for looking for infringements. This raises the question whether the employees could be rewarded for finding an infringement? The sales network could be an effective tool for finding infringements, but it requires that the goals of the dealers and the manufacturers coincide. If an infringement is found, it is important to check whether the same product or firm infringes other patents. It is also likely that the same product is sold in other countries and infringements of the patents in the same patent family can be found, which may allow selection of the most suitable place for litigation.

### 6.3 Focusing and difficulties of monitoring

The interviewed companies had different approaches to the focusing of infringement monitoring. Monitoring can be focused on certain patents on the basis of the importance of the invention, the market situation, or the ease of monitoring. One trigger for intensified monitoring is a leap in technology or a competitor’s focus on a certain R&D area. One of the companies told that they focus on patents protecting products that are already on the market. It is also possible to focus the monitoring effort on those patents that are most likely to be infringed. However, it was considered difficult to know what are the key patents, and what are the patents that are most likely infringed, since the market situation constantly changes and many infringements are unintentional. All these different approaches seem reasonable. If the purpose of patenting is to protect own market share, it is wise to concentrate the monitoring on the patents protecting products that are already on the market. If more direct income is looked for, it could be reasonable to focus on patents from which royalty income could be expected. Only a weak focus on certain competitors or market areas could be detected among the interviewed companies. An expected result was that the monitoring takes place mainly where the competitors are located, or where the patent holder itself is active.
What comes to the difficulties in infringement monitoring, it could be said that the interviews confirmed the initial assumption that business-to-business differs from business-to-consumers, since purchasing of products is more difficult. However, another important factor is probably that the products are often complicated and involve several patented features. This is not necessarily characteristic to business-to-business only, since for instance a mobile phone can involve tens or hundreds of patents. On the other hand, a pharmaceutical product can be based on a single patent, which would make the monitoring much easier. In general, the monitoring as such is not the problem, but rather the resources it requires. Many of the interviewed companies also confirmed that it is a problem to get the whole organization involved in infringement monitoring. Although in a large organization it might be challenging to communicate the scope of protection of the patents to everyone, there is also the benefit that different people detect different things. One of the companies stated that one problem is the huge number of competitors. Many business-to-business companies that manufacture complicated products may have only a few competitors, which can make monitoring easy for them. Most of the interviewed companies have mainly patents that protect physical features of the products, and they can thus avoid the problems related to patents concerning intelligence that is integrated into the products.

The interviewees agreed on that those infringements that are really harmful for the business will be detected. It was also believed that the core products and patents are known, and infringements will therefore be detected. It seems to be acceptable that all the infringements are not detected. This indicates that none of the interviewed companies has a very aggressive patent strategy, where patents are actively used for generating revenue. It is certainly true that in many cases the costs of litigation, or even the costs of a settlement would exceed the royalties or other benefits that could be received if an infringement was detected. However, the importance of those patents that are not monitored could be questioned. If it is known beforehand that no actions will be taken against infringers even when infringements are detected, are the patents really worth the maintenance costs? Of course, a patent can work as a deterrent even if it is not enforced.

Some of the interviewees saw differences between infringement monitoring in different countries, but it is very difficult to say anything generalized about that. For instance,
China was seen both as a difficult and an easy country in terms of infringement monitoring. It is likely that the experienced differences are explained by different experiences concerning different cases, and not so much by differences in the culture and legislation in different countries. The problems the interviewees brought up were more related to the enforcement than to the actual monitoring. The difficulty of infringement monitoring is probably affected by how the company is present in a certain country. A reason for not having major problems in foreign countries can be that the interviewed companies have subsidiaries in many countries, which could be expected to make the infringement monitoring easier. A small company needs to rely largely on its sales network, which would probably make things more complicated. The companies had also different views concerning changes over time. Some interviewees were of the opinion that companies are more closed today, and some were of the opposite opinion. This can again depend on the field of business. On the basis of the interviews, no fundamental changes can be seen, but the changes over time seem to be related to the ever-changing competition situation.

