

Patent Portfolio Management with IPscore 3.0

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1. Preface

IPscore is a tool for evaluation of patents and technological development projects. It provides both qualitative and quantitative evaluation in the form of a financial forecast showing the net present value of the evaluated technology. Additionally, IPscore produces output in the form of graphical overviews and a report to facilitate communication of the results of the evaluation.

The Danish Patent and Trademark Office developed IPscore in collaboration with Professor Jan Mouritsen, the Copenhagen Business School and a number of Danish companies. The European Patent Office purchased the tool from the Danish Patent and Trademark Office. The latest version IPscore 3.0 is now implemented in Excel and allows the input of figures instead of value ranges for the calculation of the net present value.

IPscore 3.0 is made available to users free of charge in order to support the patent strategy of companies, mainly SMEs and to steer the volume of applications by eliminating potentially "worthless" applications.

National patent offices and patent information (PATLIB) centres in several countries are prepared to provide support services on the use of and the interpretation of output from the tool to end users.

We hope you will find IPscore 3.0 useful.

September 2023

European Patent Office

2. Copyright

IPscore is protected by copyright owned by the European Patent Organisation ("the Organisation"). The use of IPscore is subject to the General Conditions for the delivery of EPO information products.

Use of the IPscore trade mark

IPscore is a registered trade mark owned by the Organisation. Reference in external reports and other publications may be made only if it is indicated that IPscore is a registered trade mark.

Liability of the Organisation

IPscore 3.0 does not come with any guarantee. The Organisation may not be held liable for any loss of data or other damage occurring during use of the program.

IPscore 3.0 includes a mathematical model and affords no guarantee of accuracy for the results of the financial analysis of the evaluated patented technology. The patent's actual value may be significantly higher or lower than the value calculated by IPscore, because the value is influenced by many commercial and economic factors not contained in the model, or other factors beyond control.

Decisions made on the basis of results determined by IPscore 3.0 are at the user's own risk. The Organisation bears no responsibility for any decisions taken by users including but not limited to decisions regarding investments or annulment of patents or any other commercial, economic or financial decisions and transactions.

Services

There is no technical support for installation of IPscore 3.0 other than the accompanying instructions and guide, and information to be found on the [EPO website](https://www.epo.org). Please consult the training portal at <https://e-courses.epo.org/> for training opportunities (keyword: "IPscore" or "IP management").

1. Introducing IPscore 3.0

IPscore is a unique evaluation tool, developed to provide a comprehensive evaluation of Intellectual property (IP), especially patents and technological development projects. It is a simple, user-friendly tool that can be used by all companies that have a portfolio of patents and development projects.

Contents:

- Components of IPscore 3.0
- Why you should use IPscore 3.0
- Patents as an option for value creation
- IPscore shows the way to innovative thinking
- Finding forgotten treasure
- Phasing out weak patents
- Building the foundations for an IP strategy
- Aligning business strategy and IP strategy

IPscore 3.0 provides a framework for evaluating and strategically managing patents and development projects and thereby integrating them into company management strategy.

Experience gained from working with the IPscore basic model and the subsequent development phase of version 3.0 shows that IPscore can be used for the evaluation of tangible development projects, from the birth of an idea and the IP management of patents through to the expiry of a patent.

This section gives an overall introduction to IPscore 3.0.

IPscore 3.0 comprises a basis for:

identifying the conditions that create value for the patent or development project. A strong evaluation profile with tried and tested assessment factors and new reports provides a comprehensive evaluation of the various conditions determining the value of a patent or development project.

assessment and valuation of the patent or development project. A new quantitative financial module works out a financial forecast and thereby determines the financial order of magnitude in the overall qualitative evaluation.

IPscore 3.0 includes:

- defined assessment factors which, on a user-friendly basis, translate professional specialist input into a common frame of reference.
- a radar profile which sets up a picture of the future prospects and an overall interdisciplinary picture of the evaluation results.
- organised and separate risk and potential assessment factors related to technology and investment needs.
- a matrix model which makes it possible to compare relative strengths among evaluated patents or development projects.

The construction of IPscore 3.0 is founded on the practical experiences gained in the pioneering development of the IPscore basic model. Established Danish and international companies were involved in the development of IPscore, which was first launched in January 2001. In its structure, IPscore is generally applicable to all lines of business. This ensures that IPscore 3.0 can easily be used by companies wishing to adapt the model to company- or industry-specific conditions for the assessment of the risks and potential embodied in patents and development projects.

1.1. Why you should use IPscore 3.0

Strategic patent leadership or IP management is the name we give to the work of utilising all of the opportunities inherent in patents and patented technologies. IP management is about utilising all the possible opportunities in the patent, which, combined with other company assets, gives the company an advantage in the global market.

IPscore 3.0 is a management tool which can contribute to the development of technology companies' work through strategic patent leadership and promote the benefits of working with ideas, patenting and business development.

The thoughts and ideas behind IPscore are explained in detail in the following sections and illustrate how using IPscore 3.0 can contribute to developing the company's strategic patent leadership – IP management.

1.2. Patents as an option for value creation

Generally speaking, patents can be viewed not only as a legal document protecting a technical solution to a problem, but as a basis for commercial opportunities – an option. Business prospects arise when patents exclude others from a given market, prospects for either producing and selling a product related to the patent or for patent licensing to other companies, which are then entitled to

use the technology. The assessment factors in IPscore provide an overall evaluation of carefully selected conditions, which exert influence on how the company can make the most of this option.

