Management and evaluation of patents and trademarks

Consultants' Analysis Report

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for

The Danish Patent and Trademark Office

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1. Overview

First, this chapter will give a brief summary of the conclusions of the analysis report. The opinions of the consultants regarding the potential for continued work with the model will then be outlined.

1.1. Summary

As a direct follow-up on one of the hypotheses in a publication of the Ministry of Trade and Industry from 1999 entitled "New Trends in Industrial Property Rights", the Danish Patent and Trademark Office together with the Danish Commerce and Companies Agency have initiated a project for the purpose of finding suitable valuation methods for use in industrial enterprises in order to focus on the strategic management of their patents and trademarks.

Three data samples were collected for this analysis work. First, 15 Danish and foreign companies were interviewed concerning their management, valuation, reporting and future requirements in relation to patents and trademarks. The fact that these companies have placed their experience and expertise at our disposal has been of immense importance for the project. The following companies were interviewed:

- Carlsberg A/S
- Coloplast A/S
- Danisco A/S
- Egmont Gruppen
- Goldschmidt AG
- GN Resound
- MAN B&W Diesel A/S
- Mannesmann AG
- NEG Micon A/S
- Neurosearch
- Novo Nordisk A/S
- Rockwool International A/S
- Saab Aerospace AB
- Velux
- AB Volvo

Next, a focus meeting was held with Danish investors, consultants and patent agents in order to compile their experience and attitudes with regard to management, valuation and reporting concerning patents and trademarks. Finally, a web-

based survey based upon an electronic questionnaire was performed among the 1,000 Danish companies that are most active in the field of patents and/or trademarks.

The results of the analysis work, which was performed by Ernst & Young and Ementor, are presented in this Consultants' Analysis Report.

The results from the data samples taken confirm the assumption expressed in the 1999 publication to the effect that Danish companies generally do not manage their patents and trademarks in a strategic way. However, major Danish companies do formulate independent strategies for their patent and trademark portfolios, although there is not always any general relation to an overall business strategy. Opposite to this are the perceptions of the investors, analysts, etc. to the effect that it is indeed important that strategic management of the patent and trademark portfolios of these companies be conducted.

In general, Danish companies do not perform quantitative or qualitative valuations of their patents and trademarks. Valuations are performed only in connection with purchases, sales, licensing agreements, etc.

With regard to reporting, internal reporting is generally performed within the companies; and the aspects typically reported on are infringement proceedings, number of rights, number of applications, expenses and new inventions. Reporting is, however, not performed systematically, but rather in an ad hoc manner.

External reporting is performed to a limited extent; and the aspects reported on are number of rights, number of applications and expenses. The companies give two reasons for why they do not perform additional external reporting:

- the information is not deemed to be relevant for the users of the financial statements
- the information is regarded as being too sensitive for the company to disclose it to the public.

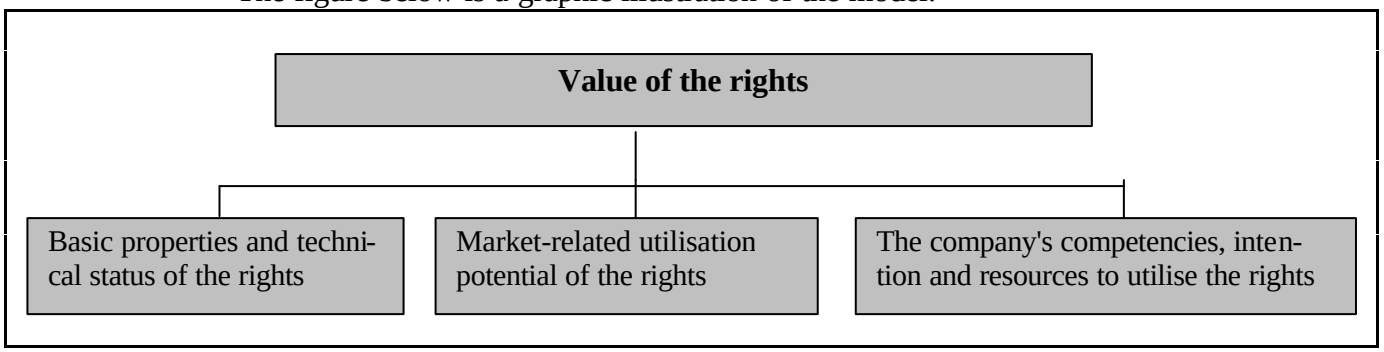
Opposed to this view are the general attitude of investors and others to the effect that the information disclosed in annual financial statements with regard to companies' patents and trademarks is insufficient, and that it is important to have additional information in order to properly assess the potential of a company.

The valuation model, which has been prepared on the basis of the results from the three data samples collected, consists of three columns:

- basic properties and technical status of the rights
- market-related utilisation potential of the rights
- the company's competencies, intention and resources to utilise the rights

The model is a qualitative valuation model, which is aimed at an assessment of an individual set of rights. The model was developed for patents and trademarks.

The figure below is a graphic illustration of the model:



A number of evaluative factors have been formulated under each of the three columns. Collectively, these factors comprise the value of the rights concerned.

The result a company obtains by performing a valuation by the use of the model is a manifest indication of those patents and trademarks that do have a strategic value for the company. Moreover, insight is obtained into whether the company is utilising its rights to the maximum or whether additional value could be extracted from them. The result can be used in further strategic planning, hence the company can use the model as a point of departure for drawing up goals for its patent and trademark portfolio.

A number of potential applications and benefits as well as drawbacks and areas for potential additional development have been found in relation to the model.

Potential application and benefits of the model:

- It allows strategic management of a company's patent and trademark portfolio
- It can be used as a basis for external reporting
- It can be used for purposes of deciding whether to patent an invention
- It supports narrative presentations of the individual rights
- It functions as a checklist in purchase/sale situations
- It can be used to evaluating a competitor's rights
- It can be used for risk assessment in a monetary valuation, for example by using the DCF method (Discounted Cash Flow)
- Its assessment factors are supported by an empirical basis.

Development possibilities and drawbacks of the model:

- The model can be used in connection with a company's usage of "concept" protection
- The model can be used for evaluating third party rights in purchase/sale situations
- The model can be used for managing a portfolio of rights as well
- It is not directly possible to prioritise between different assets on an objective basis
- The valuation is basically performed on the basis of subjective assessments
- No regard is paid to the interaction between multiple rights.

The practical application of the model in a number of companies may give rise to changes and adjustments.

1.2. Prospects for the future

On the basis of the various data samples we have collected, we generally find there is a great deal of support for the valuation model drawn up from industrial enterprises, patent bureaus, investors and consultants. This should of course be seen in the light of the various areas for potential additional development discussed above.

However, it is our unambiguous position that a future course of events in which it would be possible to obligate a number of companies to work in a concrete manner with the valuation model could clarify most of the above-mentioned areas for additional potential development. Experience gained from these types of industrial policy projects is that companies will readily participate if an entity other than the companies themselves is responsible for the management, collection and communication of the project results. In such continued work it would hence be advantageous to establish a team consisting of researchers and consultants for the group of companies that would participate in the continued development of the model.

By doing so, the requisite accumulation of knowledge and reporting would be ensured, with the result that the experience gained by the companies involved could be disseminated and incorporated into the model.

Such a future course could also contribute to the establishment of a common platform and language for the first time for purposes of evaluating the worth of patents and trademarks. It is perhaps of more interest that patents and trademarks would thus be made into legitimate objects for a strategic focus. Such a focus could lead to more visibility regarding some of the assets which are perhaps not being used at present, subsequent to which initiatives can be implemented in the companies for purposes of improving their utilisation of these rights. Such a process could help making the Danish companies more competitive.

It is not only in Denmark that patent and trademark valuation models are in demand. The model could thus also be disseminated to other EU member states, as well as to the US, Canada and other countries that need to establish a common platform and language for the valuation of patents and trademarks.

It can thus be concluded that we see two possible paths to take in the future, none of which excludes the other:

1. To establish a national project in which Danish companies work with the model in practice
2. To establish an international project, for example within the EU, in which a number of European companies work with the model in practice.

2. Introduction

The present analysis is part of a project under the joint auspices of the Danish Patent and Trademark Office and the Danish Commerce and Companies Agency.

In 1999, the Ministry of Trade and Industry issued "New Trends in Industrial Property Rights", which is part of the series called "Industry Policy in Denmark". One of the main conclusions was:

"In many companies, the failure to recognise IPR as a natural part of management's responsibility may be due to the fact that it has not in the past been the practice to assess the value of the company's rights."

Hence the following initiative was formulated:

"The Danish government intends to strengthen the IPR culture in Denmark. Consequently, it acknowledges that many companies need to reshape management's concept of the strategic significance of IPR as well as their approach to assessing the economic value of IPR."

The Danish Patent and Trademark Office and the Danish Commerce and Companies Agency initiated the present project as a direct consequence of this, and they intend to submit a proposal for a valuation model that can be widely used by Danish companies.

The next phase of the project was a workshop on 9 October 2000, in which the results of this analysis and the proposal contained in it were the subject of a more detailed discussion. The last stage of the project will be to issue a publication on the valuation of industrial property rights and a conference on the subject in January 2001.

The valuation model presented in this report is, among other things, based upon interviews with a number of leading Danish and international companies, all of which have contributed information relating to the management, valuation and reporting of patents and trademarks. In addition, a number of business consultants, investors and investment consultants have been involved to share their experience regarding the valuation of intellectual property rights in a focus meeting. Finally, the 1,000 most active Danish companies in the field of patents and trademarks were asked to fill in an electronic questionnaire – conducted as a web-based survey – concerning their experience with the management, valuation and reporting of their patents and trademarks.

The valuation of patents and trademarks is still relatively unresearched, and practice is hence quite meagre. However, some research-related contributions do exist for valuation models, but there is no consensus, and there are a number of strong and weak sides to every one of these contributions.

The valuation model presented in this report is a qualitative model, the purpose of which is to give a company an understanding of those of its patents and trademarks that are strategically important to the future competitiveness and earnings of the company. On this basis, more quantitative models could add a broader assessment of the possibilities as well as the risks.

2.1. Structure of the analysis

The analysis is divided into 10 chapters.

Chapter 1 is an overview, which contains a brief summary of the analysis, including the most significant conclusions, areas for potential additional development and potential applications, as well as considerations concerning the future course of the project.

In chapter 2, the project of the Danish Patent and Trademark Office is presented.

Chapter 3 contains a short description of the transition from a world that was based upon tangible assets to a world that, by and large, creates value on the basis of intangible assets. The purpose of doing so is to establish that it is plausible that is no longer sufficient to focus on tangible assets, but rather that it is equally important to focus on intangible assets as well.

Chapter 4 gives an outline of and describes intellectual property rights that are a subset of intangible assets. This is done in order to give a brief introduction to the concept of intellectual property rights, thus creating a common frame of reference for the rest of the report.

Chapter 5 describes the reporting possibilities and the accounting for intangible assets in relation to the applicable Danish Company Accounts Act, the International Accounting Standards issued by the IASC and the initiatives in the Draft Danish Annual Accounts Act, which has already been submitted for public comment. The purpose of Chapter 5 is to give interested readers an introduction to the accounting problems associated with intangible assets and to describe the trends that can be identified. This is important in order to understand the external reporting-related consequences of the model.

Chapter 6 contains a review of international valuation initiatives for intellectual property rights and intangible assets. Chapter 6 is included to give the reader a brief overview of the quantitative and qualitative valuation models applied around the world.

In Chapter 7, the results of the interviews, the focus meeting and the web-based survey are presented. With this as a basis, conclusions are drawn as to what the current situation is with regard to the management, valuation and reporting of intellectual property rights by Danish and international companies.

Chapter 8 describes a number of central elements in relation to the strategic management of patents and trademarks. The contents of Chapter 8 are aim at presenting a number of the overall problems related to the strategic management of patents and trademarks.

Chapter 9 contains a presentation of the qualitative valuation model for patents and trademarks that was prepared during the project. This involves a very detailed review of the structure, content and application of the model.

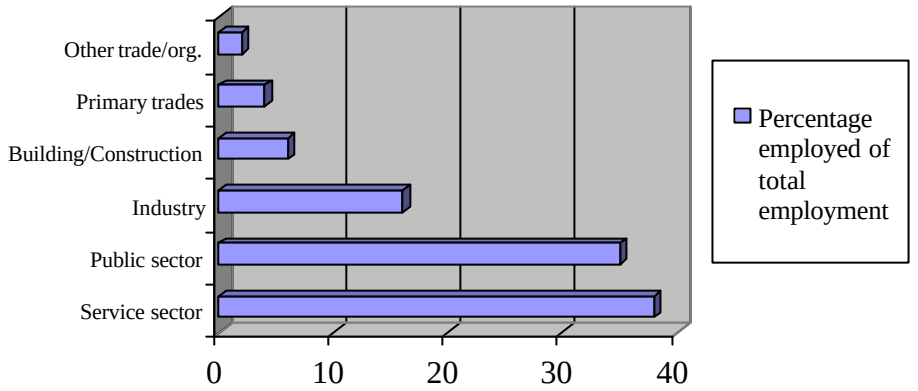
Finally, Chapter 10 describes the methodological guidelines under which the project was conducted.

3. From tangible to intangible assets

The economic activity of society is to a continuously increasing degree based upon intangible assets. Traditional industrial enterprises and agriculture account for a continuously decreasing share of the economy and employment, whereas the significance for the economy and employment of commercial activities which build upon intangible assets continues to increase. In general, this trend can be characterised as a shift from an industrial society to an information/knowledge-based society. Economic activity of society today is widely based upon factors such as information processing, analysis, decision-making and services as opposed to tangible production factors.

Expressed in terms of total employment, the picture appears as shown in figure 1.1 below.

Figure 1.1. Employment distributed by sectors, 1997



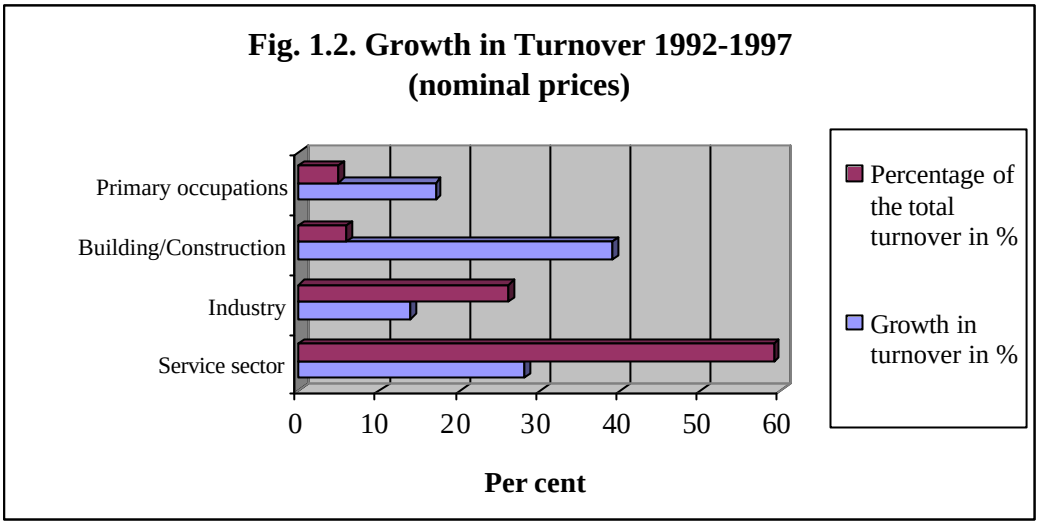
Source: Ministry of Trade and Industry, *"Service i forandring"*, March 2000

As it appears, the service sector is the largest individual sector in Denmark measured by reference to total employment. The growth in employment in the service sector during the period of 1994-1997 was 7%, which exceeds all other occupations[1]. If the service sector were instead to be measured in terms of its share of the total turnover of the Danish economy, then a still clearer picture would emerge with regard to the significance of the service sector to Denmark.

Figure 1.2 below shows growth and the percentage of turnover by relevant sectors in Denmark during the period from 1992 to 1997. It can be concluded on the basis of the figure that the service sector in Denmark is very significant to the Danish economy in that while it employs 38% of the total workforce, it accounts for 59% of the total turnover of the Danish economy.

[1] Ministry of Trade and Industry "Service i forandring" March 2000, page 35.

Fig. 1.2. Growth in Turnover 1992-1997 (nominal prices)



Source: Ministry of Trade and Industry, *"Service i forandring"*, March 2000

The previously mentioned trend has created strong growth in the offerings of products of an intangible nature– for example, the demand for consulting, service and entertainment is heavy. The most important production factors behind these products can broadly be characterised as knowledge, and in the organisations of today, knowledge is often a key element. According to the World Bank, human capital accounts for 64% of global wealth[2].

However, intangible assets are not significant to purely intangible products, even though this connection is the most self-evident one. The creation of value and competitive parameters often depends on intangible factors in that these are often decisive as to how tangible assets are combined and used optimally. Similarly, tangible products are often based on and dependent on research, development, knowledge of complex production processes, and information technology. A new pc would for example have a minimal value if its value were to be computed as the sum of the materials of which it made. The value of a pc consists largely of intangible factors such as research, development, service, design and accompanying software.

The transition from a society in which the assets are predominantly tangible to a society in which intangible assets are dominant has, among other things, increased the significance of patents, trademarks, designs, expertise, etc. This is accompanied by a rising awareness of the resulting measurement and management problems.

It is recognised that intangible assets comprise an increasing share of a company's market value. However, this is not directly reflected in the annual financial statements. As the market has recognised the insufficiency of the annual financial statements with regard to the recognition of intangible assets, it finds other sources of information and approaches to evaluate these. The fact that the annual financial statements fail to reflect intangible assets is for example reflected in the large discrepancies that are often found between the book value and the market value of a company.

[2] "Enterprise Value in the Knowledge Economy", OECD and Ernst & Young Center for Business Innovation, 1997.

Valuing intangible assets is no simple task. One reason for this is that they are invisible, and hence more difficult to deal with. Another important reason is that the value of intangible assets is very dependent on the context in which the assets are used. Companies will have different perceptions of the value of a trademark, a patent or general expertise because it is often the contexts in which the assets are used that determine their value. Finally, the high rate of change in our society also poses a problem for the valuation of those intangible assets that can quickly lose their value if, for example, attitudes change or new technology is developed.

Inadequate valuation of intangible assets may have a number of consequences. High capital expenses can be an unpleasant burden for companies that are primarily based upon intangible assets. In many cases, these companies have greater problems acquiring capital than companies that can show tangible assets such as buildings and productive equipment and hence give investors and credit providers an idea of a higher degree of security.

Another problem is the internal management process, where the management of intangible assets may be difficult. However, it is necessary to establish an understanding of intangible assets and how they can be managed for purposes of creating financial benefits. The management of tangible assets has a solid basis through many years of research and the exchange of experience, whereas the management and evaluation of intangible assets is still in an experimental stage.