The attitudes of the interviewees towards infringements in other fields of business strengthens the view of passive patent strategies. None of the companies looked actively for infringements in other fields of technology, although most of the companies admitted that they would be interested in royalties if they detected an infringement. The answers are understandable, since it would probably be in most cases more difficult to find infringements that take place outside the own business. One of the interviewees seemed to have an ideological view, and claimed that they would not prevent use of their patents in other fields of technology since patents are not meant for braking development.

6.4 IPR knowledge and training

It seems that the patent knowledge in the interviewed companies is generally quite poor. It is also varying, since some of the employees have no knowledge at all, while some may have relatively good knowledge. The focus of training is mainly on product developers and researchers, although also marketing people are trained in some of the companies. In some companies training is given mainly when being asked for. This approach could be criticized. Those people that do not have even the basic knowledge of patents are unlikely to realize that they would need training, and may therefore be left
without any training. As shown in the Australian survey,229 according to which many inventors thought that the patent office would guard their patent rights, patent knowledge can be very low even within the inventors, let alone those who have never notified their employer of an invention. It is probably wise to focus the training on the R&D personnel, since that helps to ensure that the company is notified of inventions, but if the whole organization is to be involved in infringement monitoring, they should be provided at least with a basic training in patent matters.

Also the knowledge regarding the own patent was varying. Only in half of the interviewed companies there is an internal patent database or patent listing that can be accessed by anyone in the organization. It should also be noticed that the existence of such a database does not mean that the employees are aware of it or use it. Quite a lot of enthusiasm is required from the employees, if they are required to use public databases to get knowledge of the patents hold by the company. None of the interviewed companies informed systematically a large part of the organization of own patents, but most of the companies circulated information regarding new patents to certain groups of employees. Some of the companies pointed out the importance of the decision making process as a means for informing employees of new patents. This is probably a very effective way to distribute information. If patent documents are circulated just for giving information, it is probable that only very few will take the time to read them. If they are making the decisions concerning the patents, they will certainly remember the inventions better.

229 See supra note 216.
7 Conclusions and recommendations

It could be concluded that most of the interviewed companies have paid little attention to the infringement monitoring of their patents. The interviewed companies seemed to be unanimous in the opinion that it is impossible to systematically monitor the patents for infringements. This might well be true, but it raises the question whether all the patents the companies have are really worth the resources that are used for filing the applications and maintaining the patents. Since the patent strategies of the companies were not studied in this thesis, this question cannot be answered here. On the basis of the interviews, it is difficult to conclude what would be the optimal level of monitoring effort. However, most of the interviewed companies could clearly have a more systematic approach to infringement monitoring. Systematic monitoring might not be needed, but the decisions could be taken more systematically. The companies could discuss their goals, and base their monitoring strategies on systematic analysis, as most of the companies do with their patenting decisions.

One particular area where there seems to be a lot of room for improvement is the patent knowledge and training of the employees. It is quite a strange approach to train only those employees who specifically ask for training. It is likely that it is waste of time to train people who has no motivation for training. However, in patent matters there are probably plenty of people who do not have even a basic understanding of patents, and who can thus not even know that they or the company could benefit from training. Before it can be expected that the employees will find out what patents the company owns, they need to receive some basic training in IPR. The information concerning the own patents should also be easily available. If the employees need to search the public databases that are provided by patent offices for finding information on the patents owned by the company, only the most active people will do that.

In a company with hundreds or thousands of patents, it is definitely not reasonable to expect that the whole organization could know all the patents. Therefore, the responsibility for the infringement monitoring should be divided. To a certain extent, this probably happens automatically, but a more effective way would be to clearly share the responsibility. The most effective and efficient way could be the practice to involve those
people who are responsible for the infringement monitoring also in the evaluation process of the inventions. When the members of the evaluation teams have to put some effort into the evaluation of the inventions, they will know the patents better. A drawback of this method is that only part of the organization can be involved. If too many people take part in the evaluation process, it is both inefficient and involves the risk of information leakage. Also, for instance the service personnel cannot be involved in this way. Therefore, there have to be also other ways to communicate the content of the patents to different people in the organization. An important thing is to get the people who work in the customer interface to take part in the infringement monitoring, since they often have the best chances to detect infringements.