1.3. IPscore shows the way to innovative thinking

There are many prospects for utilising the potential inherent in an idea – a patent. A patent can, for example, be the basis for the expansion of a company. This was the case with the establishment of the global LEGO Company, which developed and then obtained patents on a plastic building brick. Patents were an essential element in the development of the original small wooden-toy factory into a larger industrial company, and eventually into a worldwide enterprise. The LEGO Company has itself developed, produced and sold its products by exploiting the options in its patents.

Other companies are interested solely in developing new ideas using patents as the legal document required for setting up licence agreements with companies which, on the basis of these licences, produce and sell the actual product.

Thus there are clearly different ways in which patents can be utilised. Regardless of the chosen strategy, IPscore 3.0 adds a basis for rethinking in the company, thereby giving rise to new, challenging and profitable thinking, and setting the scene for new, value-enhancing actions.

1.4. Finding forgotten treasure

The development process behind IPscore has revealed that many companies miss considerable business opportunities. A patent should not be just a legal document to be "filed and forgotten". IPscore 3.0 sets the stage for "dusting off the patent file" and reassessing the opportunities lying dormant in the patent. Are there opportunities for new products embodied in the patent? Or new services? Can a licence be given to a non-competitor? These are the kind of thoughts that should be triggered during the IPscore evaluation process, leading to the retrieval of forgotten treasure and benefitting the company. The company can use IPscore as a basis for IP management and thereby uncover the value hidden in company-owned patents and development projects.

1.5. Phasing out weak patents

Patents grow more expensive each year – as renewal fees increase. IPscore 3.0 facilitates continuous evaluation of the future prospects of a patent.

IPscore 3.0 facilitates a systematic assessment of all the essential aspects concerning utilisation and strategy. Decisions regarding the discontinuation or sale of the patent can then be made on a sound and qualified basis, or a new strategy for making the most of the patent can be initiated.

1.6. Building the foundations for an IP strategy

A serious IPscore analysis, including all the conditions and factors described in IPscore 3.0, will provide a sophisticated, multifaceted picture of the risks and potential surrounding patents. When more patents have been evaluated with the assistance of IPscore 3.0, the company will be equipped with a sound professional basis for developing its IP strategy. This will be of benefit to the company's own development process.

1.7. Aligning business strategy and IP strategy

Not all companies have a documented IP strategy but all companies have a business strategy. As a company with one or more patents, it is important that the purpose of those patents supports or is supported by the company's business strategy.

It may be that the strategy for product development is designed to ensure one new product launch every half year (short-term), whereas the patent strategy ensures the company has the right to put products from a specific technological area on the market over the next ten years (long-term). This is one definition of "freedom to operate", guaranteeing a competitive edge in the company's core-technology areas.

IPscore 3.0 combines IP strategic conditions, such as the status and strength of the patent and its strategic purpose, with the business strategy conditions, which are the patented technology's market(ing) potential, its licensing opportunities, and its influence on production conditions and finance.

This overall, comprehensive evaluation, with its accompanying report facilities, provides a good basis for developing close interaction between the company's business strategy and IP strategy. The evaluation forms a basis for stronger interaction between managers in different technical areas of production.

2. IPscore 3.0 structural framework

Contents:

Input categories:

- Legal status
- Technology
- Market conditions
- Finance
- Strategy

The "Financial results" category

IPscore output:

- Radar profiles
- Risk/Opportunity matrix
- Risk factors table
- Opportunity factors table
- Net present value
- Patent accounts chart
- Comparison of NPV/Points chart

The IPscore 3.0 framework is built on experience gained with the IPscore basic model. IPscore 3.0 retains the focus on an overall, comprehensive and qualitative evaluation of a single patent or development project. In addition, it comprises a built-in financial model which, by producing a financial forecast, presents an order of magnitude for the value of the patented technology when put to use in the company.

IPscore 3.0 comprises five different categories of assessment factors, each a focal point on important elements for an overall evaluation of risks and potential inherent in the patent or development project. Altogether there are 40 assessment factors, each with a rating scale of 1 to 5, where 5 is the maximum ("best") score. In cases where the input is a free value (e.g. 3.5 years), the radar charts will still show a calculated value of the same rating scale. A built-in grading of answer options on the rating scale makes it easy and quick to arrive at a common frame of reference and clarification of the scoring. The assessment factors are divided into the following input categories.

2.1. Input categories

A – Legal status

This category concerns the assessment of the patent as a legal document, i.e. the legal basis for maintaining and enforcing the patent and the company's ability and motivation to do so. The category looks at determining the patent's present position in the grant process, how broad the patent's claim is and how durable it is thought to be. Is the patent monitored with regard to infringements? And if so, does the company have the means to enforce the patent? Overall, the category provides a picture of the patent's legal status and situation.

B – Technology

The focus of this category is on assessing the patent's technology, the prospects within the technology, and the technology's demands on the company. It looks at whether the technology can be substituted by other technologies, whether infringing copycat products are easy to produce, whether the technology has been tested and whether it creates a demand for new production skills/equipment. The category aims to provide an overall impression of the technology's position of strength.

C – Market conditions

This is an assessment of various factors and conditions affecting the marketing options of the patented technology and the business opportunities created when the patented technology is incorporated in one or more products. Relevant areas are the market's competitive situation, market growth, product life expectancy in the market, licensing opportunities, etc. This category creates an impression of the different factors and conditions which, when aligned with the patent's legal status and the prospects in the technology, shows the potential inherent in the patented technology. Certain assessment results go on to become a factor in the calculations for the financial forecast.