Against this background, it is necessary to contribute considerably to the research field and the exchange of experience between companies in order to identify better methods and to create a common and applicable approach to the valuation and management of intangible assets. In Denmark, the intellectual capital accounts project of the Danish Agency for the Development of Trade and Industry is an example of a broad focusing on the valuation and management of intangible assets such as knowledge assets. The project of the Danish Patent and Trademark Office focuses more specifically on the management and valuation of intellectual property rights such as patents and trademarks.

4. The IPR system and its elements

The idea behind the IPR system is to offer the companies that create new products, marks or designs the possibility of having an exclusive right to exploit these assets commercially.

It follows from the exclusive right that no other company is allowed to produce or market products that are identical to – or closely resemble – the protected product. On the other hand, the law lays down a number of requirements for those products that can obtain IPR protection. As far as patents are concerned, the invention must, for instance, be new and have an inventive step, whereas trademarks must have distinctive characteristics.

The exclusive right is also called an industrial property right.

At present the IPR system has four elements: patents, utility models, trademarks and designs. The system is a subset of the intellectual property rights system, which also encompasses property rights.

A brief review of the five different types of intellectual property rights protection is given in the following sections.

4.1. Patents

A patent may be obtained for technological inventions in the broadest sense, i.e. procedures, products, devices and applications.

Patenting requires that there is something new in relation to all previous knowledge, and the invention must distinguish itself significantly from what is already known.

The owner of a patent has the exclusive rights to use the invention for up to 20 years in those countries in which the patent applies. During that period, the owner can forbid others to use the invention.

On the other hand, the invention is made public so that other companies or researchers can gain knowledge of what is encompassed by the patent. The owner cannot prevent others from using the invention for experiments, for continued development or for private purposes.

Patent protection requires that the patent be registered. A patent must be registered in those countries in which it is to apply.

Danish companies can file patent applications either with the Danish Patent and Trademark Office, which can pursue it at both a European and an international level, or with the European Patent Organisation, the EPO.

The European Commission is working on introducing a special Community patent, according to which a patent can be obtained in all EU member states on the basis of only one application. At present (November 2000) the Community patent has not yet been adopted. The European Commission is proposing that the Community patent be administered by the EPO. At the same time, discussions are currently

underway concerning changes to the European patent system, including, among other things, the possibility to apply for patents for software and business methods.

The statutory basis for the patent system is laid down in the Patent Act.

4.2. Utility models

Utility model protection may be obtained for inventions and other technical creations which are probably worth protecting, but which do not fulfil the strict requirements of the Patent Act with regard to an inventive step. There is, however, also a requirement relating to utility models that the creation must be new and that it must clearly differentiate itself from what is already known. Utility model protection is often called "the small patent". The protection grants exclusive rights and, hence, provides protection against imitations.

Utility model protection may be obtained both more quickly and less costly than a patent because the formal examination is less comprehensive. For example, no examination is performed for newness. It is the responsibility of the owner to fulfil the requirements of law. The protection period is maximum 10 years.

Utility model protection in Denmark may be obtained only through registration with the Danish Patent and Trademark Office. There are relatively few European countries which offer utility model protection.

The statutory basis for utility models is laid down in the Utility Model Act.

4.3. Trademarks

A trademark serves to identify an individual product or service and also carries the image and the goodwill associated with the product or the company. A company's name/logo may also be registered as a trademark.

A trademark gives its owner an exclusive right to use the mark as well as a right to prevent others from registering or using similar marks for the same products or services.

Trademark rights may be obtained either by registration or by active use of the trademark. The registration of a trademark is valid for a period of 10 years and may be renewed as long as it is desired.

The EU trademark and the so-called Madrid Protocol (international registration system for trademarks) make it easier to register trademarks in a number of countries simultaneously.

Both the Danish Patent and Trademark Office and the EU trademark authority, the OHIM, can register trademarks valid for Denmark.

The statutory basis for trademarks is laid down in the Trademark Act.

4.4. Design

Design protection is the protection of a product's appearance, i.e. as determined by the special characteristics of the product itself, including its decorative lines, contours, colours, etc.

The protection may be based upon the design itself or upon a decorative element.

Design protection applies only to the appearance of a product, not its function. And the protection may only be obtained if a new "look" is involved.

Registering a design gives protection for up to 15 years against production and trading by others of products which are identical to – or do not distinguish themselves significantly from – the protected design.

Only the Danish Patent and Trademark Office can issue design registrations valid for Denmark.

The statutory basis for design protection is laid down in the Design Act.

4.5. Copyrights

Copyrights differentiate themselves from the four previously mentioned forms of protection in that they do not need to be registered for example. Thus, a person who wishes to have a copyright does not need to apply for one. The copyright arises at the very instant a work is created, and it lasts for 70 years after the death of its holder.

A copyright gives its holder the right to forbid others to produce copies of the work or to make the work generally available to the public at large. However, private use is permitted.

The drawbacks related to copyrights are that they are still not adapted to recent technological developments, that no effective law enforcement exists in the field and that it can be extremely expensive to conduct a lawsuit concerning a copyright violation.

At present copyrights encompass a broad set of areas, from traditional artistic and literary works to applied art, TV broadcasts, software and multimedia products. What is characteristic for copyrights is that they concern "works".

The statutory basis for copyrights is laid down in the Copyright Act.

4.6. International regulation

Intellectual property rights are, inherently, an object of comprehensive international co-operation and corresponding international regulation.

The most important conventions are the Paris Convention, which protects industrial rights, that is to say patents, trademarks and designs, and the Bern Convention, which deals with copyrights.

Both conventions are administered by WIPO (World Intellectual Property Organization), and more than 170 countries have ratified the conventions.

In recent years, some of the negotiations have been conducted under the auspices of GATT, and the global agreement on the World Trade Organisation (WTO) also encompasses an agreement concerning the field of intellectual property rights (TRIPS).

At European level, co-operative efforts are also being made in the field of intellectual property rights. This has, among other things, led to the preparation of the European Patent Organisation and the EU trademark authority, OHIM. A number of directives have also been implemented concerning the area.

5. Accounting for intangible fixed assets

The accounting for intangible fixed assets is governed by the Danish Company Accounts Act[3], supplemented by both Danish as well as international accounting standards. The review in this chapter will be focused upon industrial rights and will not, for example, discuss goodwill.

As an introduction, a review will be performed of the applicable rules in the Danish Company Accounts Act and the Danish Accounting Standard No. 7, "Research and Development ". A review will then be performed of the International Accounting Standards Committee's (IASC) Standard No. 38 concerning intangible assets (IAS 38). Finally, the consequences of a report from the Danish Company Accounts Council on future amendments to the Danish Company Accounts Act will be commented upon to the extent that it concerns possible changes to the applicable practices. In Appendix 1, the most significant sections in the Danish Company Accounts Act, IAS 38 and the draft for the new Danish Company Accounts Act[4] are reproduced.

5.1. The Danish Company Accounts Act

According to the Danish Company Account Act, fixed assets are "*assets which are intended for permanent ownership or use by the company*". Other assets are current assets. That is to say that the company's intentions with regard to the individual assets will determine their classification. The Danish Company Accounts Act does not define what is to be understood by intangible fixed assets. Such a definition is found in the International Accounting Standards and reads as follows: *"An intangible asset is an identifiable, non-monetary asset without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes."* In this context, the standards define an asset as "*a resource controlled by an enterprise as a result of past events, and from which future economic benefits are expected to flow to the enterprise"*. The fundamental characteristics are thus: identifiable, controlled and future financial benefits. As mentioned above, these standards will be reviewed in a later section.

The accounting forms[5] include a list of four categories of intangible fixed assets in the annual financial statements:

1. Development expenses
2. Concessions, patents, licences, trademarks and similar rights
3. Goodwill
4. Prepayments for intangible fixed assets.

[3] Statutory order on the Act on the financial reporting, etc. of certain companies No. 526 of 17 June 1996.

[4] The section references in Appendix 1 to the draft of the new Danish Company Accounts Act refer to the draft which was submitted for hearings on 15 June 2000. In other words, the section numbers which are found in the report of the Danish Company Accounts Council are not used.

[5] Statutory order on the preparation, submission and publication of annual accounts, etc. and other accounting information in the Danish Commerce and Companies Agency (BEK) No. 788 of 29 August 1996. Cf. Appendices A and B.

As stated previously, only industrial rights will be covered here, namely groups 1 and 2. The reader should be aware, however, that for purposes of the sale of a business, the difference between the equity on the books of a company and the market value of the company is often assessed in general. The difference is often entered on the books as goodwill, without there being a further delineation of the future earnings ability of the individual elements, for example patents, licences, trademarks, etc. In practice, the value of industrial rights is thus often accounted for as goodwill.

5.1.1. Capitalisation or expensing

Businesses are basically free to choose whether they wish to expense or capitalise the costs of intangible fixed assets in the year in which the expense is incurred. If the company chooses to capitalise the costs, then it must be amortised over a maximum of 5 years under Danish law, unless its economic life is longer, cf. below. In practice, the 5-year period is often exceeded with reference to the economic life. Only those intangible fixed assets that have been acquired for consideration can be entered as assets in the annual financial statements. Intangible assets developed by the company itself can thus only be capitalised at the cost incurred in, for example, a development project. Group 1 above will thus encompass internally developed assets, whereas group 2 will encompass assets acquired for consideration.

In accounting standard No. 7, "Research and Development", it is furthermore stated that only development costs can be capitalised and amortised, whereas research expenses must be charged to the profit and loss account in the year in which they are incurred. The standard include a definition of research, development and development costs. Research is characterised as *"fundamental studies initiated by an enterprise in order to attain new scientific or technical knowledge and insight."* Examples of research are:

- laboratory research for the purpose of attaining new knowledge
- experiments for purposes of finding possible new products or processes, including tests of the usability of potential items
- formulation of concepts for potential products or processes as well as the fundamental design of such
- studies of the possibilities of applying research results.

The reason for the fact that research expenses cannot be capitalised is thus that it is not possible to establish a direct relationship between the expenses incurred and the future earnings derived from the research work.

Development projects are characterised by *"the application of research results or other knowledge to the production of new or significantly improved products or processes in advance of the commencement of its commercial utilisation."* Examples of development projects are:

- development of new products
- building of prototypes of new machines
- development and test runs of new production systems
- development and design of prototypes of tools which involve new technology.

Development costs are thus costs incurred on the basis of a more direct expectation of future earnings derived from development work, either in the form of increased revenues from the sale of products or in the form of reduced expenses on the utilisation of the process.

If it is possible to demonstrate a relation between expenses incurred and future revenues, then development costs may as stated be capitalised. A number of criteria are set up which must normally all be fulfilled before such capitalisation is permitted:

- the product or the process is clearly defined, and those expenses which can be attributed to the product or process can be identified separately
- the technical potential of the utilisation of the product or process has been demonstrated
- the company's management has expressed its intent to produce and market the product or make use of the process
- there is a clear indication of the existence of either a potential future market for the product or a potential for the utilisation of the process within the company
- there exists – or there can be expected to be procured with reasonable certainty – sufficient resources both for completing the development work as well as for marketing the product or utilising the process.

Fixed assets must be valued at either their acquisition price[6] or their cost price[7]. The acquisition price is relevant for acquired intangible assets, whereas the cost price is relevant for internally developed assets, i.e. development costs.

5.1.2. Amortisation and write-downs

Amortisation must be provided in respect of fixed assets with a limited useful life. Amortisation must be provided in a manner aiming at a systematic amortisation of the individual asset over its life. The amortisation period for intangible fixed assets is, as mentioned previously, a maximum of 5 years. However, this amortisation period is often extended with reference to the fact that the economic life exceeds 5 years. A reason must be given for this longer amortisation period. Amortisation must commence once the intangible fixed asset is put into use.

Fixed assets can be written down if their value is lower than their carrying value in the annual financial statements and if this decrease in value must be presumed to be permanent. The assessment of whether a write-down should be made must be performed based on the economic utility value of the asset for the company. That is to say that a market value, if any, is not relevant in this regard as it reflects the value in free trade: an "arm's-length transaction". An assessment of write-down require-

[6] The acquisition price is defined as "The purchase price with the addition of those expenses which were occasioned by the acquisition up to the point in time when the asset was placed into service". Section 27(2) of the Danish Company Accounts Act.

[7] The cost price is defined as "The acquisition price of the raw materials and consumables added to those expenses which can be directly attributed to the asset produced. In the cost price, a reasonable portion can be included of those expenses which can only indirectly be attributed to the asset produced, provided that these expenses concern the period during which it was produced." Section 27(3) of the Danish Company Accounts Act.

ments must be made annually. Amortisation is to be provided in future on the basis of the written-down value.

It is not permitted to write up an intangible fixed asset to a higher value, regardless of whether such value can be identified and documented via an active market for trading in similar intangible fixed assets.

5.1.3. Reporting requirements

In the annual financial statements, information must be given on the valuation, amortisation and write-down methods applied in respect of intangible fixed assets. Moreover, movements of intangible fixed assets (purchases, sales, amortisation and write-downs) must be shown in a separate overview, a so-called asset movement note. Finally, information must be disclosed with regard to fixed assets that have been posted as security or mortgaged.

5.1.4. Summary

Summarising from the rules in the Danish Company Accounts Act and the associated Danish accounting standards, it can be ascertained that only intangible fixed assets acquired for consideration and development expenses may be entered on the balance sheet, and that the valuation methods are acquisition price or cost price less amortisation. Amortisation must be provided over the useful life of the relevant asset, which is basically maximum 5 years. However, the payback period may be extended if the economic life of the asset exceeds 5 years. In practice, the period is often prolonged with reference to the economic life. An assessment must be made annually of whether a write-down should be made. It is not permitted to write up intangible fixed assets.

5.2. IAS 38

As mentioned previously, a definition of intangible fixed assets is found in IAS 38, *cf. prior section.*

Intangible assets forming part of or closely associated with tangible assets must be treated as if they were part of such. The evaluation must be made on the basis of the more important of these two elements.

5.2.1. Capitalisation or expensing

According to IAS 38, a company must capitalise intangible assets at cost price when, and only when:

- the asset is controlled by the enterprise as a result of historical events, and
- it is probable that the future economic benefits that are attributable to the asset will flow to the enterprise, and
- the cost of the asset can be measured reliably.

This applies regardless of whether the intangible asset has been acquired for consideration or developed internally within the company. However, additional requirements apply to the recognition of internally developed intangible assets.

IAS 38 draws a distinction between internally developed intangible assets which arise from:

- a research phase
- a development phase

As is also the case in the Danish accounting standards, intangible assets arising from the research phase cannot be recognised as an asset. Research expenses must always be charged to the profit and loss account.

However, intangible assets arising from the development phase are recognised if the company can demonstrate:

1. Technical feasibility of completing the intangible asset so that it will be available for use or sale
2. An intention to complete the intangible asset and use or sell it
3. The ability to use or sell the intangible asset
4. How the intangible asset will generate probable future economic benefits. Among other things, the enterprise should demonstrate the existence of a market for the output of the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset
5. The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset
6. The ability to measure the expenditure attributable to the intangible asset during its development reliably.

However, IAS 38 lists a number of internally produced intangible assets that can never be recognised: goodwill, trademarks, colophons, publishing titles and customer lists.

Expenses for intangible assets must be recognised as an asset from the point in time when the intangible asset first fulfils the recognition criteria stated above. Thus, expenses incurred prior to this cannot be included regardless of whether it involves, for example, expenses incurred during the introductory phases of a development project which is only now turning out to be successful.

The value of internally developed intangible assets consists of all those expenses which can be directly attributed or allocated to it on the basis of a reasonable and consistent method, and which have been used for the creation, production and completion of the intangible asset for its expected use. For example:

- Expenditure on materials and services used or consumed in generating the intangible asset
- Salaries, wages and other employment related costs of personnel directly engaged in generating the asset
- Any expenditure that is directly attributable to generating the asset, such as fees to register a legal right and the amortisation of patents and licences that are used to generate the asset
- Overheads that are necessary to generate the asset and that can be allocated on a reasonable and consistent basis to the asset.

The following expenses cannot be included in the value:

- Selling, administrative and other general overhead expenditure unless this expenditure can be directly attributed to preparing the asset for use
- Expenditure on training staff to operate the asset.

After the first recognition, two methods of valuation are allowed:

1. Acquisition or cost price

2. Market value with reference to an active market.

Cost price corresponds to what is described above under the Danish Company Accounts Act: the value of an intangible asset must be booked at cost less amortisation and write-downs, if any.

It is possible to use the market value with reference to an active market as a recognition criterion, however not for recognition the first time. In other words, after having first been recognised, an intangible asset may be revalued at its market value if an active market may be identified in which identical assets are traded between unrelated parties. Since it is often tremendously difficult to refer to an active market for a precisely equivalent intangible asset, there is a limited possibility of revaluing intangible assets, but it is a possibility which is, however, not encompassed by the Danish rules.

An example of such an active market from the real world is automobile trading. It is stated in IAS 38 that an active market for trademarks, patents, music, etc. cannot exist in that these assets are unique. The reason is that the price which has been paid for such an asset cannot be compared to other similar assets and that the prices paid for such assets are seldom available to the public. Consequently, the market value method cannot be applied to patents and trademarks.

It also applies in this situation that amortisation and write-downs, if any, must be provided.

If an intangible assets is revalued and it leads to a write-up, then the write-up must be tied up under capital and reserves. However, the write-up must be recognised as income if a write-down has been performed earlier and then taken to the profit and loss account.

5.2.2. Amortisation and write-downs

As far as amortisation is concerned, intangible assets must be amortised systematically over their useful life, however not more than 20 years. In special cases the amortisation period may exceed 20 years. There is also a limitation to the extent that legally protected rights are concerned, namely the duration of those rights, unless it may be extended just like that. The amortisation period begins once the asset is ready for use.

The following elements must be part of the assessment of the life of an intangible asset:

- The expected useful life of the intangible asset
- The typical product life cycle for the asset and comparable assets
- Technical, technological or other kind of obsolescence
- The stability of the asset in the relevant industry and changes in the demand in the market
- Expected reaction from competitors
- Expected level of future maintenance expenses
- Duration of control of the intangible asset (for example, the period of time a patent is valid)
- The dependency on the life for dependent assets.

An amortisation method must be applied which reflects the exhaustion of the financial benefits of the asset. If no such method can be found, straight-line amortisation will be applied over the expected useful life of the asset. In the calculation of the annual amortisation amounts, the scrap value (i.e. any possible residual value on disposal) will basically be set at zero.

According to the Danish Company Accounts Act, write-downs must be made. According to IAS 38, the write-down must be made at the higher of the net sales value[8] and the utility value.