What are the most effective ways of monitoring probably depends on the field of business and the competitors of the company. The use of patent documents has its weaknesses, but because it is relatively easy to systematically monitor the patents of the competitors, patent monitoring should definitely be one tool that is used in infringement monitoring. Citation analysis can be a helpful tool in patent monitoring. Attending trade fairs is another method that should not be overlooked. Companies could consider whether it is worthwhile to send a patent engineer to the most important trade fairs, or at least instruct the people who attend the fairs to keep their eyes open for detecting infringements. The marketing material of the competitors should also be utilized. If the amount of the material is reasonable, this can possibly be done even by a patent engineer, but in most cases it could be part of the general competitor follow-up. In that case, the people doing the follow-up should have a basic knowledge of patents and know how to report suspicions. Systematic monitoring on the Internet is very difficult, but if the number of competitors is limited, regular checks of their homepages can be useful. For many companies, the service business could be an effective channel for detecting infringements, but it does not seem to be actively used. Infringement monitoring through the service business definitely has its challenges, for instance in the form of the knowledge of the service personnel, but these obstacles could probably be overcome in many cases, at least partly. An essential requirement is training of the personnel, but also good monitoring strategy should be developed. For a company with a large patent portfolio, it is not possible to monitor all the patents through the service business, but focusing on some patents would be needed. The service personnel would probably be best utilized
when there is already a suspicion of an infringement and more information is needed.

Focusing of infringement monitoring was not widely used in the interviewed companies, at least not actively. Since the resources needed for the infringement monitoring seems to be a problem, it could be assumed that focusing of the infringement monitoring could be useful. The patents could be classified according to their importance and use, and reporting of new patent applications and patents could be concentrated on those patents that need more attention. Especially if the service business is utilized in the monitoring, it is important that the employees are not overloaded with information. Focusing on certain competitors may also be worth considering in some cases.

Below are presented some suggestions for effective and efficient infringement monitoring. The recommendations are based partly on the best practices found in the interviewed companies, and partly on the obvious deficiencies in their monitoring activities.

1. Define the goals of the infringement monitoring based on the patent strategy of the company.

Monitoring requires resources, and it is therefore important to assess the need for infringement monitoring. For instance, if the patents are used for blocking, and especially if license revenue is actively sought, it is important to be able to detect infringements.\textsuperscript{230} If the patents are in internal use, less emphasis needs to be put on the infringement monitoring.

2. Define the responsibilities for the monitoring.

Someone needs to have the responsibility for the infringement monitoring. It may be the patent department, or the owner of a patent. In any of the cases, the responsible person needs to know that he or she is in charge of the monitoring.

3. Define the people who are in the best position to detect infringements.

This depends on the field of business, but usually the people who are in the customer in-

\textsuperscript{230} See chapter 3.3 for the definitions of the different ways of using patents.
terface are in the best position to detect infringements.

4. Give adequate training to those people who do the monitoring.

It is important that the people who are supposed to detect infringements know at least the basics of the patent system. In addition, they need to know what is patented in the company.

5. Involve the people doing the infringement monitoring also in the evaluation process of the inventions.

Whenever possible, it is good to involve the people who are supposed to detect infringements already in the patenting process. This an effective way to keep them informed on the patents the company owns.

6. Make the patent databases accessible also to those employees who do not have the main responsibility for the monitoring.

In a large organization, there are many people who might detect something if they are just given a chance for that.

To summarize, the need for the infringement monitoring of patents varies greatly from company to company. Also within a company, some patents may need more attention than others. In some cases, infringement monitoring may be completely unnecessary and the lack of monitoring can be justified. However, the lack of monitoring should always be the result of an informed decision, and not the result of poorly defined responsibilities and processes.
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