D – Finance

The finance category concentrates on determining how the patented technology affects the financial structure in the business area where it is put to use. It is an assessment of the future costs for product development and production and earnings, coupled with the importance of these contributions to the company's total turnover, etc. It also assesses the investment needs for production equipment. The information gathered here is put together with key figures from the company accounts to become factors in the calculations for the financial forecast.

E – Strategy

The strategy section focuses on categorising the patent (the legal document) with a view to weighing the actual purpose of the patent against the qualitative and financial assessments. The company assesses the purpose of the patent, how it intends to use the patent. Is the patent a defensive tool, short-term and only attached to one product, or does it also have an offensive, long-term purpose, e.g. by securing the right to come up with new product developments in new markets and thus ensuring company enterprise options?

2.2. "Financial results" category

Apart from categories A-E, the model includes a financial results category, where key figures from the company accounts are entered. These figures form the basis for calculating the financial forecast of how much the patented technology is worth to the company when put to use in a given business area.

From the annual company accounts, key financial figures for turnover, costs and provision for depreciation are entered in this category. The patented technology's business area is also defined. The figures provide an order of magnitude for the assessments made in selected financial assessment factors in categories C and D. (The construction of the financial model and assumptions is explained in detail in Chapter 5).

2.3. IPscore output

IPscore 3.0 includes a number of output charts, each revealing different dimensions of the qualitative evaluation and the financial forecast. The output charts contribute to interpretation and analysis of the patent evaluation. The reports can be used in dialogue and reference groups, and for presentation to interested parties.

Radar profiles

A new facility for strategic management of patents and development projects is the IPscore radar profile. Radar profiles provide an overall view of the assessment factors in categories A-D. They can be used in dialogue and for interpreting how the different categories of assessment factors as a whole affect the value of the patent. Immediate strengths and weaknesses are made apparent and cross-referencing, e.g. technology status/marketing potential, will reveal the correlation between different categories.

Opportunity/Risk matrix

In IPscore 3.0 it is possible to examine and compare the evaluated patents or development projects in a portfolio matrix mapping the evaluated patents according to their score in the risk/potential assessment factors.

Risk factors table and Opportunity factors table

All of the assessment factor results in categories A-E are assigned as risk and/or opportunity factors. The diagnoses present the two groups of assessment factor results according to the score achieved, making it easy to identify critical areas.

Net present value

The net present value (NPV) is the financial forecast depicting the value of the patented technology, discounted at a selected interest rate. All assumptions for the calculations are shown here. Finally, there is a built-in facility enabling direct simulation of data in the output report.

Patent accounts chart

The patent account forecast chart illustrates the forecast of the financial development when implementing the patented technology.

Comparison of NPV/Points chart

In IPscore 3.0 it is possible to examine and compare the evaluated patents or development projects in a bar chart showing the score of each patent in categories A-D as well as the estimated NPV for each of the patents.

Reports

Report based on IPscore typically contain selected output charts from the qualitative evaluation and the forecast of financial results, as well as a number of directional questions and topical headings that form the framework for creating a comprehensive evaluation report. The report can form the basis for further business discussions concerning the evaluated patent.

3. Practical guide to IPscore 3.0

Contents

- IPscore definitions
- Defining the business area
- Evaluation of category A-E input data
- Analysing the patent's qualitative profile
- Financial forecast and simulation
- Financial development
- Qualitative diagnoses of risks and opportunities
- Opportunity/Risk matrix
- Comparison of net present value/points
- Communicating the results in reports
- Export of evaluation data

Some sections start with a short guide, providing user-friendly support in future IPscore processes.

3.1. IPscore definitions

An IPscore evaluation demands a clear decision on what is to be evaluated and the purpose of doing so. It is important that the elements of the evaluation are accurately defined, and that all participants in the process share a common understanding of these elements. The following is a list of some of the elements and definitions used in IPscore:

Patent is the term given to the legal document that defines the exclusive right to an invention. This invention can be an element of several prospective products/processes. When a patent is evaluated in IPscore, the process covers all the products and processes that could be developed on the basis of the invention embodied in the patent.

Description of a situation in IPscore: in IPscore input category A, "Legal status", it is the patent that is assessed. Depending on the evaluation situation, the company can decide to assess one patent, or more patents collectively in category A. If the company wants to evaluate a development project embodying a specific technology there may be several patents covering the technology. As such, the answers to category A must provide a comprehensive assessment of all the patents involved in protecting the technology.

Invention is the term applied to the idea or the invention the patent embodies.

The patented technology is the term used to describe the technology, product or process which is based on the patent and which will be commercially exploited.

There may be cases requiring a differentiation to be made between the patented technology and the patented product. In cases where the invention can be sold without being part of an actual product, the term 'patented technology' is preferred.

The patented product or the patented process is the term given to the finished products or processes that the company either sells or uses in its own production process. The patented product or the patented process may, unlike the patented technology, comprise several inventions.

To start the evaluation, go to an unfilled column in the worksheet "A. Legal status" and enter the name of the new patent or development project. If all the displayed columns are already full, unhide a new column and enter the name of the patent in row 1.