5.2.3. Summary of the current state of affairs prior to the amendment of the Danish Company Accounts Act

The Danish and international rules are identical in many respects. However, there are a few differences:

- According to international rules, intangible fixed assets must be capitalised, whereas the Danish rules allow for immediate write-off. According to the following section on the report from the Danish Company Accounts Council, a corresponding requirement may be expected to apply to major Danish companies.
- In those cases where an active market does exist, the international rules allow for the possibility of a write-up to market value. Under the Danish rules, it is not possible to write up intangible assets. As stated previously, the possibility is, however, limited, and it cannot be applied to trademarks, patents, music, etc. in that these assets are unique.
- The maximum amortisation period is 20 years with the possibility of an extension, as opposed to a Danish limit of 5 years with the possibility of an extension with reference to the economic life. In practice, this is often the case. The expected amendments to the Danish Company Accounts Act include a similar limit of 20 years.

5.3. Report from the Danish Company Accounts Council on a new Danish Company Accounts Act

In its report, the Danish Company Accounts Council makes allowance for general developments and the contents of the International Accounting Standards issued by the IASC. However, the Council has made no definition of an intangible asset, as the Council does not wish to limit developments in the accounting practice concerning intangible assets.

For intangible assets, a distinction is drawn between acquired and developed fixed assets. For acquired intangible assets, the Council proposes that a requirement be introduced for major companies to recognise (capitalise) along the lines of the international standard, provided that the requirements below are fulfilled.

Assets or liabilities can be recognised only if:

- It is likely that the company will receive the financial benefits or cede the financial resources, respectively, and

[8] The net sales value is the net value, i.e. the value net of transaction costs at which the asset could have been sold at the measurement time.

- The value of the benefits or resources, respectively, can be reliably assessed. By "reliably" is understood that the measurement must be neutral, verifiable and able to be represented in a valid manner.

For self-developed intangible assets, the same six requirements as mentioned above under IAS 38 in connection with development projects must be fulfilled before the assets can be recognised.

The valuation methods for intangible assets are the acquisition price for acquired intangible assets and the cost price for self-developed intangible assets.

Intangible assets must be amortised under the same rules as are found in the Danish Company Accounts Act. However, the time horizon is expanded as in the international standard to 20 years instead of the 5 years presently applying. However, amortisation periods of over 5 years must be explained in the notes. Write-downs must be made in accordance with the provisions of IAS 36, which deals with the impairment of assets, i.e. a procedure for how the economic value of an asset must be assessed. As opposed to IAS 38, write-ups will still not be allowed for intangible assets in that a write-up would be in violation of the EU's Fourth Directive.

5.3.1. Summary

Apart from the possibility of write-ups – which, as already mentioned, is not relevant for patents and trademarks – it can be concluded that the forthcoming revision of the Danish Company Accounts Act will bring the Danish rules into accordance with the international standard.

6. Methods and models for the valuation of intellectual property rights

Part of the task of making patents and trademarks controllable or manageable involves valuations of same[9]. These valuations may take different forms, for example just a grouping or a categorisation. However, unless a valuation is carried out, it will not be possible to prioritise a contribution or allocate resources.

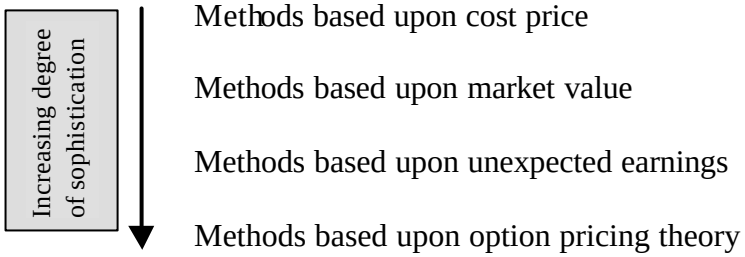
A number of different initiatives are being taken around the world for purposes of finding valuation methods for intellectual property rights. This is due to a number of factors. However, one significant justification is the desire to be able to better manage intangible assets. A continually increasing number of companies are becoming aware of the significance of being able to manage their intangible assets not only to attain a better market position, but also internally in the business to manage them in a better way. In some industries, intangible assets are the only assets which actually exist, for which reason they are of course highly essential.

Efforts are being made with regard to the evaluation of patents using various methods. In general, these methods may be divided into quantitative valuation methods, which attempt to place a monetary value on patents, and methods which are more qualitative in their approach in that the valuation is: "very important", "important", "less important" or "negligible".

This chapter will give a short presentation of some of the quantitative valuation models, and then two qualitative methods will be described in more detail. This will not involve an exhaustive list of all valuation methods that can be found in literature, but rather a number of the most significant contributions. At the end of the chapter, a method will be presented which attempts to place a value on what is called knowledge capital, which is typically defined as the difference between the market value of a company and its equity.

6.1. Quantitative methods

The quantitative valuation models can be grouped into four general types, as shown below:



[9] Valuation should be interpreted in a broad sense in this context, as it does not just concern the determination of a monetary value. Valuation should be perceived as the determination of a number of characteristics – relatively in relation to the enterprise which owns the intangible assets in question – allowing a comparison with other intellectual property rights evaluated under identical circumstances.

6.1.1. Methods based upon cost price

Methods based upon cost price are a result of the possibilities with regard to the accounting rules. The expenses related with the acquisition of a patent are summed up, and then this value is set equal to the value of the patent plus amortisation and write-downs, if any, cf. Chapter 5.

A valuation under the cost price method does not necessarily give the company or other interests a true and fair view of the value of the patent to the company or to others. Hence a prioritisation within the company, which is solely based upon the historical cost price, can be expected to be arbitrary and, at worst, negative for the company itself. This is due to the fact that it may not necessarily be the patents which were the most expensive to produce that are the most valuable ones. The same applies to patents that are several years old and, hence, have been written down in value. They might actually still be the most valuable ones to the company, even though the historical cost price does not show such to be the case.

One of the advantages of the method is that the patents become visible in the company in that they are made up at a value; and on that basis alone it is likely that the management will become aware that they exist.

6.1.2. Methods based upon market value

As there are no formal markets for patents[10], the approach to valuation is to look at the price of comparable assets traded between two independent parties in an active market. There are, however, a number of problems with this, as patents cover unique inventions, which perhaps do not have any comparable assets. In addition, there is a risk of comparing a patent with another patent which has been traded but which has still not been utilised to the full extent possible, causing the patent to be undervalued. A number of other problems associated with methods based upon market value could be mentioned, but the reader should refer to the specialised literature for a more thorough discussion of the subject[11]. It should also be noted that the Danish Company Accounts Act specifically excludes the possibility of writing up patents and trademarks to market value due to the lack of a market.

6.1.3. Methods based upon expected earnings

The methods under this category are all centred around evaluating the future cash flow which derives from the patent or the underlying invention and then discounting them back at a discount rate. The method for doing this is called the DCF method (discounted cash flow)[12]. This method can subsequently be made more or less advanced according to how many factors of uncertainty are taken into account, such as time and risk projections.

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[10] The new Internet markets for patents will be mentioned later in the article. However, it still cannot be said that actual markets have been established for trading in patents from which market prices can be found.

[11] See for example *"The Valuation of patents: A review of the patent valuation methods with consideration of option based methods and the potential for further research"* by Robert Pitkethly.

[12] For more detailed information about this method, reference is made to the specialist literature, for example *"Principles of corporate Finance"* by Brealy & Meyers.

An advantage of these methods is that it is relatively simple to assess the value on the basis of the conditions set up, and hence sensitivity analyses, etc. can be performed.

A significant disadvantage of these methods is the uncertainty with regard to the future cash flow from new inventions, as they basically have no experience base that can be drawn upon regarding potential, etc.

6.1.4. Methods based upon option pricing theory

These methods are by far the most advanced and seem to be those which can resolve the greater part of the above problems related to the setting of a market value for patents.

Some research-related work is being done in connection with the application of options-based valuation methods in relation to the valuation of patents. As a justification for this, it is stated that a patent is like a **call option**. The definition of an option is:

"An option is a contract in which the seller of an option grants the purchaser of the option a right, but not an obligation, to purchase or to sell an underlying asset at a fixed price within a specified period or on a specific date."

A distinction is made between European and American options. **European options** can only be exercised on their expiration date, whereas **Americans options** can be exercised on all days up to and including their expiration date. That is to say that the person who has the right to purchase or sell the asset can exercise this right at any such point in time as he considers appropriate. A distinction is also made between call and put options. **Call options** are options for which the purchaser of the option has the right to purchase the underlying asset from the seller. **Put options** are where the purchaser of the option has the right to sell the underlying asset to the seller. A patent may be seen as a right to utilise a given asset (for example technology or a process), which will perhaps have a future value.

Options are priced using *the Black-Scholes option pricing model*, which is a mathematical model for the valuation of options.

For a further discussion of the challenges related to the use of option pricing models for the valuation of patents, reference is made to *"The Valuation of Patents: A Review of the Patent Valuation Methods with Consideration of Option Based Methods and the Potential for further Research"* by Robert Pitkethly.

According to their web-site, one of the Internet-based marketplaces, pl-x.com, which stands for Patent & License Exchange, has developed a model for the valuation of intangible assets, which builds upon the Black-Scholes option pricing model. They call this model "Technology Risk Reward Units" (TRRU^{SM}). As the model is, however, not described in detail on their website, we cannot describe it in more detail here, but only refer the reader to www.pl-x.com for additional information.

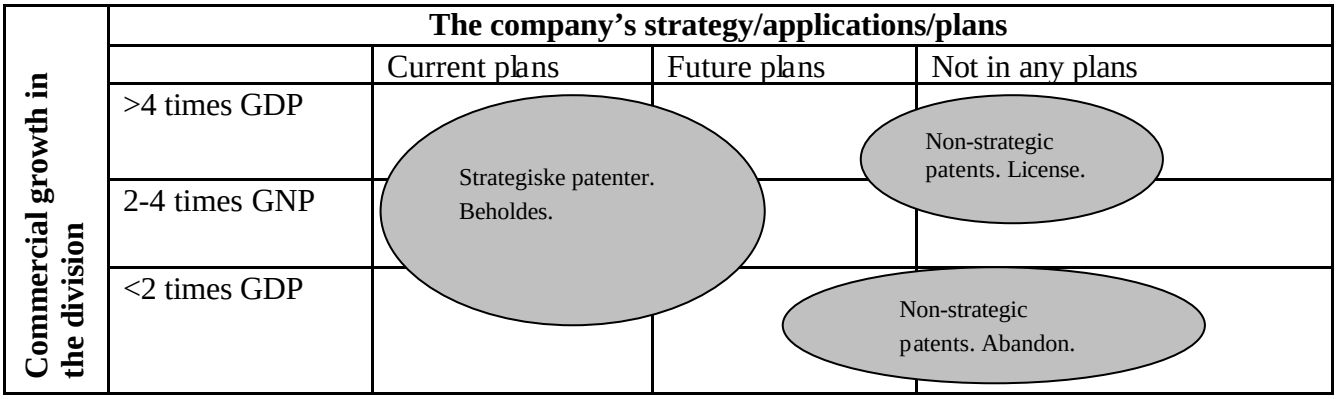
6.2. Qualitative methods

The two models presented in this section attempt to assess the value of patents on the basis of a form of classification or marking.

6.2.1. Intellectual Property Audit Map

The American company Dow Chemicals had at one point in time once approx. 29,000 patents, and as a consequence of an economic slowdown in the industry, they were forced to cut back on costs in the company. Hence Dow Chemicals began a comprehensive project to revise their patent portfolio. The method developed by Dow Chemicals consists of the following steps:

- Assign the responsibility to the individual divisions for those patents whose technology they use or expect to use
- Work out a matrix as shown below.



Source: Rembrandts in the Attic, Kevin G. Rivette & David Kline.

The elements in the matrix are a partitioning of the business-related growth in the division with regard to strategies/plans, etc. of the companies. The two overall categories are each broken down into three elements. For the business-related growth in the division, the categorisation is performed here in relation to the growth rate of the GDP, although a different categorisation might well seem more relevant for the division concerned. For the company's strategy, the categories are characterised in relation to the extent to which the technology, etc. is used in products/processes which enter into: current plans, future strategic plans or no plans at all.

The work then involves categorising all the division's patents into one of the cells in the matrix and then deciding upon the subsequent action to be taken for the individual patent. In the matrix, a possible classification of the strategic alternatives is given, although it is up to each individual company to decide what to do with patents that are classified by the individual cells.

6.2.2. Patent-related Evaluative Indexes

The Japanese Patent Office, the JPO, issued a draft in 1999 containing a qualitative valuation model. The model uses a marking system based upon five marks from A to E, where A is the best and E is the worst. The application area for the model is individual patents.

The model is structured around three overall assessments:

1. Specific assessment

2. Checklist assessment
3. Summary assessment

Re 1: The specific assessment consists of two elements:

A. Basic information
B. Specific assessment of the rights

Basic information is fundamental information on the patent. This involves information such as whether the patent is at the application stage or has been granted, if the patent has been granted, how long the remaining period of protection is, in which countries the patent has been protected, whether there are objections, etc. from third parties, whether there is a need for licences, what status (basic technology, highly improved technology or only marginally improved technology) the invention can be said to have, which patents are related to the patent concerned and, finally, something concerning expenses already paid in connection with the patent.

The total information should impart to the individual who is to perform the assessment an understanding of the properties, etc. of the patent.

The specific assessment of the patent consists of three items, each of which has one or more associated index questions. There are a total of 8 index questions. The three items are:

- The degree of technical control which the patent covers
- The degree of completion of the technology behind the patent
- Possibility of commercialising the market

For each of the 8 index questions, there is a set of pre-defined responses consisting of between three and five possible responses. A given number of points (between 1 and 5 points) are associated with each possible response. Once the index questions have been evaluated and the most suitable response category has been specified, then the points are to be summed up. Finally, the mark to which the number of points attained justifies must be stated.

Re 2: The next assessment is two checklist assessments:

C. Assessment of the potential for transferring and sharing the patent
D. Assessment of the commercial potential

The assessment of the potential for transferring and sharing the patent consists of two items, each of which consists of a number of index questions. There are 6 index questions in total.

The two items are:

- The reliability of a technology transfer
- The stability of the rights and the possibility of enforcing them

The assessment of the commercial potential consists of two items, and a total of 17 index questions in all. The two items are:

- The commercial potential of the invention
- The earnings potential of its commercial utilisation

The technique used is the evaluation of the two checklist evaluations is the same as mentioned above regarding the assignment of points: pre-defined possible responses and marks. Moreover, the importance of each index question should be evaluated. This importance evaluation should thus result in an indication of the importance of the question concerned for the patent involved. The weight attributed to the question concerned will be used in the computation of the numerical points for the index question in such a manner that the points will be weighted in relation to those index questions that are deemed to be important.

Re 3: The summary evaluation is an overall review of the previous evaluations, the purpose of which is to assign a mark between A and E to the patent, as mentioned in the introduction to this section. There are no guidelines as to how this assessment should be performed. However, it is mentioned that regard should be paid to the particularly important index questions and to the points attained and that a comprehensive description should be made of how the final mark was arrived at.

6.3. The knowledge capital model

In this section a method will be presented, which, as opposed to the previous models, does not focus on individual assets such as patents or trademarks, but rather on stating how knowledge capital[13] can be described or presented.

6.3.1. The Knowledge Capital Scorecard

Professor Baruch Lev from the Leonard Stern School of Business at New York University has developed a model which he calls "The Knowledge Capital Scorecard" (in the following referred to as "the Scorecard"). The model attempts to set a value on what is called knowledge capital.

A rule of thumb used to describe knowledge capital is that it is equal to the market value minus the book value. This rule of thumb can be criticised on a number of points. Firstly, it suggests that knowledge capital can have different values depending upon the accounting practices chosen. If the payback period for a given asset is extended, then – all other things being equal – it will reduce the knowledge capital. This cannot be a natural consequence. Secondly, the rule of thumb suggests that the capitalised assets do not have a value that exceeds their cost price or acquisition cost, which are the two permitted valuation methods provided by the Danish Company Accounts Act for tangible fixed assets. Neither can this be the case. Rational companies do not acquire assets if the company cannot attain a net present value from the asset that which exceeds its acquisition cost or cost price. Hence the knowledge capital which results from the use of the above formula is overvalued.

Baruch Lev argues that it is nonsensical to try to allocate knowledge capital on the basis of individual assets, as such a scheme could not take into account the synergies which may exist between related products and services.

The Scorecard developed by Baruch Lev looks like this:

[13] Knowledge capital is understood as the value of the people, the processes, the intellectual property rights and the customers.

The Knowledge Capital Scorecard

$$\text{Knowledge capital} = \frac{(\text{Normalised earnings} - \text{earnings from tangible and financial assets})}{\text{Knowledge capital discount rate}}$$

The Scorecard builds upon a conventional valuation of the after-tax returns on tangible and financial asset investments and an estimate of the long-term returns on the knowledge capital (knowledge capital discount rate). However, since no body of experience exists in the calculation of such an expected rate of return, Baruch Lev has used a substitute. This substitute is the average after-tax expected rate of return in three industries, which primarily consist of knowledge assets: computer software, biotechnology and pharmaceuticals.

The procedure for computing knowledge capital begins with an estimate of a company's annual normalised earnings. This quantity is computed as the company's historical results for the last three years plus the earnings forecasts for the next three years. An institution exists in the US, which makes such forecasts and from which data can be obtained. For other countries, the individual investor or other parties concerned must make the earnings estimates themselves.

The next step is to compute the earnings from tangible fixed assets (net of long-term liabilities and reserves) and financial asset investments. The procedure is to multiply the respective asset classes by their expected after-tax returns. Baruch Lev has found that the expected after-tax rates of return for tangible assets and financial asset investments are 7.0% and 4.5%, respectively. These rates apply to all companies regardless of the individual company's risk profile or cost of capital. It is also mentioned that the individual companies will in time be able to calculate their rates of return themselves. Nevertheless, the given rates do provide good estimates of earnings from tangible and financial asset investments.

The residual which appears when earnings from tangible and financial asset investments are subtracted from the normalised earnings is part of the normalised earnings, which cannot be accounted for. Baruch Lev is of the opinion that this represents the earnings from the knowledge capital. He calls this residual "knowledge capital earnings" (KCE). KCE can then be used to calculate different key figures such as knowledge capital margin (KCE/Sales).

The last step in the computation is to divide the knowledge capital earnings by the knowledge capital discount rate. Baruch Lev has done so for the three industries mentioned above (computer software, biotechnology and pharmaceuticals) and found that the knowledge capital discount rate is 10.5%.

Once the knowledge capital has been computed, then the extent to which the company is knowledge-based can be worked out by calculating the ratio of knowledge capital to book value. Furthermore, the ratio of knowledge capital to sales can be computed. Doing so makes it possible to see whether the contribution of the knowledge capital to the company's performance increases or decreases over time.

The last concept which is introduced in the Scorecard is "comprehensive value", which is equal to the knowledge capital plus the book value. Comprehensive value can be said to be a reflection of a company's balance sheet, which takes absolutely

all assets into account: from machines to patents and trademarks. If the ratio of market value to comprehensive value is computed, analysts and others will be able to evaluate the current share price of the company. A ratio of 1:1 indicates that nothing but short-term earnings are embedded in the share price.