	A	B	D	E
1	A. Legal Status questions	Explanation	Patent 2	Patent 3
2	A1: What is the status of the patent?	A patent	1 - Patent not yet applied for	Select answer
3	A2: What is the patent's legal position of strength?	This factor relates	2 - Quick and dirty' search (simple database	Select answer
4	A3: For how long is the patent still valid?	An assessment of	3 - Patent has 4-8 year term remaining	Select answer
5	A4: How broad and comprehensive are the patent claims?	The breadth of a	4 - The claims are broadly inclusive	Select answer
6	A5: Does the patent's geographical coverage include the relevant markets?	Patents held in	5 - Patent protection in all existing and	Select answer
7	A6: Are patents monitored to identify infringements?	This assessment	4 - Systematic monitoring of markets	Select answer
8	A7: Are disputes and legal proceedings customary in the operative markets?	A patent is	3 - Disputes are customary	Select answer
9	A8: Does the company have the means to enforce patent rights?	A company's	2 - Patent rights enforced in selected	Select answer

3.2. Defining the business area

This is an important stage of the evaluation, where it is vital to be clear when defining the relevant business area of the evaluated patented technology and about the correlation between the business area of the patent and the company's remaining financial area.

Before answering questions and making the evaluation, it is important to consider and document what the business area is that this patent relates to (a dedicated unit or a rather large product or process area). This way it can be assured that all evaluation factors are assessed in relation to the same basis (e.g. market growth rate, maintainability of business area output).

Firstly, you need to enter key financial figures from the annual company accounts. Select the worksheet "Financial results".

If these figures are not available, proceed to the next section and answer the compile evaluation criteria. Some outputs (e.g. on net present value) are only possible, however, if the financial results data is entered.

Elements of the "Financial results" worksheet – input data for the financial model

	A	B	C
1			
2	Factor/Financial assumptions (to be changed in the respective categories)	Patent 1	Patent 2
3	B5: How much time is required before the patented technology can be commercially worked?	2,5 years	0,0 years
4	C2: What is the market growth in the business area where the patented technology is utilised?	15,0%	3%
5	C3: What is the life expectancy of the patented technology in the market?	4,0 years	2,0 years
6	C6: What is the potential extra turnover to be obtained within the business area when utilising the patented technology?	6,0%	6%
7	D1: Can the existing business area output in the relevant market be maintained without utilising the patented technology?	25,0%	100%
8	D2: What are the necessary future development costs?	15,0%	15%
9	D3: What is the index for cost of production when implementing the patented technology?	100,0%	100%
10	D4: What investment is necessary for production equipment?	100,0%	70%
11			
12			
13	Financial results from the company accounts	Patent 1	Patent 2
14	Business turnover	€252.000	€252.000
15	Direct costs	€180.000	€180.000
16	Indirect costs	€21.000	€21.000
17	Provision for depreciation	€5.000	€5.000
18	Net result	€46.000	€46.000
19			
20	Depreciation period (in yrs)	5,0 years	5,0 years
21			
22	Definition of business area		
23	Share of current turnover	15,00%	40,00%
24			
25	Parameters used in the calculations		
26	Discount factor	10,0%	10,0%
27			
28	The net present value of the patented technology is:	€22.473	€4.865

See instructions given in the explanatory text box by hovering over cell A13.

Guide box 1

You can use a simple economic structure based on company accounts from a specific company division or department/sector, depending on the basis for the evaluation of the patented technology. If so, all financial figures must relate to the chosen sector and represent a cohesive economic structure.

The choice of financial basis for the evaluation affects the calculable results from the assessment factor questions, where the rating scales refer to percentage of turnover. This is the case in category C – Market conditions and category D – Finance. The figures for turnover given in this financial results category must be the same as the turnover figures forming the basis for your answers to the assessment factor questions.

Now enter the figures for business turnover, direct and indirect costs, provision for depreciation and depreciation period in the allotted spaces.

Define the business area to be evaluated. See instructions given in the explanatory text box by hovering over the cell A22.

Guide box 2

Select the business area specific to the patented technology to be evaluated in IPscore.

The business area is defined as the percentage share of total company turnover.

Alternative method:

Where available, selected business area accounts provide greater accuracy than an estimated share of total turnover, and as such can be used instead of the company accounts. In that case, the business area share of company turnover is equal to 100%.

Determine and enter the relevant percentage in the space provided.

Determine the discount factor. See instructions given in the explanatory text box by hovering over cell A26.

Guide box 3

Determining parameters for calculations and graphs

Discount factor

A calculation is made of net present value for the patented technology, using a predefined discount factor. Here, you enter the desired discount factor for the net present value.

Specification of the net present value calculation is presented in the chart "Comparison of net present value/points".

Enter the discount factor. Determine and enter the company's general market growth rate. Choose the discount factor for the calculation.

3.3. Evaluation of category A-E input data

When the basis for the evaluation has been defined, all 40 assessment factor questions in the five categories A-E must be answered. Start by accessing category A – Legal status by selecting the "A - Legal status" worksheet on the Start page or at the bottom of the screen.

This accesses a worksheet with assessment factors A1, A2, etc. Each assessment factor has a 5-point rating scale of answer options.

A. Legal Status questions	Explanation	Patent 1	
A1: What is the status of the patent?	A patent	2 - Patent application filed	(1)
A2: What is the patent's legal position of strength?	This factor relates	Select answer	(2)
A3: For how long is the patent still valid?	An assessment of	1 - Patent not yet applied for	
A4: How broad and comprehensive are the patent claims?	The breadth of a	2 - Patent application filed	
A5: Does the patent's geographical coverage include the relevant markets?	Patents held in	3 - Novelty search and patentability evaluation completed	
A6: Are patents monitored to identify infringements?	This assessment	4 - Patent granted	
A7: Are disputes and legal proceedings customary in the operative markets?	A patent is	5 - Opposition period expired	
A8: Does the company have the means to enforce patent rights?	A company's	1 - No monitoring against infringement	(3)
		2 - Legal proceedings are very customary	
		3 - Legal proceedings are very customary	
		4 - Legal proceedings are very customary	
		5 - Legal proceedings are very customary	
		1 - Patent rights enforced in nearly all cases	(4)
		2 - Patent rights enforced in nearly all cases	
		3 - Patent rights enforced in nearly all cases	
		4 - Patent rights enforced in nearly all cases	
		5 - Patent rights enforced in nearly all cases	
Comments to questions		Enter comment relating to Patent 1 below:	En
A1: What is the status of the patent?			
A2: What is the patent's legal position of strength?			
A3: For how long is the patent still valid?			
A4: How broad and comprehensive are the patent claims?			
A5: Does the patent's geographical coverage include the relevant markets?			
A6: Are patents monitored to identify infringements?			
A7: Are disputes and legal proceedings customary in the operative markets?			
A8: Does the company have the means to enforce patent rights?			
Adaptation of questions and answers (change below)	Explanation	Answer 1	An
What is the status of the patent?	A patent applicatio	Patent not yet applied for	Pa
What is the patent's legal position of strength?	This factor relates t	No novelty search	Qu
For how long is the patent still valid?	An assessment of th	Patent has 0-2 year term remaining	Pa
How broad and comprehensive are the patent claims?	The breadth of a pa	The claims are very narrow and specific	Th
Does the patent's geographical coverage include the relevant markets?	Patents held in mar	Patent protection in a single national marke	Pa
Are patents monitored to identify infringements?	This assessment fac	No monitoring against infringement	Ra
Are disputes and legal proceedings customary in the operative markets?	A patent is valuabl	Legal proceedings are very customary	Le
Does the company have the means to enforce patent rights?	A company's resour	In general, too expensive and difficult to en	Pa

Input of data:

For information on each assessment factor, access the explanations in column B (1). These give a detailed description of the assessment factor. You can access the full explanation on the formula bar

or by hovering over the cell that contains the explanation you want to see. Choose the answer most relevant to the given situation and select it using the dropdown menu (2). Select the rating that comes closest to reflecting the situation at hand.

Comments:

Use the comments to questions (3) in the second section of the worksheet to note down assumptions you make and any comment that should be documented.

Continue answering the questions in this way through all category A assessment factors. When you're finished, go to the next category B – Technology by selecting the text "B – Technology" at the end of the worksheet or by selecting the respective worksheet. Complete the evaluation in all five categories A-E.

Adaptations:

If the assessment factors (i.e. questions and answers) or the predefined financial assumptions are not applicable to the company situation, they can be changed (4) to suit the situation. The assessment factors are adjusted centrally for all patents to ensure that the results are comparable.

Firstly, you can change the wordings of (I) questions, (II) possible answers and (III) explanations. In exceptional cases, you can even give a question a completely new meaning. However, it is not recommended to change the meaning of the questions which contribute to the net present value calculation (see worksheet "Financial Results"). The screenshots below show what happens when you change the question, explanations and possible answers for assessment factor A2. If you change the wording of a question, all cells that contain that question will turn yellow. If you change a possible answer, the cell you changed will change to italics and the cells that contain the question corresponding to that answer will turn yellow. If you change an explanation, only that cell will turn yellow.

- I. Questions (the word "changed" was added to the end of question A2)

A. Legal Status questions
A1: What is the status of the patent?
A2: What is the patent's legal position of strength? changed (ADAPTED)
A3: For how long is the patent still valid?
A4: How broad and comprehensive are the patent claims?
A5: Does the patent's geographical coverage include the relevant markets?
A6: Are patents monitored to identify infringements?
A7: Are disputes and legal proceedings customary in the operative markets?
A8: Does the company have the means to enforce patent rights?
Comments to questions
A1: What is the status of the patent?
A2: What is the patent's legal position of strength? changed (ADAPTED)
A3: For how long is the patent still valid?
A4: How broad and comprehensive are the patent claims?
A5: Does the patent's geographical coverage include the relevant markets?
A6: Are patents monitored to identify infringements?
A7: Are disputes and legal proceedings customary in the operative markets?
A8: Does the company have the means to enforce patent rights?
Adaptation of questions and answers (change below)
What is the status of the patent?
What is the patent's legal position of strength? changed
For how long is the patent still valid?
How broad and comprehensive are the patent claims?
Does the patent's geographical coverage include the relevant markets?
Are patents monitored to identify infringements?
Are disputes and legal proceedings customary in the operative markets?
Does the company have the means to enforce patent rights?