The method seems to be at a stage still where it is too undeveloped, and it contains the same uncertainties as were mentioned under the methods based upon expected future earnings.

7. Summary of results from the data samples collected

A summary will be presented in this chapter of the overall results from the 15 interviews which were carried out with major Danish and foreign companies, the focus meeting with investors, consultants and patent agents and the electronic questionnaire – the web-based survey. For additional details on the three different data samples, reference is made to Chapter 11 concerning methodology. Each of the four themes permeating the entire study will be summarised: strategic management, valuation, reporting and future requirements.

7.1. Strategic management

The focus in this section of the report will be on the attitudes of the consultants, investors and patent agents towards how companies ought to work in a strategic manner with their portfolios of parents and trademarks. Afterwards, these attitudes will be compared to how companies do actually work in a strategic manner with patents and trademarks in practice.

Strategic Management

	Interview Large companies	Focus meeting Investors and analysts	Web survey "All"
Strategy for the entire company	Yes - all	Important	Approx. 75%
Strategy for patents and trademarks	Yes - nearly all	Important	Approx. 25% (+approx. 40% not in writing)
Relationship between the strategies	In general, no	Important	Not asked

Firstly, it can be ascertained that the consultants, investors and patent agents clearly believe that it is important that the companies work in a strategic manner and try to ensure that there is some kind of correlation between the overall strategy and a patent and trademark strategy. It should, however, be pointed out that the companies have still not progressed to the extent that they have carried through such a direct strategic unification. The companies are working in a strategic manner, which means to say that they formulate their business concept/mission, vision and business strategies[14]. It thus emerges from the web-based survey that between 70% and 78% of all companies have formulated such strategic elements.

Only those companies that were included in the interview round were asked whether they make sure that the overall strategy and any possible patent and trade-

[14] By company strategy is meant a strategy for the entire company, as opposed to an independent strategy for a given business area or for a given portfolio, such as IPR.

mark strategy correlate. The result was nevertheless that the companies do not in general make sure that there is such a correlation.

As regards the question of whether work is performed independently in a strategic manner within the companies with regard to patents and trademarks, it should be noted that there is a very large difference between the two populations of the interviews and the web-based survey, respectively. Most of the enterprises participating in the interviews performed some form of strategic planning. The results from the web-based survey were that a written strategy or policy was formulated in only approx. 23% of the companies with regard to patents and trademarks. Approx. 38% responded that they did have a strategy or policy for patents and trademarks, but that it was not formulated in writing. In contrast, the consultants, investors and patent agents held the reasonably unequivocal view that it was important that there is a separate patent and trademark strategy if the patent and trademark portfolio was to be utilised in full.

It can therefore be concluded that, in general, companies still are not at such an advanced level that they make sure that their overall strategy and any strategy for patents and trademarks correlate, and that only major companies formulate independent patent and trademark strategies or policies.

7.2. Valuation

It must be concluded that Danish companies do not generally perform any systematic valuations in monetary terms of their portfolios of patents and trademarks. Some companies do perform a qualitative valuation of their portfolio. However, only approx. 15% of companies do so. Nothing can be concluded on the basis of the available data sources as to how this qualitative valuation is performed.

Valuation

	Interview Largercompanies	Focus meeting Investors and analysts	Web survey "All"
Quantitative valuation	Not in general	Hardly realistic	Few, approx. 8%
Qualitative valuation	Not in general	Important	Approx. 15%
Need for valuation	For specific purposes	Large	For specific purposes

The results from the interviews, the focus meeting and the web-based survey do, however, confirm the basic presumption of the project group: that efforts should be made to develop a qualitative valuation model instead of a monetary model. The companies wish to be able to perform qualitative valuation and reporting concerning their patents and trademarks, and the consultants, investors and patent agents also seek such qualitative reporting. In addition, the web-based survey confirmed that the assessment factors included in the valuation model are those which should be included in such a qualitative model as well.

The monetary models used for valuation purposes are primarily based upon expenses incurred, the estimated market value or the discounted cash flow (DCF).

A general conclusion based upon the three data samples described above is that no valuations are made on an on-going basis in the companies. In those cases where patents and trademarks are sold, the valuation is often a result of the relative bargaining strengths or the two parties, or an estimate is used, or the price is imputed as a consequence of business considerations.

7.3. Reporting

The section on reporting is broken down by internal and external reporting, respectively.

Reporting is largely performed internally within the companies on their patent and trademark portfolios. The aspects most frequently reported on are infringement proceedings, number of rights, number of applications, expenses and new inventions. However, as no general framework has been established with regard to the reporting, it primarily takes place on an ad hoc basis.

Reporting

	Interview Large companies	Focus meeting Investors and analysts	Web survey "All"
Internal reporting	Yes - by and large all	N/A	Approx. 66%
External reporting	Limited	Important	Limited
Importance of external reporting	Not relevant Sensitive	Important	Not relevant Sensitive

As far as external reporting is concerned, less than 25% of companies report on patents and trademarks in their annual financial statements. The aspects reported on are: number of rights, number of applications and expenses. The most significant reason why no reporting is made is that such information is not thought to be relevant for the readers of the annual financial statements.

Opposed to this are the perceptions of consultants, investors and patent agents to the effect that the information presently disclosed is not sufficient. There is a demand for information, as the potential of a company cannot be reasonably assessed without this information, provided that assets which are important to the company are involved.

It can therefore be concluded that there is a discrepancy between the information that companies consider relevant and the information demanded by the investors, etc.

7.4. Future requirements

The responses we have received support the idea that efforts should be made to establish a qualitative valuation model which can be used internally by the companies as part of their management process, and possibly also for external reporting. This is also what investors, etc. demand, as they seek a model which builds upon a

qualitative valuation which can be used for external reporting, but which the investors can also use as an element in the assessment of a company's patents and trademarks.

Future Requirements

	Interview Large companies	Focus meeting Investors and analysts	Web survey "All"
Valuation method	Qualitative	Qualitative	Not asked
External reporting	Not relevant Sensitive	Desire more information	Approx. 22% perform external reporting. The remainder state not relevant or sensitive.
Possibility for capitalisation of patents and trademarks	None desire a monetary valuation. Few would like to perform a qualitative valuation.	Would like a money measure, but with regard for reliability. Would like qualitative description with reference to strategy.	Approx. 20% desire to be able to use a money measure. Approx. 37% desire to be able to use a qualitative measure.

As mentioned above under section 7.3, companies do not in general consider necessary to provide additional information on their activities concerning patents and trademarks in their annual financial statements. This is partly due to the fact that doing so would involve information that is irrelevant for the users of the annual financial statements, and partly that such information is, to a lesser extent, regarded as being too sensitive for the enterprises. In addition, the investors and others wish to have additional information included in the annual financial statements.

Against this background, the enterprises generally neither wish to be able to use a monetary nor a qualitative valuation in relation to the recognition of their patents and trademarks in the annual financial statements. There is, however, a small difference between the large companies that were interviewed and the companies that responded to the web-based survey, since approx. 37% of the companies in the web survey would like to be able to perform an external qualitative reporting.

It can hence be concluded that more efforts should be put into preparing a qualitative valuation model which would primarily be useful for internal management, but which could also be used as a basis for external reporting.

8. Management and control of patents and trademarks

It is a fact that in the new economy, the principal value of a company arises through the creation and application of knowledge. The competitive advantages of a company will to a very large extent be attributed to those resources which are special and hence cannot easily be copied by others. Thus the managerial tasks related to the administration of a company's knowledge-based resources, including patents and trademarks, will be of crucial strategic significance to the company.

On the basis of international trends in the patent field, in which liberalisations relative to current Danish legislation have occurred, it must be expected that it will soon be possible to patent software and business models in Denmark, too. As a result, the significance of patents and trademarks will, all other things being equal, increase in future. The challenge for the companies will thus be to utilise and develop their knowledge-based resources, including the patenting of such resources to be able to appropriately differentiate themselves from its competitors.

The most immediate benefit of the strategic management of patents is that a company can attain a better **utilisation of its resources**, which can immediately bring about a number of financial benefits. This could be through higher revenues from the company's intangible assets, for example by selling licences, or through a reduction of the expenses related to the maintenance of intangible assets. Moreover, the **strategic organisation and management** of the resources[15] and the **activities** for which the resources are used will probably give the company many market-related advantages. The interaction between management, resources and activities will thus be essential to the strategic management.

Since a company's knowledge-based resources are of crucial strategic significance, these assets must, inherently, be managed and developed as well.

This chapter will primarily focus on patents as knowledge resources and will explicitly describe this field. Trademarks will only be discussed to a lesser extent, even though a number of the strategic aspects will apply to them, too.

8.1. Linkage between the overall strategy and the patent strategy

The linkage between a company's overall strategy and its strategy for patents and trademarks will, all other things being equal, be more significant in "the new economy" than before. In the new economy, one of the preconditions for being able to compete is that a company can create, produce, protect and commercialise intellectual property rights.

It seems logical that the various strategies of a company should always be coordinated and adapted to one another. The issue is simply whether a detailed strategy for patents and trademarks can remain cohesive if it is exclusively subordinated

[15] In this context, resources are the inputs used by the company to produce and market a product or service, including patents.

to a broader, higher-level strategy. Furthermore, the individual company should consider how patents – being an important knowledge resource – are actually part of the company's management processes, including marketing and product development.

8.2. Separate or integrated strategy

If a company has a minimum of patent activities, then it would not be appropriate to simply make the patent strategy an integral part of the company's overall strategy. This strategy consists of so many different elements that it would be difficult to make the patent strategy a coherent part of it. The patent strategy should be adapted to the company's overall strategy and basic values. However, it should be directly related to a more specific strategy concerning the company's competencies and knowledge resources.

Linking the patent strategy tangible competencies and a knowledge-based strategy may can create the basis upon which the management can allocate its resources. If patents and trademarks are assets of the company, then they must be made controllable or manageable. This implies that they are made visible as resources for the enterprise's products and/or processes, and it implies that their application can be measured and reported on. In order for this to be relevant, a strategy must be formulated as to how patents and trademarks are important; and it must be made visible whether they support the company's vision and objectives in general.

Targeted management and reporting within this area will thus also require a relatively detailed strategy that is separate from the overall strategy. It will be necessary in major companies to prepare actual "guidelines" as to how different patent activities and events should be handled, possibly supplemented with specific descriptions regarding individual products. Furthermore, detailed process descriptions of the interaction between the development department and the patent department should be available. The independent patent and trademark strategy will moreover, as with the strategies of other functional areas, be fit into the company's overall strategy.

In summary, one may say that there is a need for a comprehensive strategic view in which detailed strategies are related to the company's broader, higher-level strategies. In the pharmaceuticals industry, the significance of patents will typically be much greater than in the IT industry, and managing them will also differ as to the level of detail and type. Unfortunately, no single standardised solution exists for an optimum strategy. The individual company must compose it so as to work within the company's own culture and context.

8.2.1. Management-related characteristics of patents

In a resource-related respect, patents can be regarded as a capacity. The company pays for these rights, which to some extent become a prerequisite and a basis upon which to create activity. Intangible assets can thus give a company a marketing-related capacity: However, as opposed to traditional types of capacity it is possible to attain the same capacity in some situations without having to pay anything for it! This could, for example, be a situation in which a company chooses to keep a pro-

duction method secret instead of applying for a patent on it. It would be problematic to out-license this capacity, but the possibility exists.

There are also other attributes distinguishing patents from a normal capacity: the situation in which a patent becomes a scarcity for the activity. Through licensing activities, etc., patents can, in principle, provide an unlimited marketing capacity, although for patents this ability is limited to their normal life of 20 years.

Decisions concerning patents and trademarks will often have a long timeframe and period of effect. All other things being equal, these choices result in a high degree of irreversibility. The irreversibility does not lie in, for example, heavy start-up investments which are often connected with this concept, but rather simply in the choice itself. Once the choice has been made to make an invention public, it is not possible to retract it and apply for a patent afterwards. It can be said that the opportunity cost or the consequences of patent decisions can be rather high. A patent and, thus, rights which could be worth many hundreds of millions can be obtained for a relatively modest amount of money. Conversely, errors in this area can be incredibly expensive. Their management thus takes on a strategic or structural character.

Patents and trademarks can thus to a large extent be thought of as a marketing-related capacity, but since their attributes are different from "normal" capabilities, they give rise to some management-related challenges. Since many business areas are changing very quickly and since it is not possible for a company to pursue all paths, the strategic use of patenting may be a possibility. The patent would thus function as an option, and a company can choose whether it will pursue that path itself or whether it will licence its rights to others. Without a strategic patent strategy, all development results not pursued by the company itself will be wasted.

8.3. Patents and trademarks as knowledge resources

A company's resources can be divided up into two categories, all depending upon whether they are based upon ownership rights or upon knowledge. Legally controlled assets based upon ownership rights can give a company a competitive edge as long as the structures in the market permit the asset to be valuable. Knowledge-based assets are protection against imitation, not in a legal sense, but because these assets will quite often be difficult to imitate.

Patents and trademarks are interesting assets in this respect because they embody not only a legal protection of the rights – they also have a very large knowledge content.

Well-protected patents and trademarks will, for most companies, be a very important strategic resource. The rights can supplement each other in many different contexts and in this manner create "concept" protection for the company.

As opposed to patents, which to a large extent reflect a company's internal knowledge and competencies, the nature of trademarks is more marketing-related. Trademarks will thus have a smaller knowledge content than patents. Trademarks have a history and their significance depends upon how the trademark has been used and treated by the company. A trademark can, for example, be an excellent guarantee that the company will be able to market its products and services on the

Internet, because the protection to a large extent secures the rights to the came domain name[16]. Trademarks have a large marketing-related significance and value in this manner, but they are not necessarily a guarantee that the company possess any special competencies or knowledge. Hence trademarks cannot be directly characterised as a knowledge-based resource, but rather a more perhaps "reputation-related" resource.

8.3.1. Resource and competency management

In traditional financial management, it is the capacity requirement of the activity which controls the establishment of the capacity and thus also the expenses. With patents and trademarks, it is more difficult to point to an unambiguous context. The nature of the tasks normally connected with a company's adjustments of its capacities is slightly different in this context. Under these circumstances it is thus part of the capacity that somehow governs the activity, because a patent can give rise to market opportunities. The strategic management will hence to a large extent resemble resource and competency management, where the focus will be in the interaction and integration of the intellectual resources and the human resources.

Most companies will face different management-related challenges related to the effective utilisation of a company's knowledge-based resources, for example challenges relating to the composition, qualification and measurement of these resources. With an individual company, the overall strategy might manifest itself in concrete measures concerning a desire to create innovation, obtain patents, etc. These are both rational and appropriate measures. However, in relation to competency management they are an element of extreme importance. It is the connection between the employees and the patents. The value of a patent and its market-related commercialisation depends not only on whether the company holds the patent, but also on whether it possesses the knowledge and the skills that created the patent. It is therefore very important that the qualifying activity is, to a large extent, directed towards sharing and anchoring the concrete knowledge and experience gained by the employees during the development process.

Even though patents are legal rights having physical or "explicit" characteristics, it is very important to be aware of the close linkage to human resources[17]. The fact that a company obtains a patent does not necessarily mean that the company in all of the 20 years will have the knowledge and experience based on which the patent was created. There are innumerable examples of how companies have "forgotten" how a product was actually created. What is important here is perhaps not so much the product itself, but rather the learning which was the basis for the innovation. In concrete terms, a mapping of persons to patents could give a picture of how much of the original knowledge a company still possesses. These measurements could then form a basis for the knowledge management activities within the company and they could also be reported externally to, for example, investors, etc. A patent thus represents an explicit knowledge and competency possessed by the company.

[16] In a judgment concerning "www.brugterolexure.dk" of 18 August, the Copenhagen Maritime and Commercial Court found that "Rolex" must not be used unlawfully in Internet addresses.

[17] This will also apply to trademarks, although to a far lesser extent.

However, a patent as a knowledge-based object represents a very complicated interaction of many different resources.

8.3.2. Linkage to strategic marketing storyline

Many patents and trademarks will in addition to their "normal" value also have a very significant positioning-related value, because the patent is related to the company's overall marketing storyline. From a knowledge-management perspective, patents will often be directly related to the utility value that the company wishes to deliver to its customer.

An example of this would be a Volvo patent that has a safety aspect. In this situation there is a link between the patent and Volvo's overall positioning which makes the patent more important than simply being yet another patent. In this situation it is extremely important to be able to assess the connection between the elements. Does the company also have the marketing-related resources it needs to utilise the positioning-related value of such a patent? In relation to the internal knowledge management activities, the connection to the utility value is also interesting, since from this perspective the technical development competencies also bear a direct relation to the company's marketing storyline. A development team employed by Coloplast must thus also know something about quality of life[18], not just simply chemical compounds. By virtue of this, the team cannot be directly replaced by other technical competencies that have not developed any "quality of life".

It thus appears that patents can have very different significances for a company because they can have a connection to other parts of a company's strategy than simply the product itself. This relationship will become still more pronounced with the possibility for patenting business methods, and will also apply to service businesses.

Assessments need to be made of whether there is an appropriate interaction between the different strategic elements. What is in mind here is primarily the interaction between the resources, the structure and the activities. This would be a broad assessment of complementarities that would go further than the individual patent.

The assessment would look into whether the resources are being used appropriately in relation to activities carried out, whether the resource utilisation is rational and whether the management of the activities is sufficient.

It is to be considered whether there is a rational connection between the individual elements, including particularly a company's employee resources and competencies in general. In concrete terms, measurements could be made, for example, of the number of patents relative to the number of people in the patent department or the number of countries in which patents have been taken out relative to the number of persons in the patent department. Some key figures can be generated in this manner, from which it would be possible to assess the likelihood that a company is able to utilise its patents.

[18] Coloplast has a marketing storyline concerning utility value in which their product supplies "quality of life".

8.4. Guidelines for strategic management

It appears from the above review that patents and trademarks are particularly important for a company and that their characteristics are in many respects different from "normal" resources. As a result, considerable efforts need to be made to make these resources controllable and manageable and to incorporate this work into the company's overall strategic management.

The strategic management of patents cannot be anchored without problems directly in a tool such as intellectual capital accounts, which, among other things, are intended for managing a company's knowledge-based resources. However, it would be possible to manage these resources using other methods/techniques. What is most essential is that the strategic and dynamic/proactive management of a company's knowledge-based resources is implemented. This management will, among other things, encompass the identification and development of the company's resources and competencies, and a definition of how the knowledge-based resources form part of a company's other management processes.