II. possible answers (the word "changed" was added to the end of answer 1 of question A2)

A. Legal Status questions	Explanation	Patent 1
A1: What is the status of the patent?	A patent	2 - Patent application filed
A2: What is the patent's legal position of strength? (ADAPTED)	This factor relates	3 - National office novelty search or similar
A3: For how long is the patent still valid?	An assessment of	5 - Patent has more than a 12-year term
A4: How broad and comprehensive are the patent claims?	The breadth of a	4 - The claims are broadly inclusive
A5: Does the patent's geographical coverage include the relevant markets?	Patents held in	5 - Patent protection in all existing and
A6: Are patents monitored to identify infringements?	This assessment	1 - No monitoring against infringement
A7: Are disputes and legal proceedings customary in the operative markets?	A patent is	1 - Legal proceedings are very customary
A8: Does the company have the means to enforce patent rights?	A company's	4 - Patent rights enforced in nearly all cases
Comments to questions		Enter comment relating to Patent 1 below:
A1: What is the status of the patent?		
A2: What is the patent's legal position of strength? (ADAPTED)		
A3: For how long is the patent still valid?		
A4: How broad and comprehensive are the patent claims?		
A5: Does the patent's geographical coverage include the relevant markets?		
A6: Are patents monitored to identify infringements?		
A7: Are disputes and legal proceedings customary in the operative markets?		
A8: Does the company have the means to enforce patent rights?		
Adaptation of questions and answers (change below)	Explanation	Answer 1
What is the status of the patent?	A patent applicatio	Patent not yet applied for
What is the patent's legal position of strength?	This factor relates t	No novelty search changed
For how long is the patent still valid?	An assessment of t	Patent has 0-2 year term remaining
How broad and comprehensive are the patent claims?	The breadth of a pe	The claims are very narrow and specific
Does the patent's geographical coverage include the relevant markets?	Patents held in mar	Patent protection in a single national marke
Are patents monitored to identify infringements?	This assessment fac	No monitoring against infringement
Are disputes and legal proceedings customary in the operative markets?	A patent is valuable	Legal proceedings are very customary
Does the company have the means to enforce patent rights?	A company's resour	In general, too expensive and difficult to en

III. Explanations (the word "changed" was added to the beginning of the explanation for question A2)

Adaptation of questions and answers (change below)	Explanation
What is the status of the patent?	A patent application involves a considerable degree of uncertainty, in term
What is the patent's legal position of strength?	changed This factor relates to the defensibility and robustness of the pater
For how long is the patent still valid?	An assessment of the stage the patent has reached in its life cycle. Is it new
How broad and comprehensive are the patent claims?	The breadth of a patent's claims can be a determining factor in constructin
Does the patent's geographical coverage include the relevant markets?	Patents held in many countries are considered more valuable than patents
Are patents monitored to identify infringements?	This assessment factor will demonstrate the company's ability and willingn
Are disputes and legal proceedings customary in the operative markets?	A patent is valuable on an aggressive market where battles are waged. Nev
Does the company have the means to enforce patent rights?	A company's resources are assessed according to its ability to take patent i

Secondly, you can define (IV) whether a given assessment factor is a risk, an opportunity, both or neither. The default definition for all assessment factors in Group E – Strategy, for example, is neither risk nor opportunity. If you change the default definition of risk or opportunity factors, the cell will turn yellow. Unhide columns if you do not see all answer options.

IV. Risk and opportunity factors (risk factor of A2 was changed to "no" from the default):

Adaptation of questions and answers (change below)	Explanation	Risk factor	Opportunity factor
What is the status of the patent?	A patent applicatio	yes	no
What is the patent's legal position of strength?	This factor relates t	no	yes
For how long is the patent still valid?	An assessment of ti	yes	no
How broad and comprehensive are the patent claims?	The breadth of a p	no	yes
Does the patent's geographical coverage include the relevant markets?	Patents held in ma	yes	yes
Are patents monitored to identify infringements?	This assessment fac	yes	no
Are disputes and legal proceedings customary in the operative markets?	A patent is valuab	yes	no

Please select whether this assessment factor is an opportunity factor or not

Number entry questions

Categories B – Technology, C – Market conditions and D – Finance contain a set of number entry questions. These are distinguishable by a dark grey background. The entered number will then be allocated in the rating scale according to its relative position within predefined limits and the cell will turn into the colour corresponding to said rating. In the example below, question D2 is answered for Patent 3.

D. Finance questions	Explanations	Patent 3
D1: Can the existing business area output in the relevant market be maintained?	This assessment factor determines whether the	
D2: What are the necessary future development costs?	This assessment factor is for determining the	2,5%
D3: What is the index for cost of production when implementing the patented technology?	The future production costs for the patent-related	
D4: What investment is necessary for production equipment?	This assessment factor determines whether the	
D5: Does the company have the financial capacity to cover patent renewal fees?	Obviously, the company must have the financial ability	Select answer
D6: What is the patented technology's contribution to company profits?	This is an evaluation of the patented technology's	Select answer

Default limits are defined for each of the number entry questions right next to the adaptations table. You can adjust these limits as needed by simply adjusting these cells to the desired minimum and maximum:

Adaptation of questions and answers (change below)	Explanations	Set minimum here	Set maximum here
Can the existing business area output in the relevant market be maintained?	This assessment fac	0,0%	100,0%
What are the necessary future development costs?	This assessment fac	0,5%	30,0%
What is the index for cost of production when implementing the patented technology?	The future producti	70,0%	130,0%
What investment is necessary for production equipment?	This assessment fac	50,0%	120,0%

The rating scale of answers (1-5) will automatically update. Similarly to what happens when a question is changed, if the default minimum and/or maximum are changed, all cells which contain the corresponding question will turn yellow. IPscore will only allow you to answer a number entry question with a number within the defined limits. If you change a limit after answering the question, all answers that no longer fall within the new minimum and/or maximum will turn red.

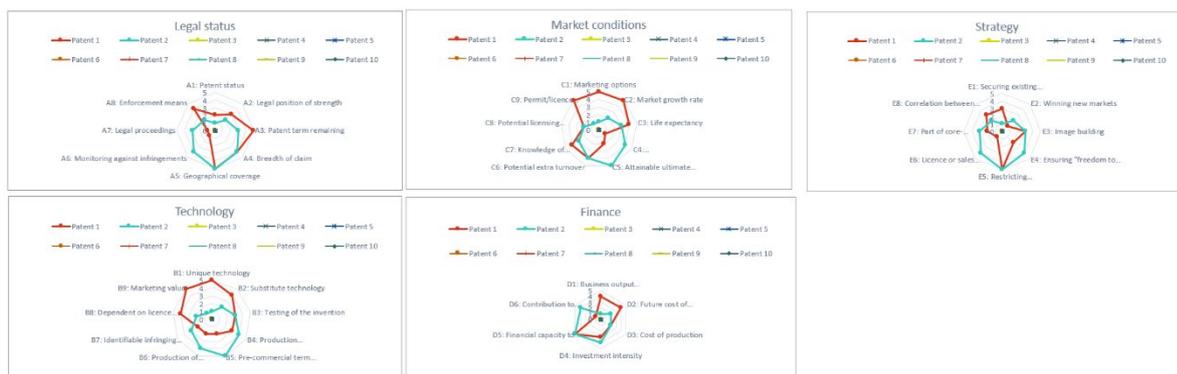
You can also check the actual minimum and maximum values scored in your portfolio by checking the table right next to the limits:

Adaptation of questions and answers (change below)	Explanations	Minimum in portfolio	Maximum in portfolio
Can the existing business area output in the relevant market be maintained?	This assessment fac	25,0%	100,0%
What are the necessary future development costs?	This assessment fac	2,5%	15,0%
What is the index for cost of production when implementing the patented te	The future producti	100,0%	100,0%
What investment is necessary for production equipment?	This assessment fac	70,0%	100,0%

3.4. Analysing the patent's qualitative profile

The radar profiles represent the core of IPscore's qualitative evaluation. It displays the results of the evaluation undertaken in worksheets of the categories A-E in five radar charts.

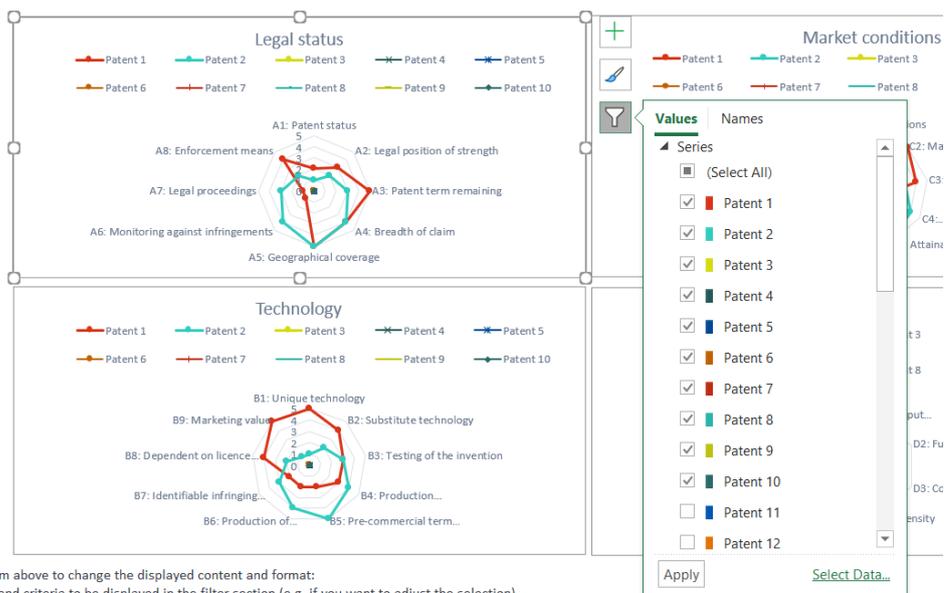
Radar profile



You can find the radar profiles in the "Output – Radar profiles" worksheet.

These radar charts position the score of each assessment factor so that the lowest score (1) is shown close to the centre of the chart, and the highest score (5) is shown on the perimeter. The joining up of scores does not imply a particular relation between them, but has been done solely to produce a graphical image that creates a user-friendly, overall picture of the patent's scores.

The default presentation shows only results for ten patents. But users will often want to compare them with those for their firm's other patents or projects. Using the incorporated filter, you can select more patents for comparison. To select a new combination of patents, just select the radar chart, then the filter button (🔍), choose all the patents you want to see and select "Apply".



Additionally, you can also deselect some questions that are not relevant for your area or for the current development stage. You can activate these later when the patent is re-evaluated.

Example – interpreting the radar profile

Interpreting the profiles requires some practice in being able to see and 'read' the connections and correlations depicted in the profiles. For example, the **Legal status** radar profile for patent x1 shows that a patent application has been filed but that there is no monitoring against infringements, even though legal proceedings and disputes in the market are a common occurrence. This increases the risk factor.

Also, the **Technology** radar profile for patent x1 shows that it is easy to produce infringing copycat products, but quite difficult to identify them. This also increases the risk factor in the market.

The **Market conditions** radar profile for patent x1 shows there are great marketing opportunities in a growing market, but that there is also competition from substitute products that have already been developed. However, it is also apparent that it is possible to put the product on the market at a price lower than the competition's.

The **Finance** radar profile for patent x1 illustrates that the product does not have a great effect on company turnover or profits. So even though there is a high risk attached to the product, it is not a bad idea to enter the market and aim for the potential profit. Some of the interpretations may appear to be at variance with each other. However, this radar profile creates a realistic picture of the conditions inherent in a given company where IPscore was tested.