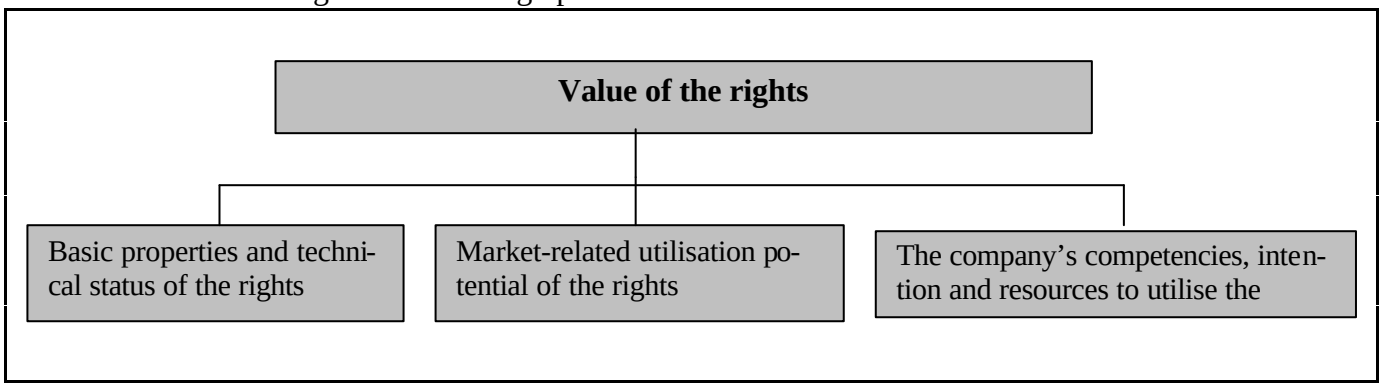
Specifically in relation to patents, focus should be placed on anchoring and sharing knowledge/experiences when patents are obtained so as to minimise the risk a company runs of losing valuable information.

9. Evaluation model

9.1. Elements of the model

The evaluation model which will be presented in this section is based on the experience which has been qualified in the project through the 15 qualitative interviews with large Danish and foreign companies, the focus meeting with investors, consultants and patent agents, and the conclusions from the web-based survey with regard to which assessment factors are of significance to the companies for purposes of an evaluation of their patents and trademarks.

The figure below is a graphic illustration of the model.



The model is thus based on the presumption that the value of a set of rights is comprised of the following three columns:

- basic properties and technical status of the rights
- market utilisation potential of the rights
- the company's competencies, intention and resources to utilise the rights, including the linkage to the company's strategy.

This involves a valuation model directed at an evaluation of individual sets of rights. Moreover, two evaluation forms have been prepared: one for trademarks and one for patents. A number of the same considerations apply to trademarks and patents. However, as trademarks and patents are different in many respects, the two types of rights have been separated from one another, each being given their own evaluation form.

In the following, the three columns for trademarks are first discussed in section 9.2, arguments being given for the inclusion of the individual assessment factors in the column concerned. Patents will be handled next, in section 9.3, and arguments will be given for the special circumstances applying in this respect.

9.1.1. Application of the model

Since this field is very broad and because the valuation can be performed for many different purposes, a process has been developed for the application of the model. Through a rough categorising of different "situations", it is the intent that focus can be placed differently in the model.

The process must render visible the significance of special circumstances that should be taken into account in the individual situation. For example, a company's internal resources might have a different impact depending on whether the nature

of the rights is "offensive" instead of "defensive". If the rights are actively used by the company for purposes of extracting the maximum economic value, then, all other things being equal, greater demands will be made of the company's competencies and resources than if they were simply being used passively in order to bar competitors from accessing the market.

9.1.2. Systematics of the model

As mentioned above, the model consists of three columns, each of which contains a given number of assessment factors, and which collectively comprise the value of a given patent or trademark.

Each assessment factor is a question that can be evaluated as an element of the valuation of the rights concerned. For each assessment factor, regard must be paid to two factors. Firstly, an evaluation must be made of the **importance** of the individual factor. That is to say that a company must assess the extent to which the assessment factor concerned is significant to the evaluation of the rights. An assessment factor might, for example, be as shown in the following.

	A: The basic properties and technical status of the patent		POINT SCORE				
	Assessment factors	Importance	4	3	2	1	0
	I. Basic properties						
4	Is it possible to extend the period of protection offered by the patent?						

If performing this evaluation is not important for the patent concerned, then the importance score is set to zero. If it is extremely critical to have the period of protection offered by the patent extended, for example in the case of some pharmaceutical patents, then the importance score is set to the maximum.

It is recommended that each company set up and define its own importance scores itself, so that uniform scoring is attained across the entire company regardless of who performs the evaluation. This company-specific evaluation should be based on the company's overall strategy, and possibly also on a special strategy for the rights concerned. By linking the assessment evaluation to the strategy, the evaluation becomes based on the company's strategic foundation. It is also recommended not to use an importance scale of more than five levels. Here, an importance scale going from zero to four is applied.

The next assessment performed is a **point assignment** to the individual assessment factor. The assignment of points is an evaluation of the degree of accordance between the company's situation and the content of the question. If we take the above example, then the possible responses would for example be "Yes, it is possible to obtain an extension" or "No, it is not possible to obtain an extension". The relevant points in this situation could for example be 1 point for the first response and 0 points for the second. Another example could be as shown in the following.

	B: The market-related utilisation potential of the patent		POINT SCORE				
	Assessment factors	Importance	4	3	2	1	0
	I. The patent's commercial potential						
1	To what extent in the market is there a demand for the service or the product encompassed by the patent?						

In this case, the company must assess whether, and the extent to which, a demand exists in the market for the product or service covered by the patent. If the assessment is that there is a heavy demand for the service/product, then an X should be placed in the field for 4 points. If, on the other hand, the assessment is that there is no demand in the market, then an X should be placed in the field for 0 points.

When performing the point assignment, it may be necessary to take into account the conditions in the type of industry to which the company belongs. This applies, for example, when points are to be assigned for questions of the "To what extent …" type. It is essential with these to have a fixed point in relation to which the assessment is to be performed. This fixed point could relate to industry standards or to the most significant competitors.

As with the importance assessment, it is recommended that a company set up and define the point scale itself, thus enabling the use of a point scale which is both specific and relevant to the individual company.

The last two columns in the assessment form consist of:

- A column which shows the maximum number of points a company can attain for the assessment factor concerned, given the specified importance assessment
- A column which states the point score actually attained by the company.

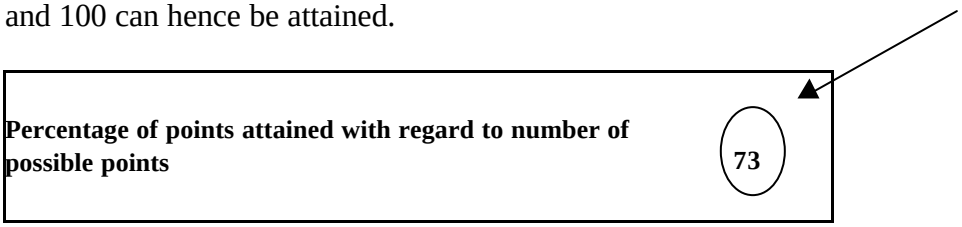
The technique used for the "Maximum point score" column is to multiply the given importance score by the highest point total for the assessment factor concerned. For the "Actual point score" column, the given importance score is multiplied by the points in the column with the X in it. See the following example.

	C. The company's competencies, intention and resources to utilise the patent		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. The company's competencies, intention and resources to utilise the patent								
1	To what extent does the company monitor the patent for purposes of identifying possible infringements, the status of the rights locally?	4		X				16	12

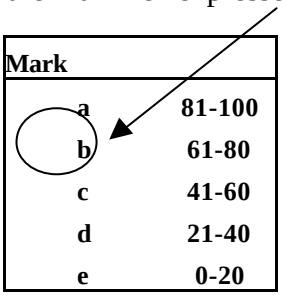
The assessment for the importance factor is that it is quite important, as it has been assigned an importance score of 4. Hence the maximum number of points which a company can attain is 16. The company has determined that it to some extent monitors the patent for purposes of identifying possible infringements, the status of the rights locally, which is why an X has been placed in the column for 3 points.

Hence an actual point score of 12 has been attained for the assessment factor concerned.

When all assessment factors have been evaluated with regard to both importance and actual point score, then a percentage is computed for each set of assessment factors in the individual columns, indicating how many points the company has actually scored in relation to the maximum point score. A percentage of between 0 and 100 can hence be attained.



When this percentage has been calculated, the mark that has been attained for the individual column is then specified at the bottom of the form[19]. A marking scale which has 5 marks is used: a, b, c, d and e. While "a" expresses the greatest degree of similarity between the maximum number of points and the actual point score, the mark "e" expresses in turn the lowest degree of similarity.



The final assessment of the rights should be performed subjectively on the basis of the three marks attained, one from each of the columns. This subjective assessment of the final classification should be made on the basis of which assessment factors have been found to be particularly important. Another element in the assessment of the final classification is the degree of cohesion with the overall strategy. For a more detailed discussion, reference is made to Chapter 10.

9.2. Trademarks

A trademark is most often a distinctive mark of a product or service. Hence it is important that such a mark creates the right associations in the target group, and that the mark differentiates itself from other marks.

9.2.1. Basic properties of the trademark

Basic properties for trademarks contain the following 8 assessment factors:

1. Status of the trademark (applied for, registered, put into use)
2. What is the probability that the trademark will be administratively revoked, disallowed or limited?
3. Life cycle of the trademark (new, mature, old)
4. Geographic coverage of the trademark, number of countries

[19] However, when no importance assessment has been specified, the default text is then "#DIV/0!".

5. Coverage of the trademark by classes
6. Is the trademark supported by a domain name?
7. Strength of the trademark
8. The trademark as a house brand or sub-brand.

Re 1: This assessment factor is included because it is important for a trademark whether it is in the application phase, has been registered or put into use. In the application phase, it will of course still be uncertain whether the trademark will at all be registered. Hence, the point score given to trademarks which are in the application phase should be lower than the point score given to those that have already been registered. For trademarks which have been put into use, but which are not registered, a point score must also be assigned. This should be less than for registered trademarks, but more than for trademarks in the application phase, because if a trademark has been used for a period of time without objections being raised against it, there will be evidence that the trademark is not infringing the rights of others.

Re 2: The next assessment factor concerns newly registered trademarks and applications for trademarks. For newly registered trademarks there is a risk that the trademark will subsequently be revoked in that objections can be made to the trademark. For trademarks being applied for, the same applies in that there is a risk that the application will not be approved by the relevant authorities. In assessing the probability that a trademark or an application for a trademark may be revoked, disallowed or limited, it could be appropriate to give a low importance score to old registered trademarks relative to those which are newly registered. In this manner, the difference in the uncertainty with regard to the revocation or disallowance can be handled in that there is a presumption that the probability that an old registered trademark may be revoked or limited is less than for the disallowance of a newly registered one. Finally, trademarks that are being used, but which are not registered, should also be included in the assessment. As mentioned above, there is a presumption that the longer the period of time during which a trademark has been used, the smaller the probability is that is will subsequently be disallowed.

Moreover, there is also an obligation to use registered trademarks within 5 years. If the trademark has not been used before this deadline, then other parties can have the trademark disallowed and hence gain access to the trademark concerned.

Re 3: For this assessment factor, the stage of a given trademark in relation to its life cycle must be determined, specifically whether the trademark is new, mature or old. All other things being equal, the older a trademark is, the more valuable it must be. This is due to the fact that is has been in use for a long time, and hence it has attained a greater level of familiarity. Thus a higher point score should be allocated to old trademarks rather than to trademarks that are completely new. However, a trademark can be introduced rather quickly by the use of electronic media.

Another element that can be made part of the assessment is the amount of money spent towards making the trademark widely recognised. The larger the amount of money that has been used, the greater the exposure the trademark has been subjected to, and hence, all other things being equal, it is presumed to be better known. This assessment must be performed in relation to the industry in which the company is a player. If the industry is one in which large sums of money are spent on

marketing, the assessment must of course be performed in relation to this. As a result of this, a company that considers itself to be spending a great deal of money on marketing may in fact not attain a high point score, as the point allocation should as such be performed in relation to the industry.

Re 4: A trademark protected in many countries (internationally known) is potentially worth more than trademarks only registered in, for example, Europe (regionally known). And finally, trademarks only registered in one country (nationally known) are usually worth the least. It is of course only the relevant countries that have any significance here. Relevant countries can, for example, be a company's own market areas, the market areas of its competitors or copycat countries.

Re 5: It further applies to trademarks that they may be registered in a given number of classes. As a result, the trademark is protected for goods and services within these classes. Hence, a trademark that can be used only within a limited product area may perhaps not be so potentially valuable as another trademark which can be used more broadly, since the trademark cannot in such cases be transferred to other products. The individual companies must assess whether this also applies to the trademark which is being assessed. This assessment must of course be reflected in the importance assessment.

Re 6: For some trademarks it is also important to have the associated domain name. A company itself must decide whether it is also significant to have the corresponding domain name for the trademark in question. This consideration could, for example, be part of a trademark strategy in which the situations are specified for which a company would also wish to have the corresponding domain name. In this regard, those situations must be collated against the company's own strategy. In doing so, the extent to which the truly beneficial top-level domains[20] are registered or not would also become clear. As it is not necessarily important with regard to a number of trademarks to have the domain name, this should be reflected in the importance assessment. Similar considerations may also apply in connection with the question of whether the trademark is also the company name of its owner (see also Re 8).

Re 7: The assessment factor "strength of the trademark" concerns the construction, type and other characteristics of the trademark itself which may be decisive with regard to how strong and, hence, how valuable the mark may be. If the trademark is an imaginative grouping of letters, then it would involve a made-up word, which would typically be quite strong and enjoy broader protection than a mark composed of alphabetic elements often used within a given industry. Another element may consist of whether the trademark involves a word of a figure. For the former, an exclusive right is created in respect of the word itself, whereas a figure is protected solely in its entirety as a figure, where, viewed in isolation, the exclusive rights to the word as such are not attained. This applies all the more when the word in a figure-based mark does not have the requisite distinguishing characteristics in order to

[20] Top-level domains concern the question of whether it should have one of the endings ".com", ".dk", ".net", etc. For example, if a company only operates on a national basis, then the top-level national domain would be attractive. If it involves an international company, then a ".com" address would be valuable, etc.

be protected, or if the word has distinguishing characteristics to a limited extent only. It should, however, be noted in this respect that a weak mark may obtain quite some strength if used intensively.

	A: Basic properties of the trademark		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. Basic properties								
1	Status of the trademark (applied for, registered, being used)								
2	What is the probability that the trademark will be administratively revoked, disallowed or limited?								
3	Stage of the life cycle of the trademark (new, mature, old)								
4	Geographic coverage of the trademark, number of countries								
5	Coverage of the trademark by classes								
6	Is the trademark supported by a domain name, company name, etc.?								
7	Strength of the trademark								
8	The trademark as a house brand or sub-brand								
	Total								

Re 8: In addition to the elements mentioned, it may also be of significance whether the trademark functions as a housemark, and thus is used for a number of products, or whether it involves a "sub-brand", which is solely used for a single product. A housemark used on many products will reach many potential buyers more quickly, which may increase the value of a housemark in relation to a sub-brand. However, this is not always the case where the individual products are marketed under their own strong marks. It must be emphasised that the factors mentioned here may all have their own separate effects, just as some factors may play a greater role in some industries than in others.

9.2.2. Market utilisation potential of the trademark

This column contains two categories:

I. The commercial potential of the trademark
II. The profitability of the trademark.

The category entitled "The commercial potential of the trademark" comprises the following 10 assessment factors:

1. To what extent is there a demand in the market for the product or service encompassed by the trademark?
2. How probable is it that the product or service which the trademark covers can be sold at a competitive price?
3. What is the market leadership position of the product or service (leading, less leading or last-in-class)?
4. What is the coverage of the trademark with regard to the relevant markets?
5. How has the familiarity of the market with the trademark grown over time?
6. How large is the market area?
7. At what rate is the market growing?
8. What market share may be expected to be conquered?
9. How quickly can the desired market share be conquered?
10. What is the life cycle of the product or service in the market?

Re 1: The first assessment factor is an assessment of the demand in the market. An analysis should thus be performed of whether the market to which the product or service is addressed in any way shows a demand for the product or service concerned. According to the general theory of supply and demand, if there is a large demand for a given item, then the price which can be obtained for the product or service will, all other things being equal, be higher than the price which would be obtained if there were less demand given a constant supply. This then means that the greater the demand is for the product or service which the trademark covers, the higher the value the trademark can be presumed to have.

Re 2: This assessment factor addresses the competitiveness of the product/service. Behind the factor lies a presumption that if the company cannot sell more – or equally as – competitive products/services as the other suppliers, then the trademark has less value. This is due to the fact that even though there is a market, it should also be possible to attain a market share before the trademark will become known, which perhaps may not be possible if the product/service cannot be sold competitively.

Re 3: For goods or services already on the market, an assessment should be performed of the relative market position, i.e. whether it involves a market-leading product/service, a less market-leading product/service or a discount product/service. There is a presumption that the value of trademarks rises in step with the market-leading status of a product/service. However, a discount brand could well be market-leading, such as NETTO in Denmark.

Re 4: With this factor, as assessment is performed of what the registration of the trademark is in relation to those market areas which the company expects to address. If the requisite trademark registration is not attained for all the relevant markets, then this must influence the point score negatively in that the company has not attained full protection. Such a lack of registration in a given country could be the reason why a marketing campaign cannot begin in the country concerned. Moreover, regard should be paid to whether registration has been attained in countries known to make pirate copies. As trademark registration in countries known to make pirate copies can be an effective way in which to stop pirate copying, the assessment of points should be adversely affected if no such registration is performed. This condition applies to a greater extent to goods that are attractive to copy. The same applies to registration in countries that produce raw materials and in countries in which competitive goods are found.

Re 5: The market's familiarity with the trademark should be assessed over time. This is one of the absolutely crucial assessment factors, since a trademark with which a large share of the market is familiar may sustain a sale solely on the basis of the trademark and the image which the trademark projects. An example of this is Coca-Cola, which is known worldwide, and which is sold at a higher price than other equivalent softdrinks.

The reason why the familiarity a given trademark should be assessed over time is that there may well have been a large degree of familiarity with the trademark in a historical sense, but such familiarity must be maintained via advertising campaigns, etc. If the knowledge of the trademark is declining, then it should not be given as high a point score as is given to trademarks with a stable level of market familiarity. The absolute level of knowledge must also be taken into account in that one can easily imagine a trademark which has had a stable but low level of familiarity and another trademark which has a very high level of familiarity, but which shows a downward trend. The latter trademark would, all other things being equal, be more valuable than the former. This may be compensated for by assigning a lower importance score to the first-mentioned trademark relative to the second one.

Re 6: The next five assessment factors address an assessment of the market potential of the market area in which the product/service is sold.

Assessment factor 6 addresses the absolute size of the market in that a potentially larger market is more attractive than a small market area. That is to say that an assessment must be performed in absolute terms (for example dollars) of the market area in which the company expects the trademark to be used. This will typically be done via an assessment of the market for the product or service, as the value of the trademark is to a large extent derived from it.

	B: Market-related utilisation potential of the trademark		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. Commercial potential of the trademark								
1	To what extent is there a demand in the market for the product or service encompassed by the trademark?								
2	How probable is it that the product or service which the trademark covers can be sold at a competitive price?								
3	3. What is the market leadership position of the product or service (leading, less leading or last-in-class)?								
4	What is the coverage of the trademark with regard to the relevant markets?								
5	How has the familiarity of the market with the trademark grown over time?								
6	How large is the market area?								
7	At what rate is the market growing?								
8	What market share can be expected to be conquered?								
9	How quickly can the desired market share be conquered?								
10	What is the life cycle of the product or service in the market?								
	II. Profitability of the trademark								
11	How high a price will the customer pay for the image which the trademark concerned attributes?								
12	What is the expected cash flow from the product or service covered by the trademark?								
13	How attractive to the company will the absolute profit be that can be expected to be added from the product covered by the trademark?								
	Total								

Re 7: It is also essential to assess the growth rate of the market for the product or service covered by the trademark. If it involves a market with a high growth rate, then the potential value of the trademark will, all other things being equal, be higher than for a market without any actual growth. This is due to the competitive situation, as it is harder to gain a foothold in a market without growth than in a market in which the supply is perhaps not sufficient to meet the demand.

Re 8: In relation to what market share is expected to be conquered, the share of the market area expected to be conquered should be analysed. The analysis should be conducted on the basis of an assessment of the level, for example very large, large, medium, small or very small. When this factor is viewed in conjunction with items 6 and 7, then a good picture will be drawn of the strength of the product in relation to the market it addresses, and hence also of the strength of the trademark. Moreover, the company can use these analyses/assessments internally in its marketing efforts. For example, a more in-depth analysis should be made of the reason why the company expects only a small market share with regard to products or services (and the associated trademark) which address a large market in absolute terms with a very high rate of growth, and where only a small market share is expected.. By doing so, the assessment of the trademark may contribute to increasing the level of focus within the company.

Re 9: The speed at which the expected market share will be gained is assessed here. This is due to the fact that the time dimension is significant to the value of the cash flow which will ultimately flow to the trademark. The farther into the future the cash flow falls, the lower the present value of the cash flow will be, given an expectation of inflation.

Re 10: Finally, the life cycle of the product or product type in the market should be assessed. If the life cycle of a given product or product type is very short, then the trademark should be assigned a lower value than in case of a product or product type that has a long life cycle. As many trademarks cover a product type and are not dependent on whether the product or the product model has a short life cycle, they should be assessed as per the life cycle of the product type.

The second category under market-related utilisation potential is "Profitability of the trademark", which consists of the following 3 assessment factors:

11. How high a price will the customer pay for the image which the trademark concerned attributes?
12. What is the expected cash flow from the product or the service covered by the trademark?
13. How attractive to the company will the absolute profit be that can be expected to be added from the product covered by the trademark?

The assessment of these three factors should contribute to an awareness of the actual profitability of the trademark in monetary terms. A linkage is thus established to a possible quantitative assessment based upon a discounting of future cash flows.

Re 11: This factor is a direct analysis of what additional price relative to previously familiar goods or services the consumer/customer will be willing to pay. The reasoning here is that the higher the price relative to other equivalent products which it is possible to receive for the product or service, the higher the value of the trade-

mark will be. This assessment must be performed for previously existing products or services, and the additional price may rise over time as a consequence of the trademark becoming stronger and stronger.

Re 12: In addition to factor 11, an assessment should be made of the cash flow which is expected to be added to the company as a consequence of a commercialisation of the product/service or the trademark itself. In the two models used to value assets in finance theory, the absolute size of the cash flow generated by the asset is included in both. Hence it is essential to assess the absolute expected cash flow from the asset, budgeted for by the company, as the greater the cash flow, the higher the value of the trademark will be. However, a number of trademarks do not generate any cash flow - yet they are valuable. This applies, for example, to non-profit organisations.

Re 13: Finally, the absolute profit which can be expected to accrue from a commercialisation of the product/service or the trademark itself should be assessed. This is actually a strategic assessment of the significance to the company of the trademark. If the absolute profit on the trademark, etc. viewed in relation to the company's profit in general is essential, then a strategically significant trademark is involved. The company will thus get an overview of what trademarks generate what profits and, thus, which trademarks are the most important in a strategic sense.

9.2.3. The company's competencies, intention and resources to utilise the trademark

This third column partly concerns partly the company's competencies, intention and resources to utilise the trademark, and partly the company's strategic utilisation of the trademark.

There are two categories:

I. The company's competencies, intention and resources to utilise the trademark
II. The company's strategic utilisation of the trademark

The company's competencies, intention and resources to utilise the trademark consists of the following 3 assessment factors:

1. To what extent does the company monitor the trademark for purposes of identifying possible infringements, the status of the rights locally?
2. To what extent does the company have the financial ability to maintain the trademark in the relevant markets?
3. To what extent does the company possess the competencies and financial ability to enforce the trademark against any possible infringing parties?

Re 1: This assessment factor shows the company's competencies and intention to monitor its rights. That is to say that it should be assessed whether any form of formalised or more as hoc monitoring has been implemented for possible infringements of the trademark. If the monitoring of the trademark is more or less by chance, then this should have an adverse effect on the value of the trademark in that a given legal right is not worth much if no attempt is made to enforce it. It is, of course, not so important to the company to make sure certain trademarks are

enforced. However, in such a case the importance score can be set to a low value for the trademark concerned.

	C. The company's competencies, intention and resources to utilise the trademark		POINT SCORE						
	Assessment factors	Importance	**4**	**3**	**2**	**1**	**0**	Maximum point score	Actual point score
	I. The company's competencies, intention and resources to utilise the trademark								
1	To what extent does the company monitor the trademark for purposes of identifying possible infringements, the status of the rights locally?								
2	To what extent does the company have the financial ability to maintain the trademark in the relevant markets?								
3	To what extent does the company posses the competencies and financial ability to enforce the trademark against any possible infringing parties?								
	II. The company's strategic utilisation of the trademark								
4	To what extent does the company utilise the trademark to screen off its market area from its competition? (defensive use)								
5	To what extent is the trademark used in a goal-oriented fashion for sales and marketing purposes in order to raise entry barriers or increase customer loyalty? (offensive use with regard to positioning)								
6	To what extent is the registration of the trademark used to avoid lawsuits? (offensive use with regard to saving expenses)								
7	To what extent does the company commercialise the trademark by licensing or sales? (offensive use with regard to revenues)								
	Total								

Re 2: The company must of course be in a financial position which allows it to pay any due renewal fees.

Re 3: This assessment factor must clarify the situation with the company's competencies and resources with regard to a legal perspective. If a person has trademark protection in China, then it is important that the person understands Chinese trademark law and has access to the requisite competencies and resources to be able to enforce his rights in the market concerned.

Moreover, the company's financial resources must be assessed in relation to the potential for taking legal proceedings against infringements of the trademark. If a company does not have the financial ability to prosecute infringing parties, then this must influence the value of the trademark negatively, on the basis of the same arguments as put forward under item 1 above.

The company's strategic utilisation consists of the following 4 assessment factors:

4. To what extent does the company utilise the trademark to screen off its market area from its competition? (defensive use)
5. To what extent is the trademark used in a goal-oriented fashion for sales and marketing purposes in order to raise entry barriers or increase customer loyalty? (offensive use with regard to positioning)
6. To what extent is the registration of the trademark used in order to avoid lawsuits? (offensive use with regard to saving expenses)
7. To what extent does the company commercialise the trademark by licensing or sales? (offensive use with regard to revenues)

The content of assessment factors 4 through 7 involves the extent to which the company uses the trademark offensively or defensively, i.e. what strategic use the company has planned for the trademark. Specific, detailed comments will only be given in the following for assessment factor 4.

A defensive use of trademarks would be if the trademark were used solely to exclude others from using the trademark, or trademarks that could be confused with the trademark concerned in relation to the company's own products or services.

If, on the other hand, the trademark is used in one of the following situations, then it involves an offensive use of the trademark:

- If it is used to position the company in relation to its competition with regard to image/reputation.
- If the trademark has been registered in order to prevent a competitor from varying its marks in a manner such that the competitor is limited to marketing its product or service under the trademark concerned.

Re 4: In relation to assessment factor 4, it should be mentioned that trademarks registered solely in order to protect the actual trademark should be included in the valuation of the trademark used. Which is to say that if the company has registered a number of trademarks solely for the purpose of setting up a wall around its own trademark, then these trademarks should be included here. The trademarks concerned perhaps do not have any separate financial value, but they do have a strategic value as they fence out competition.

9.3. Patents

9.3.1. Basic properties and technical status of the patent

In general, the patent application and patents will be assessed in this section.

Basic properties and the technical status of patents include a number of assessment factors, which are divided into two categories:

I. Basic properties
II. Technical status.

Basic properties comprise the following 6 assessment factors:

1. The status of the patent (applied for, issued)
2. Tenability of the patent?
3. Stage in the life cycle of the patent (new, mature, about to expire)
4. Is it possible to extend the period of protection afforded by the patent?
5. How likely is it that the period of protection afforded by the patent will be extended?
6. The geographical coverage of the patent, number of countries.

Re 1: This assessment factor is included because it is crucial for a patent whether it is in the application phase or has been issued. In the application phase, it will of course be uncertain whether the patent will be granted after an investigation of its innovativeness, an assessment of the inventive step, etc. Hence a higher point score must be given if the patent has been issued than if a patent application has only just been filed.

Re 2: The next factor concerns the tenability of the patent. What is meant by this is that it is probable that the patent application will be disallowed or limited during the individual phases which the application traverses. For newly issued patents, there is a risk that the patent will be subsequently invalidated, as objections may be made against the patent. As far as more mature patents are concerned, legal proceedings may be instigated, and the validity of the patent itself may be subjected to close scrutiny. If patents have survived such attacks and won them, they may be considered more tenable, and hence more valuable.

In the assessment of the probability that a patent or an application will not be approved, it is appropriate to assign a low importance score to patents which have been granted relative to patent applications. The difference as to the degree of uncertainty with regard to disallowance may be handled in this manner, as it is presumed in advance that it is less probable for newly issued patents to be disallowed than for patent applications. The same applies to patents which have gone through lawsuits and have prevailed.

Re 3: With regard to this assessment factor, the stage of the life cycle of the patent should be determined. It is particularly important in this respect to determine whether the patent is new, mature or about to expire. As a new patent has a longer period during which it can exclude others from using the same technology, it is considered to be more valuable than a patent which is about to expire. A higher point score should thus be assigned to newly issued patents than to patents which are about to expire.

Re 4: In some industries it is very important to have the exclusivity period extended, and in these situations this factor may be included in order to counteract the assessment in point 3. In other words, a low point score under point 3 can be offset by a point score under this factor.

Re 5: If an extension of the exclusivity period is considered possible, the likeliness that it will in fact be the period extended should be assessed.

Re 6: Patents which have been obtained in many countries are presumed to be more valuable than patents which only enjoy protection in one country. It is of course only the relevant countries which are of significance. Relevant countries may be a company's own market areas, the market areas of its competitors, copycat countries, countries providing raw materials and countries of production.

Some patents are very dependent upon a given raw material factor or other input factor. Furthermore, the production mechanism must be located in a given place in order for production to be feasible. In these or other special circumstances, the importance of this factor is down-graded. In other words, if the patent is protected in only one or two countries, but where special production or distribution conditions apply, then a low importance score can be given, and a low country point score can thus be countered in that manner.

	A: Basic properties and technical status of the patent		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. Basic properties								
1	Status of the patent (applied for, issued)								
2	Tenability of the patent?								
3	Stage in the life cycle of the patent (new, mature, about to expire)								
4	Is it possible to extend the period of protection afforded by the patent?								
5	How likely is it that the period of protection afforded by the patent will be extended?								
6	The geographical coverage of the patent, number of countries								
	II. Technical status								
7	To what extent is the invention developed for a superior technology?								
8	To what extent is the invention described by the use of examples of different applications?								
9	To what extent has the invention been tested?								
10	To what extent is further development necessary before commercialisation is possible?								
11	To what extent is the invention technically superior compared to substitutable technology?								
	Total								

The "Technical status" category contains 5 assessment factors:

7. To what extent is the invention developed for a superior technology?
8. To what extent is the invention described by the use of examples of different applications?
9. To what extent has the invention been tested?
10. To what extent is further development necessary before commercialisation is possible?
11. To what extent is the invention technically superior compared to substitutable technology?

All the factors must be assessed in relation to a continuous scale in that they involve questions of the type "To what extent …". Thus they do not involve, to the same degree as the above basic properties, assessments of a more objective nature. They consequently involve a company's assessment of the uniqueness, etc. of the invention covered by the patent.

Re 7: This assessment factor covers the individual invention in relation to the uniqueness of the invention. The assessment involves the extent to which the patent covers an invention which turns out to be path-breaking in the field. It is not necessarily important in this connection whether it involves fundamental technology, much better technology in relation to existing technology or technology which is only slightly better than existing technology. What is important in this context is the extent to which the patent is superior compared to known technology. A small change in a fundamental technology invention may, for example, turn out to be still more significant, and hence the patent concerned may subsequently appear to be the most superior within the sphere of the technology concerned.

Re 8: Here, the content of the patent application itself is assessed. There is a presumption that the number of examples of potential uses in the patent application are of significance to how well-described the uses of the invention are and, hence, the subsequent utilisation of the invention. It is not the number as such which is significant, but rather the number of potential uses which are relevant. In addition, the number of examples are of significance to how strong the rights obtained are. Finally, the examples are used for placing the patent into patent classes depending on which technological areas are encompassed by the examples. The presumption behind the assessment factor is that an invention which can be used exclusively within a given technological sphere is not worth as much as an invention which has a broader set of potential uses. In other words, a patent which covers, for example, a given electronic invention which can only be used for windmills does not have the same value as an invention which could also be used in other contexts. This applies regardless of whether the company does not have direct access to use the invention in all of its potential applications itself, because licensing contracts, joint ventures, etc. from which the company can receive revenues may subsequently be entered into. In other words, it must be ensured that inventions with a broad set of potential applications are valued higher.

No direct instructions can be given for the scale to be used. However, it is recommended that each individual company set up pre-defined scales for a number of examples and the associated point assignments.

Re 9: Assessment factor 9 covers an assessment of the extent to which the given invention has been tested so that it can be commercialised soon after the patent has been granted. This assessment factor is hence closely related to factor 10 below.

Re 10: If the invention has not been sufficiently tested, or if there are other reasons for the commercialisation[21] of the invention being delayed, then this should be made part of the valuation of the patent. In other words, an invention which still requires a long trial period is not as valuable as another patent which is well-tested and ready to be commercially exploited. This is due to the fact that a test period of a given length is, all things considered, a factor of uncertainty as regards the extent to which the invention covered by the patent can be commercialised at all.

Re 11: Finally, it is appropriate to assess the technology concerned in relation to other technologies that may be used as a substitute. This assessment factor is included in order to have the company expand its focus so as to include other technology which can be applied instead of the technology covered by the patent. It is perhaps not so valuable to develop a new method of stamping a letter, since it can be expected that more and more communication will take place via the Internet or other means of telecommunications. This does not mean that there is no value in having such a patent for a new method of stamping a letter, only that the value would have been higher had the Internet not existed. The extent to which the company should evaluate substitutable technology is an open question. For example, the potential of the Internet of having meetings between people without any physical meeting taking place may certainly easily be considered a substitute technology for a train or an aeroplane. The individual company itself should ascertain how this assessment should be performed and the extent to which substitute technology should be sought out.

9.3.2. Market-related utilisation potential of the patent

In general, the underlying invention will be evaluated in this section. In other words, the technology, the product or the service will be evaluated.

This column contains two categories:

I. Commercial potential of the patent
II. Profitability of the patent.

[21] What is meant by commercialisation is that the invention can become a part of a product, be marketed independently or be used in the production of a given product.

	B: Market-related utilisation potential of the patent		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. Commercial potential of the patent								
1	To what extent is there a demand in the market for the service or the product encompassed by the patent?								
2	How likely is it that a product which has been produced using the technology concerned can be produced at a reasonable price?								
3	How straightforward are the sales channels for the product or the service covered by the patent?								
4	Do sales of the product/service require that special permissions, licences, etc. be obtained? In the affirmative, how long can such permissions be maintained?								
5	To what extent will the invention add something new to the product or service it supports?								
6	How probable is it that competitive or substitute products/services will appear?								
7	Can infringing/copy products be produced easily?								
8	How easy is it to detect infringing/copy products?								
9	To what extent is the product or the service which the patent covers obsolete?								
10	How large is the market area?								
11	What is the rate at which the market is growing?								
12	What market share can be expected to be conquered?								
13	How fast can the desired market share be conquered?								
14	What is the life cycle of the product in the market?								
	II. Profitability of the patent								
15	How high a price will the purchaser pay for the value added by the use of the technology in the patent concerned?								
16	What is the expected cash flow from the product or the services covered by the patent?								
17	How attractive to the company will the absolute profit be that can be expected to be attributed from the product covered by the patent?								
	Total								

The category called "Commercial potential of the patent" comprises the following 14 assessment factors:

1. To what extent is there a demand in the market for the service or the product encompassed by the patent?
2. How likely is it that a product which has been produced using the technology concerned can be produced at a reasonable price?
3. How straightforward are the sales channels for the product or the service covered by the patent?
4. Do sales of the product/service require that special permissions, licenses, etc. be obtained? And in such case, how long can such permissions be maintained?
5. To what extent will the invention add something new to the product or service it supports?
6. How probable is it that competitive or substitute products/services will appear?
7. Can infringing/copy products be produced easily?
8. How easy is it to detect infringing/copy products?
9. To what extent is the product or the service which the patent covers obsolete?
10. How large is the market area?
11. What is the rate at which the market is growing?
12. What market share can be expected to be conquered?
13. How fast can the desired market share be conquered?
14. What is the life cycle of the product in the market?

Re 1: The first assessment factor is an evaluation of the demand in the market. An analysis must hence be performed of whether the market to which the product or service is addressed evidences any demand at all for the product/service concerned. According to the general theory of supply and demand, if there is a large demand for a given item, then the price which can be attained for the product or service will, all other things being equal, be higher than the price which could be attained had there been less demand given a constant supply. Consequently, the greater the demand for the product/service which the patent covers, the higher the value of the patent will be.

Re 2: This assessment factor is directed towards process patents. There is a presumption behind the patent that if the company cannot produce in a better, less expensive or more competitive way using the process patent, then it is of lesser value than if the application of the technology behind the process patent had implied a better, less expensive or more competitive production process, for which the output could be sold at a lower price or whatever other goal the company might have.

Re 3: If, for example, a company holds a patent on a product which is not a part of the company's normal line of business, then situations may arise in which the company does not have the requisite sales channels in order to market the product concerned. It is self-evident that if a company is not in a position to commercialise its patent, then the patent would be worth less than a patent which can be commer-

cialised[22]. As a company might also with to enter markets in which it has not been represented previously, the sales channels in the market concerned should be analysed.

Re 4: In some situations special permission must be obtained from public authorities or others when licensing agreements are entered into for the application of technology, etc. In such cases these matters should be assessed, as it may not be possible to commercialise the patent until such permissions or licences are obtained. Furthermore, the time aspect should be considered, as a time-related limitation on the licence, etc., which must be obtained will have an adverse effect on the value of the patent if the time-related limitation is shorter than the period of protection offered by the patent.

Re 5: This assessment factor is related to assessment factor 8 under "Technical status" and to assessment factor 15 under "Profitability of the patent". The extent to which the product or the service covered by the patent may add incremental value to the products/services in a manner such that a higher sales price can be obtained should be assessed. If the consumers consider the product unchanged, and no additional incremental price can be added to the product/service, then the patent is worth less than if an additional incremental price could be added.

Re 6: An analysis should be performed of the probability of the development of competitive or substitute technologies[23]. Hence it is necessary that the development capabilities of the competition be analysed for purposes of ascertaining whether exclusivity in the market can be maintained for the product/service concerned. If it is highly probable that competitive or substitute technologies will be developed, then it should affect the value of the patent adversely. This is because the exclusivity which goes with a patent will be diluted if other solutions appear for the same problem.

Re 7: If the technology, the product or the service is easy for others to copy, i.e. if a competitor can easily bring equivalent products to market by using the invention covered by the patent, then the value of the patent should be adjusted downwards. However, this depends on whether the copycat products can be produced and marketed at competitive prices. The reasons for the assessment factor are, as mentioned previously, that the exclusivity which a patent gives to its owner becomes diluted if copycat products, etc. exist.

Re 8: This factor is related to factor 7 above. If it is very easy to identify infringing products, etc., then it is not entirely as serious as when copycat products exist which are extremely difficult to identify as such. If a company holds a patent which is easy to infringe, but where it is also easy to identify any such infringement, it must not be assigned as high a score as companies whose patents are very difficult

[22] Objections can of course be made against this conclusion in that some patents are taken out in order to hinder competitors in their development or other forms of patent strategies which protect one's own commercial position. Such patents have of course a rather significant value.

[23] This assessment factor must be viewed in conjunction with assessment factor 11 under "Technical status". What is involved here is an assessment of future technologies, as opposed to factor 11, which involves an assessment of already known technologies.

or nearly impossible to infringe. This is due to the fact that there is always a risk connected with a lawsuit in that the outcome cannot be predicted with complete certainty. In the field of exclusive rights, there are large national differences as to how likely it is to win an infringement lawsuit before the courts, hence the companies should also include this element in their overall evaluation.

Re 9: This assessment factor should be included after a period during which the technology behind the patent has been in use. Given the rate at which new technology, new products and new services is developed globally, it must be assessed whether the patent is still state-of-the-art or whether new solutions have emerged for what is covered by the patent. If such new solutions have appeared or are expected to appear within a short period of time, the technology behind the patent could be obsolete and hence worth less than originally.

Re 10: The next five assessment factors all concern an assessment of the market potential for the market area addressed by the product/service.

This assessment factor addresses the absolute size of the market in that a potentially large market is more attractive than a small market area. In other words, an assessment should be performed in absolute terms (for example dollars) of the market area which the company expects the underlying patent to address.

Re 11: It is also essential to assess the rate of growth of the market for the product, etc. which the patent concerns. If the market has a high growth rate, the potential value of the patent will, all other things being equal, be higher than for a market without any actual growth. This is due to the competitive situation, as it is harder to gain a foothold in a market without growth than in a market where the supply is perhaps not sufficient to meet the demand.

Re 12: In relation to what market share can be expected to be conquered, the share of the market area which can be expected to be conquered should be analysed. The analysis should be conducted on the basis of an assessment of levels, for example very large, large, medium, small and very small. When this factor is viewed in conjunction with sections 10 and 11, a good picture is drawn of the strength of the patent relative to the market it addresses. Moreover, a company can use these analyses/assessments internally in its marketing work. For example, a more detailed analysis should be made of why the company only expects a small market share with regard to patent addressing a large market in absolute terms with a very high growth rate, and where only a small market share is expected. In this manner, the assessment of a patent may contribute to increasing the level of focus within the company.

Re 13: Here, the speed at which the expected market share can be attained should be assessed. This is due to the fact that the time dimension is significant to the cash flow that will ultimately accrue from the use of the patent. The farther into the future the cash flow falls, the lower the value it has today will be, given an expectation of inflation.

Re 14: Finally, the life cycle of the product must be assessed. If a given product has a very short life cycle, the patent should be assigned a lower value than for products in areas in which the life cycle is longer. If a patent has another 15 years of

protection, but where it appears that the patent will not be used for more than 8 years, this must of course weigh in the opposite direction of assessment factor 3 under "Basic properties".

The second category under "Market-related utilisation potential of the patent" is "Profitability of the patent", which consists of the following three assessment factors:

15. How high a price will the purchaser pay for the value which is added by the use of the technology in the patent concerned?
16. What is the expected cash flow from the product or the services covered by the patent?
17. How attractive to the company will the absolute profit be that can be expected to be added from the product covered by the patent?

The assessment of these three factors contributes to an awareness of the actual profitability of the patent in monetary terms. A linkage is thus established to a possible quantitative assessment based upon a discounting of future cash flow.

Re 15: This factor is a direct analysis of what additional price, in relation to previously familiar products, the consumer/customer is willing to pay in order to receive a product containing the qualities/properties which the technology, the product or the service will impart. The reasoning here is that the higher the price it is possible to receive for the product, etc., the higher the value of the patent will be.

Re 16: In addition to factor 15, an assessment should be made of the cash flow which is expected to accrue to the company as a consequence of a commercialisation of the patent. In the models used to value assets in finance theory, the absolute size of the cash flow which is generated from the asset is included. Hence it is essential to assess the absolute expected cash flow expected to accrue to a company from the asset, as the higher the cash flow is, the higher the value of the patent will be.

Re 17: Finally, the absolute profit expected to accrue from a commercialisation of the patent should be assessed. This more resembles a strategic assessment of the significance to the company of the patent. If the absolute profit from the patent, viewed in relation to the company's profit in general, is of essential significance, a strategically significant patent is involved. The company will thus receive an overview of what patents generate what profits and hence which patents are the most important from an earnings-related perspective.

9.3.3. The company's competencies, intention and resources to utilise the patent

This third column relates in part to the company's competencies, intention and resources to utilise the rights, and in part the company's strategic use of the rights.

There are two categories:

I. The company's competencies, intention and resources of the company to utilise the patent
II. The company's strategic utilisation of the patent

The company's competencies, intention and resources to utilise the patent consist of the following 5 assessment factors:

1. To what extent does the company monitor the patent for purposes of identifying possible infringements, the status of the rights locally?
2. To what extent does the company have the financial ability to maintain the patent in the relevant markets?
3. To what extent does the company possess the competencies and financial ability to enforce the patent against any possible infringing parties?
4. Access to the inventor in connection with instances of objections or lawsuits?
5. To what extent does the company possess knowledge of the potential scope of the applications and, hence, of the commercialisation potential of the patent?

Re 1: This assessment factor must show the company's competencies and intention to monitor its rights. This is to say that an assessment should be performed of whether any form of formalised or more as hoc monitoring has been implemented for possible infringements of the patent. If the monitoring of the patent is more or less by chance, this should influence the value of the patent negatively in that a given legal right is not worth much if no attempt is made to enforce it. It is, of course, not so important to the company to ensure that some patents are enforced. However, in such a case the importance score can be set to a low value for the patent concerned.

Re 2: The company must of course be in a financial position to pay the annual fees which fall due. If the company has a patent which is registered in many countries, the annual fees will add up to a significant amount.

Re 3: This assessment factor should illustrate the situation with the company's competencies and resources with regard to a legal perspective. If a person has patent protection in China, it is important that the person understands Chinese patent law and has access to the requisite competencies and resources to be able to enforce his rights in the market concerned.

Moreover, the company's financial resources should be assessed in relation to the potential for taking legal proceedings against infringements of the patent. If a company does not have the financial ability to prosecute infringing parties, then this must influence the value of the patent negatively, on the basis of the same argumentation as advanced above under 1.

Furthermore, the assessment should also include considerations concerning the company's ability to defend itself against objections advanced by others against its own patents. If the company is very good at defending itself, this should of course affect the value of the patent.

Re 4: When companies purchase patents, it is in some situations crucial to the subsequent value of the patent for the purchasing company that it has access to the inventor of the patent. It may be due to a lack of special expertise in connection with the technology which the patent involves, or because only the inventor can develop reliable argumentation as to what the patent covers in connection with subsequent objects or infringement proceedings. Something similar also applies to

companies that have generated the invention behind the patent internally in that they may, in a later situation, also need access to the inventor if the person is no longer with the company and the underlying expertise is no longer to be found internally.

Re 5: With this assessment factor, a company should assess whether it has full knowledge of the potential scope of the applications and thus the associated commercialisation potential created by the patent.

	C. The company's competencies, intention and resources to utilise the patent		POINT SCORE						
	Assessment factors	Importance	4	3	2	1	0	Maximum point score	Actual point score
	I. The company's competencies, intention and resources to utilise the patent								
1	To what extent does the company monitor the patent for purposes of identifying possible infringements, the status of the rights locally?								
2	To what extent does the company have the financial ability to maintain the patent in the relevant markets?								
3	To what extent does the company possess the competencies and financial ability to enforce the patent against any possible infringing parties?								
4	Access to the inventor in connection with objections or lawsuits?								
5	To what extent does the company possess knowledge of the potential scope of the applications and, hence, of the commercialisation potential of the patent?								
	II. The company's strategic utilisation of the patent								
6	To what extent does the company utilise the patent to screen off its market area from its competition? (defensive use)								
7	To what extent is the patent used in a goal-oriented fashion for sales and marketing purposes in order to raise entry barriers or stop the development of competitors? (offensive use with regard to positioning)								
8	To what extent is the patent used to avoid lawsuits or to gain access to the technology of others? (offensive use with regard to saving expenses)								
9	To what extent does the company commercialise the trademark by licensing or sales? (offensive use with regard to revenues)								
	Total								

The company's strategic use consists of the following 4 assessment factors:

6. To what extent does the company utilise the patent to screen off its market area from its competition? (defensive use)
7. To what extent is the patent used in a goal-oriented fashion for sales and marketing purposes in order to raise entry barriers or stop the development of competitors? (offensive use with regard to positioning)
8. To what extent is the patent used to avoid lawsuits or to gain access to the technology of others? (offensive use with regard to saving expenses)
9. To what extent does the company commercialise the trademark by licensing or sales? (offensive use with regard to revenues)

The content of assessment factors 6 through 9 involves the extent to which the company uses the patent offensively or defensively, i.e. what strategic use the company has planned for the patent. Specific, detailed comments will be given in the following only for assessment factors 6 and 8.

A patent would be used defensively if the patent were used solely to exclude others from using the technology, etc. concerned, or if the purpose of the patent is to secure freedom to operate for the company.

If, on the other hand, the patent is used in one of the following situations, the use of the patent will be offensive:

- If it is used to position the company in relation to its competition with regard to image/reputation
- If the patent has been taken out in order to hinder a competitor in its line of development so that the competitor is prevented from making a product, etc. which is competitive
- If the patent is used to scare a party away from entering a given market, as there are high entry barriers of a technological nature. What is meant here is that it becomes extremely complicated for a party to develop its own products because a number of patents have been taken out within the area concerned which perhaps makes it possible to get around these patents only by entering into licence agreements.

Re 6: With this assessment factor, patents that have been taken out exclusively for the purpose of protecting the actual patent should be included in the assessment. Which is to say that if the company has taken out a number of patents for the sole purpose of setting up a wall around its own patent, then these patents should be included here. The patents concerned perhaps do not have any separate financial value, but they do have a strategic value with regard to the fact that they fence out competition.

Another element which should be mentioned here is that co-operative relationships are sometimes entered into with competitors or other companies, causing a summons, which would otherwise have been served, not to be served, since – in the assessment of the company – the risk and associated cost of having the co-operative relationships terminated is greater than what may be obtained by winning a lawsuit. In such situations, the importance score can be set to a low value so as to reflect the situation mentioned above in the valuation.

Re 8: Some companies take out patents to have something with which they may later negotiate in any possible cross-licensing agreement. Such patents must, among other things, be included as part of the evaluation for assessment factor 8.

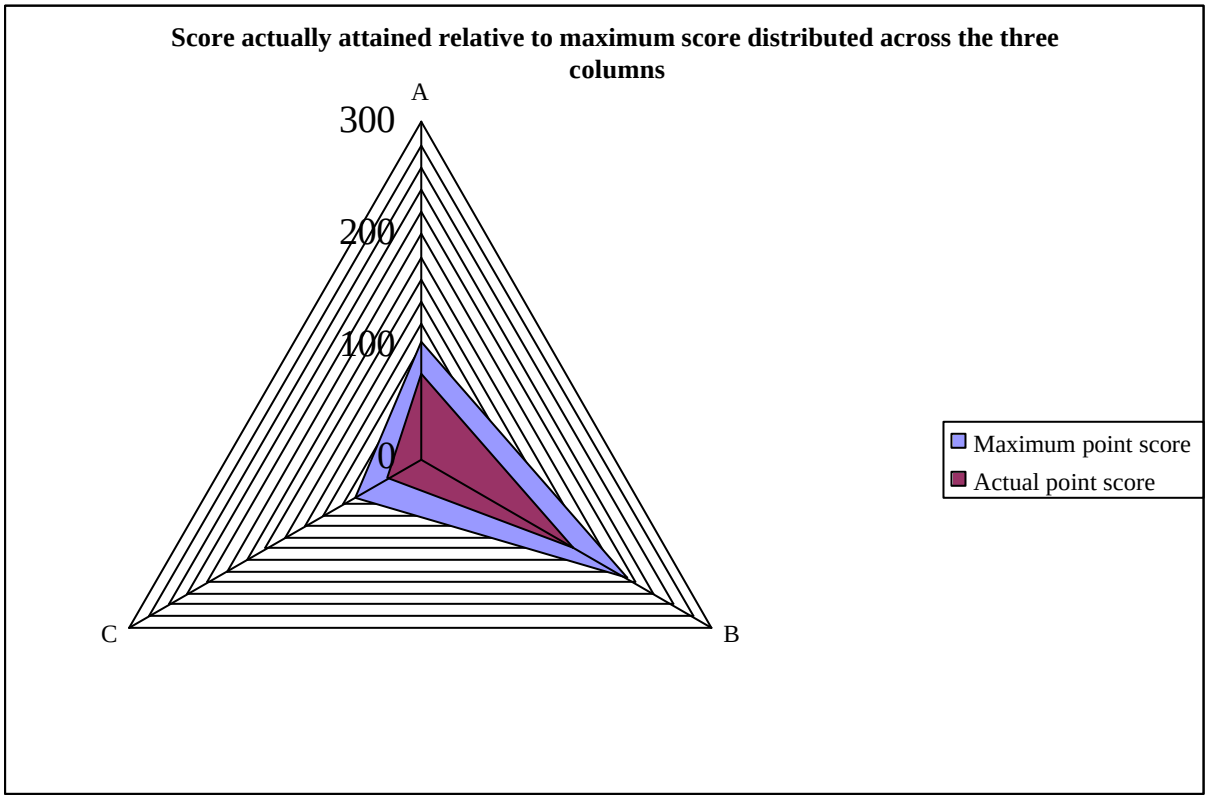
9.4. Reporting and application of the results

When a company has performed an assessment of an individual set of rights, a total assessment of the strategic significance of those rights to the company is one thing that emerges. In addition, some absolute point scores are also produced for the three overall categories as well as for the individual assessment factors.

If the company carries out structured reporting of this information, the possibility is opened for a strategic reaction to the company's actual situation relative to the direction its desires.

It is suggested that the results of the assessment of the three columns should be reported graphically in the following manner, cf. the figure below.

The proposed manner of reporting is an attempt to express, some way or other, a "mercantile summary" of the valuation. Thus, it is an attempt to set up a language which should be used in the communication between the patent/trademark function and the top management. However, in each individual company this is something which calls for further efforts to be made so that the reporting is formulated in a manner suitable also for the individual company's reporting manner.

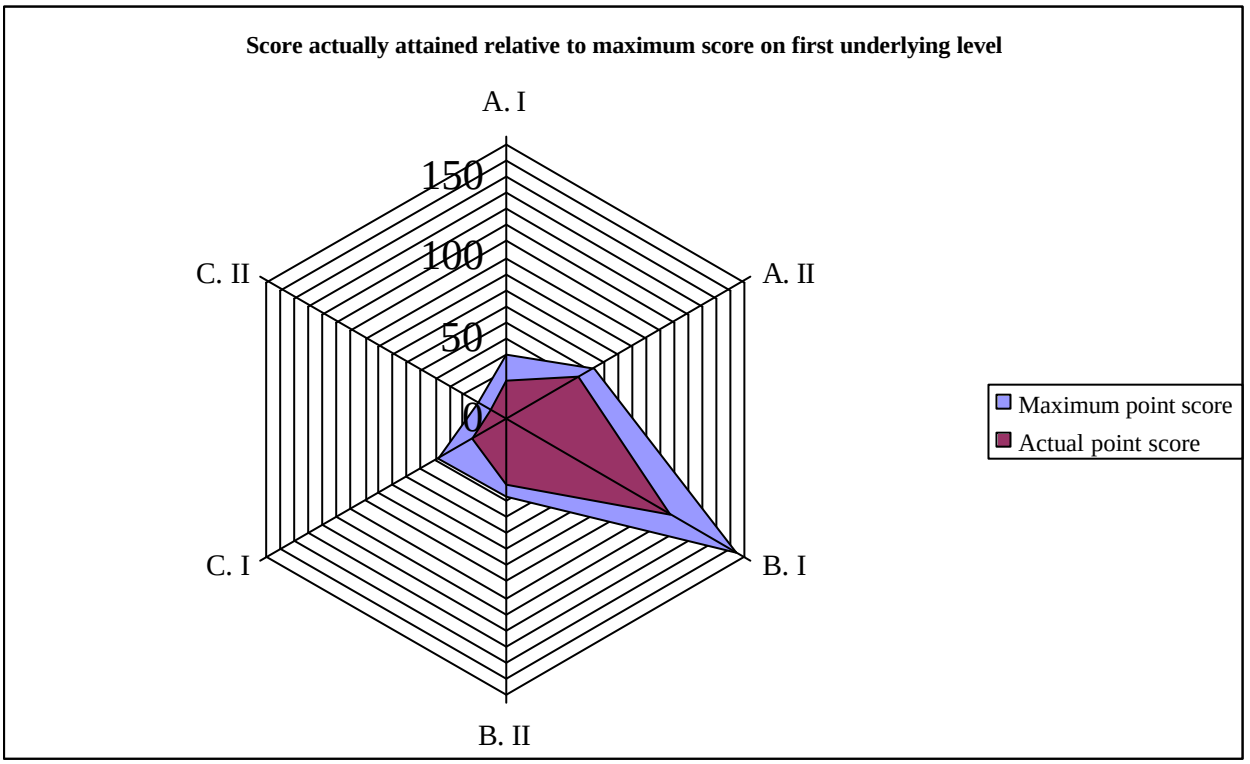


The figure is a radar figure. The blue field in the radar figure shows the maximum value of the patent which was evaluated, given the company's own perception of its

importance in relation to the individual assessment factors. The purple field represents the value which the company actually derives from the patent, partly given the basic properties and technical status of the patent, and partly the market potential and in part the company's competencies, desire and resources. Since the blue field is larger then the purple field, that there is a latent potential for the patent concerned to extract more value from the asset.

If the management decides that they would like to know what elements should be focused on in order to derive more value from the patent concerned, a more in-depth look into the valuation of the patent is needed.

For such analysis work, the functional manager can use the figure below as well as the computed percentages in relation to the maximum score in each of the three columns.



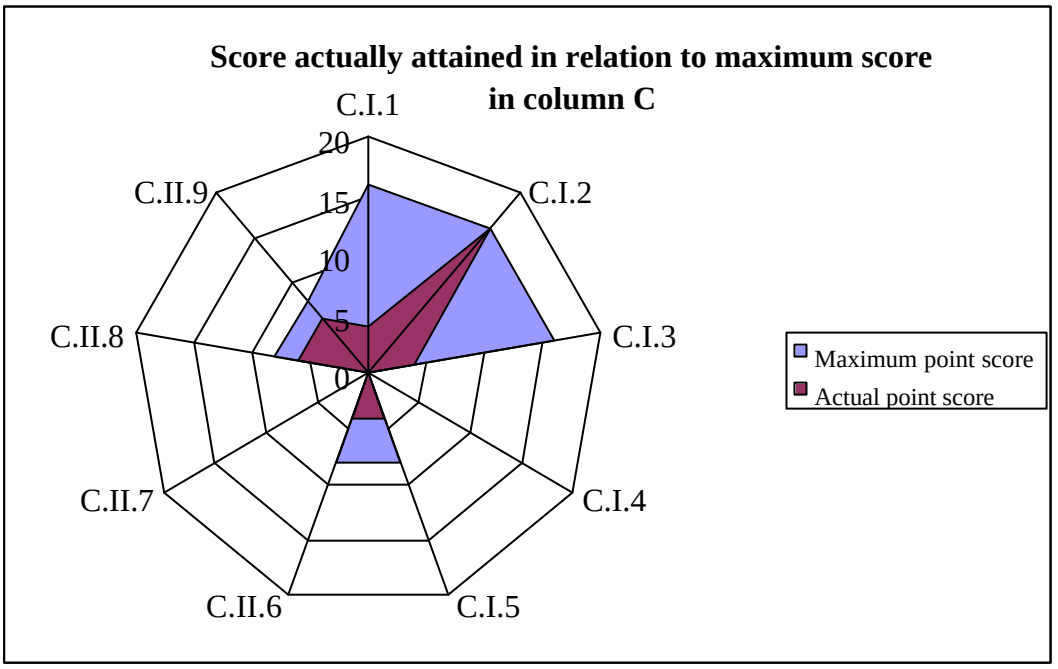
The above figure and the computed percentages show that category C is where the greatest relative distance between the maximum score and the score actually attained lies. However, this requires a more thorough explanation of the cause in order to explain why the distance is so big. The radar figure below can be used for this purpose.

It may be inferred from the figure below that the company has not implemented the requisite monitoring procedures which they feel are important for the patent concerned. In other words, efforts must be made in this area to derive more value from the patent. Moreover, it also appears that the company does not have the financial resources required to enforce the rights against any possible infringement. Consequently, the company should perhaps consider alternative enforcement methods

with regard to possible infringing parties. For example, these could take the form of licence agreements, joint ventures or strategic alliances.

Another way of approaching the analysis work is to consider the absolute areas between the maximum and actual scores. By doing so, insight into how additional value can be derived from the rights may be achieved.

The valuation model may thus, along with the reporting of the results, contribute to indicating the areas in which the company should make some strategic considerations, given their own evaluation of the importance of the assessment factors and the actual situation of the company.



9.5. Linkage between the elements

As part of the valuation process, an assessment should be made of the extent to which a rational linkage exists between the individual elements. For example, this could be the number of patents relative to the number of people in the patent department or the number of countries in which patents are taken out relative to the number of people in the patent department. By doing so, some key figures may be created, making it possible to assess the likeliness that the company has the capability to utilise its patents.

9.5.1. Linkage to strategic position

Some patents and trademarks will, in addition to their "normal" value, also have a positioning-related value because the patent is related to the company's overall marketing storyline. An example of this would be a Volvo patent that has a safety aspect. In this situation there is a link between the patent and Volvo's overall positioning, which makes the patent more important than simply being yet another patent.

In this situation it is extremely important to be able to assess the connection between the elements. Does the company also have the marketing-related resources it needs to utilise the positioning-related value of such a patent?

10. Potential applications and development possibilities

The model as presented in Chapter 9 obviously has a number of potential applications and advantages compared to the valuation models presented in Chapter 5. On the other hand, as the model does have a number of drawbacks and possibilities for development, more work needs to be put into the model. A number of these issues will be dealt with in this chapter.

On 9 October, a workshop was held with the participation of approx. 30 representatives from large Danish industrial enterprises, patent bureaus, investors, consultants and researchers. At the workshop, the valuation model was scrutinized for purposes of assessing its potential practical applications. In other words: to identify potential applications and development possibilities for the valuation model that was put together. The conclusions from the workshop have been incorporated into this chapter.

10.1.1. Potential applications and benefits

Better management
One of the most important possibilities afforded by the model is that it enables a management process for a company's patents and trademarks. This is possible, because the assessment factors of the model expose a number of conditions of significance to the company in relation to the individual patents and trademarks. Once the company has performed a valuation of a given patent or trademark, the extent to which the patent or trademark concerned is of strategic importance to the company is identified, and insight is achieved as to whether the asset is being utilised completely or whether it has additional potential/value that could benefit the company. In some situations, it may further be interpreted on the basis of the model which factors make the company unable to utilise or completely utilise the asset. That is to say that the assessment factors of the model collectively pose a number of important questions that may give rise to strategic considerations within the company.

Moreover, using the model's results as a point of departure, a company may set up goals for its portfolio of rights. For example, if it turns out that the company has a large number of patents or trademarks with under-utilised potentials, goals can be set for what portion of these should be utilised during the next period, etc.

External reporting
It is possible to utilise the model for purposes of external reporting, as the company can disclose information in its annual financial statements concerning the composition of its patents and trademarks on the basis of strategic significance. In other words, interested parties may obtain information on how the portfolio of patents and trademarks is distributed among the individual categories. By doing so, it becomes possible to assess the quality of the research and development by the individual company, as well as the company's ability to administer its patents and trademarks.

Assistance in the decision to patent an invention
The assessment factors in the model may be used as a basis for deciding whether or not to apply for a patent in cases where such a decision must be made for a given invention.

The model supports narrative presentations concerning the individual rights
The output of the model may be used as part of a narrative presentation concerning the individual set of rights. In this manner, the rights can be made more alive and less technical, and the strategic challenges are placed at the centre.

As a checklist in purchase/sale situations
Despite the focus placed by the model on the assessment of existing rights, the model may be used as a kind of checklist in purchase/sale situations. Thus, both the purchaser and the seller may assure themselves that they have considered all relevant issues before entering into the transaction. If both the purchaser and the seller use the model, they will each arrive at their own particular value for the rights, which could then form a kind of negotiation space in which the final transaction value is to be found.

For evaluating the rights of competitors
The model may be used to evaluate the rights of competitors. If a company evaluates its own rights and then the rights of its competitors, a good picture of the company's rights in relation to those of its competitors may be arrived at. By using the model, an assessment can be made based upon a consistent basis.

Use with risk assessment
As regards a possible monetary valuation using, for example, the DCF method, the model supplies input for the risk assessment of the value arrived at. This is consistent with a number of the assessment factors addressing factors of significance to the cash flow which is used as input for, e.g., the DCF method.

Empirically supported
A significant advantage of the model over the qualitative models/methods mentioned in chapter 5 is that it is supported by empirical material. The significance of the model's assessment factors are thus largely supported by a large number of companies that have stated that the they find the assessment factors concerned to be significant to and relevant for an assessment of the value of patents and trademarks.

10.1.2. Development possibilities and drawbacks

Concept protection
The model may be made more holistic and, thus, catch the synergies arising in connection with the protection of business concepts via the use of a number of different types of rights. For some companies, concepts are the central element, and hence there may be a need for developing the model so as to enable it to handle such concept protection mechanisms.

Purchase/sale situations – third party rights
In concrete purchase/sale situations, it may be necessary to assess a number of additional aspects beyond those comprised by the model. Even if a company has purchased a set of rights, it may not make use these rights due to the rights of others.

In other words, in such situations it is also important to bring in an assessment of the rights of others (third party rights).

Portfolio focusing
It would be extremely relevant to attempt to develop the model so as to make it able to manage a portfolio of rights as well. Some companies do not place their main focus on the individual rights, but rather on a portfolio.

Prioritisation between the rights
The most significant pitfall of the model is that it does not make it directly possible to prioritise between the assets. This is due to the fact that a mark is assigned, which is based upon a percentage score. This percentage score indicates how many points were obtained in relation to the maximum that could be attained for the individual asset. A percentage rate close to 100 for a given patent or trademark is not necessarily synonymous with the patent or trademark being more valuable than another patent or trademark which only attained a percentage score of 75. A high percentage score does mean that for the patent or trademark concerned, more value is being extracted in relation to a maximum level for the patent or trademark concerned. However, no regard is paid to the absolute level of value for the asset concerned. The model must hence be combined at this point with a financial model for the value of the relevant potential utilisation. In other words, if the company prioritises solely on the basis of the mark obtained, it will run the risk of making some incorrect prioritisations.

Consequently, it is necessary when performing the overall assessment and assignment of marks for a patent or trademark to pay regard to the maximum point value (the economic value of a use) that the asset concerned may attain. In other words, a trademark that has scored the following marks "a, b, a" in the three columns of assessment factors is not necessarily worth more than another trademark that has only scored "b, c, b". The potential absolute value of the last trademark might perhaps be greater than the first one.

Subjective assessments
One drawback of the subjective importance assessments performed during the valuation is that it is very difficult to perform any benchmarking of the result of the company's position with other companies. However, if the model does find broad application within a number of industries and companies, then industry standards could, over time, appear with regard to a number of the importance assessments. It might thus become possible for a company to perform benchmarking on the basis of such industry standards.

Another consequence of the subjectivity in the importance and point assessments is that it may be difficult to verify the estimate concerned. Also, internally within the company different results might perhaps arise from the valuation depending upon who performed it. A possible solution to this would be for companies to take care of defining and setting up criteria for the importance and point allocation assessments internally, as well as preparing guidelines for the evaluation itself. Some of this subjectivity and randomness could thus be eliminated.

Interaction between rights

One element which the model does not take into consideration is the interaction between individual rights and the interaction between different types of rights. There may be interaction between a number of patents, or between a registered design and design protection, etc. With continued development of the model, a more comprehensive and detailed description of the value of the rights can be attained.

Another element which the model does not handle is that the values of some patents are transferred to other rights or other assets once the patent expires. The model does not take this succession of value into account. This is also an area in which additional work could subsequently be performed.

11. Method

11.1. The methodological guidelines

The purpose of the project by the Danish Patent and Trademark Office (PVS) is *"to contribute to improving the possibilities for Danish companies to capitalise, utilise and report on their intellectual property rights as an element of the company's overall business strategy."*

The most essential element in this contribution is the establishment of *a method for the valuation of IPR* that is independent of the industry and the size of the company.

Rights are primarily limited to *patents and trademarks.*

The project consisted in an examination of:

- Existing national and international methods for computing the value of intangible assets
- Development trends in the field of IPR
- Documentation of the needs and desires of Danish companies for future possibilities for conducting valuations
- Which methods for conducting valuations should be continued to be worked with.

It has thus been relevant to clarify the extent to which the companies operate with a cohesive management model, and how the industrial rights form part thereof. Moreover, it has been crucial to assess the extent to which industrial property rights comprise a critical success factor for a company in attaining its strategic goals.

The valuation of industrial rights is based on the point of view that three overall factors are important for the valuation:

1. The basic properties and technical status of the rights
2. The market-related utilisation potential of the rights
3. The company's competencies, intention and resources to utilise the rights

This study is being published with results in relation to the elements that should, at a minimum, be included in a valuation method for patents and trademarks.

11.1.1. Organisation of the project

The project is organised with a Steering Committee, a Project Management Group and a Working Group.

The Steering Committee consists of Mogens Kring, Director General, the Danish Patent and Trademark Office, Lars Aagaard, chief special adviser, the Ministry of Trade and Industry, Olaf Hasselager, Head of Division, the Danish Commerce and Companies Agency, Jan Mouritsen, Professor Copenhagen Business School,

The Project Manager is Steffen Rebien, Director Planning Division, the Danish Patent and Trademark Office. In addition, Henrik Dall, Director, from Ementor and Teddy Wivel, Partner, from Ernst & Young are also part of the project management.

The Working Group consists of Steffen Rebien, Bent Warrer-Madsen, Strategy Consultant, from the Danish Patent and Trademark Office, Lars Bo Christensen, Senior Consultant, Ementor and Jean Fabian Jeldorf, Manager, Ernst & Young.

The project organisation is sketched out in the figure below:

The Steering Committee has the overall responsibility for the project, reporting to the Ministry of Trade and Industry.

The Project Management is responsible for the co-ordination and operation of the project, as well as for compliance with the budget, time schedule, etc.

The Working Group is responsible for carrying out the interviews, the survey, the focus meeting, the workshop and the reporting.

11.1.2.Basis of the study

The conclusions of the study build upon 15 interviews with companies from different industries, 1 focus group meeting and a web-based survey.

11.1.3.Interviews

The purpose of the introductory **interviews** was to undertake a first investigation of *how and to how large an extent companies manage, measure, conduct valuations and report on their patents and trademarks.*

A total of 15 interviews were performed. A total of 11 out of the 15 were conducted with Danish companies and the remaining 4 were conducted with 2 companies from Germany and 2 from Sweden, respectively.

The companies were selected from among the largest customers of the Danish Patent and Trademark Office, as it was a selection criterion that the companies held patents and/or trademarks.

Before the interviews were conducted, a theme-based question framework was prepared. It was used in all the interviews in order to ensure uniformity in the focus of the study.

The interviews were recorded on tape to obtain as broad, but at the same time as complete and detailed, a data sample as possible from which to prepare hypotheses.

As the participating companies were anonymous, the data sample is only available to the two participating consulting houses, Ernst & Young and Ementor's project participants.

11.1.4.Focus group meeting

In August 2000, a focus group meeting was held with the purpose of *qualifying those attitudes which predominate today concerning the significance of intangible assets in the valuation of the total worth of a company, as well as clarifying the state of the art in valuation, reporting, etc. concerning patents and trademarks.*

The focus group meeting was held with patent bureaus, lawyers, auditors, investors and consultants with experience in company analysis and investing.

The focus group meeting was conducted via Group System, which is an electronic meeting system.

On the basis of the interviews performed and on the focus meeting, a number of results were formulated concerning experience with and wishes for the valuation of patents and trademarks. In addition, the interviews and focus group meeting formed the basis of a presentation of the elements in a compiled valuation method. This material was used in the preparation of hypotheses a more broad investigation via the web-survey.

11.1.5.Web-survey

On the basis of the interviews performed and the focus meeting held, a hypothesis was set up to answer how Danish companies *can better manage, measure, value and report on their patents and trademarks.* This hypothesis was tested via a web-survey and the purpose was to be able to verify the interim results.

The questionnaire for the web survey was formulated in such a manner that it could be answered as precisely and quickly as possible. All questions could be answered on the basis of the knowledge already possessed by the respondent on the organisation.

The questionnaire comprised 3 overall themes: strategy, valuation and reporting.

The companies participating in the web survey were selected based upon the criteria that they were among the most active companies within the field of patents and trademarks. A total of 949 questionnaires were sent out via email. We received a total of 320 responses, a large portion of which could not be used at all because the respondents had not answered all the questions.

11.1.6.Workshop

In October 2000, a workshop was held with the participation of approx. 30 representatives from large Danish industrial enterprises, patent bureaus, investors, consultants and researchers.

Prior to the workshop, all the participants had been sent a working draft of this analysis report so that they could have a thorough look at the valuation model prepared.

The purpose of the workshop was *to qualify the attitudes which exist towards the needs for valuation generally, and specifically towards the utility value, strengths and weaknesses of the model relative to these needs*.

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13. Appendix

13.1. Accounting for intangible fixed assets

Danish Company Accounts Act	**Content of section**
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Section 19	Possibility of capitalisation of intangible assets acquired through purchase as well as (internally defrayed) development expenses.
Section 27	Valuation of fixed assets at either acquisition price or cost price.
Section 28	Requirements for amortisation of assets with a limited useful life.
Section 29	Requirements for writing down permanently lower values than were entered on the basis of the acquisition price / cost price less amortisation
Section 36	Maximum amortisation over 5 years of intangible assets with the possibility of immediate expensing
Section 36(2)	Possibility of using an amortisation period longer than 5 years when the economic life must be presumed to exceed 5 years. Justification requirement.
Section 42	Reporting requirement concerning valuation methods
Section 46(2)	Reporting requirement concerning mortgaging or pledging as security for fixed assets.
Statutory Order on the Danish Company Accounts Act	
Section 6	The requirements for the asset movement note.
Appendices A and B	Form for balance sheet in horizontal and vertical formats.
Accounting Standard No. 7, "Research and Development"	
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Item 10	Definition of development.
Item 13	Definition of development expenses.
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Item 3	Intangible assets associated with tangible assets.
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Item 54	Specification of what expenses can be attributed to an internally generated intangible asset.
Item 55	Specification of what expenses cannot be attributed to an internally generated intangible asset.
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Item 67	For trademarks and patents, etc., rejection of the notion that an active market can be found.
Item 76	Rule on write-ups.
Item 77	Rule on write-downs.
Item 79	Determination of the life cycle of amortisation for intangible assets.
Item 80	Assessment criteria for life cycle for amortisation.
Item 85	Life cycle for amortisation of intangible assets which are associated with a legal right should be equal to the period of the protection.
Item 88	Determination of amortisation method.
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Section 33	Definition of assets which must be recognised plus the possibility of exceptions for development projects and internally generated assets.
Section 36	Valuation method for assets is initially cost price.
Section 40	Definition of cost price.
Section 43	Requirements for amortisation of assets with a limited useful life.
Section 43(2)	Maximum 20 years' life for amortisation of intangible assets.
Section 53	Reporting requirements.
Section 57	Requirements for the asset movement note.
Section 83	Requirements for recognition of development projects, including patents, etc. which result from the development project.