3.5. Financial forecast and simulation

IPscore calculates the net present value of the patented technology.

IPscore uses the entered data in a financial model that provides a forecast of the patented technology's foreseeable contribution to liquidity over a ten-year period. The period of calculation is

however governed by the pre-commercial period and the predetermined life expectancy of the patented technology. The net present value is a discounted foreseeable liquidity flow. The net present value is calculated with a selected discount factor and entered in the IPscore financial results category.

The screenshot below shows the discounted net present value, the chosen discount factor and the other data for the financial calculations from the IPscore evaluation. For a detailed explanation of the assumptions in the financial calculations, see Chapter 5 IPscore 3.0 financial model.

"Financial results" worksheet: net present value with simulation facilities

Factor/Financial assumptions (to be changed in the respective categories)	Patent 1	Patent 2
B5: How much time is required before the patented technology can be commercially worked?	2,0 years	0,0 years
C2: What is the market growth in the business area where the patented technology is utilised?	15,0%	3%
C3: What is the life expectancy of the patented technology in the market?	4,0 years	2,0 years
C6: What is the potential extra turnover to be obtained within the business area when utilising the patented technology?	6,0%	6%
D1: Can the existing business area output in the relevant market be maintained without utilising the patented technology?	25,0%	100%
D2: What are the necessary future development costs?	15,0%	15%
D3: What is the index for cost of production when implementing the patented technology?	100,0%	100%
D4: What investment is necessary for production equipment?	100,0%	70%
Financial results from the company accounts		
Business turnover	€252.000,00	€252.000,00
Direct costs	€180.000,00	€180.000,00
Indirect costs	€21.000,00	€21.000,00
Provision for depreciation	€5.000,00	€5.000,00
Net result	€46.000,00	€46.000,00
Depreciation period (in yrs)		
	5,0 years	5,0 years
Definition of business area		
Share of current turnover	15,00%	40,00%
Parameters used in the calculations		
Discount factor	10,0%	10,0%
The net present value of the patented technology is:	€21.527,64	€4.864,84

The "Financial results" worksheet shows the result of the IPscore calculations for the financial forecast. The screen shows all of the assumptions included in the calculations in the Factor/Financial assumptions table.

3.6. Financial development

IPscore has an output chart illustrating the foreseeable financial development achievable by implementing the patented technology. You can see it on the "Output - Financial results" worksheet or by selecting it on the "Start" worksheet.

The calculations are based on financial figures selected in the financial results category. The IPscore financial model uses these figures and selected assessment factors in a forecast of the patented technology's net present value and in a future patent account for the patented technology. For a more detailed explanation of the assumptions in the financial calculations and for an explanation of how this output chart is produced, see Chapter 5.

Patent account

IPscore calculations are based on the entered financial data and assessment factors. The patent account is a projection of the financial effects generated by the patented technology within the defined business area (entered in the financial results category). This data is compared with the financial effects of not implementing the patented technology in the business area. Thus, the value ratio of implementing and not implementing the patented technology in the business area is illustrated.



There are three graphical elements in the patent account: (1) a blue line indicating the patented technology's effect on company accounts; (2) a green column representing the profits in the business area without the patented technology; and (3) a red column representing the total business area profits when implementing the patented technology. Similarly to the Radar profile charts, you can filter which patents you want to see in the chart by selecting the filter icon next to the chart (🔍), choosing the patents you want to see/compare and selecting "Apply".

Example – interpreting the patent account

The patent account shows the patented technology to be operating at a loss during the first year. The blue line shows a minus. This can be attributed to the estimated development costs prior to the patented technology being commercially worked (see assessment factor B5 and D2). Should the company choose to implement the patented technology in the relevant business area, the estimated account for that business area will show a negative yield for the first two years. The red column depicts this information. Should the company decide not to implement the patented technology, it will maintain a positive financial trend for the relevant business area for the first two years: the green, positive columns for year 1 and year 2. However, during the third year, the estimated account for the business area is already substantially more positive when the patented technology is being utilised than when it is not. The green and red columns mark this contrast from year 3 onward. IPscore uses a ten-year time frame, though this will, in each case, be determined by when the patented technology is ready to be commercially worked (assessment factor B5), and by the estimated life expectancy of the patented technology (assessment factor C3). The chart shows that the four-year technology life expectancy limits the time frame to year 6.

3.7. Qualitative diagnoses of risks and opportunities

Diagnostic reports on risk and opportunity factors are available on the "Risk factors" and "Opportunity factors" worksheets.

Diagnostic report on risk factors

Questions	Risk factor	Patent 1
A1: What is the status of the patent?	yes	2 - Patent application filed
A2: What is the patent's legal position of strength?	yes	3 - National office novelty search or similar
A3: For how long is the patent still valid?	yes	5 - Patent has more than a 12-year term remaining
A5: Does the patent's geographical coverage include the relevant markets?	yes	5 - Patent protection in all existing and potentially relevant market area countries
A6: Are patents monitored to identify infringements?	yes	1 - No monitoring against infringement
A7: Are disputes and legal proceedings customary in the operative markets?	yes	1 - Legal proceedings are very customary
A8: Does the company have the means to enforce patent rights?	yes	4 - Patent rights enforced in nearly all cases if not too expensive
B2: Is the invention technically superior to substitute technology?	yes	4 - There is substitute technology which is not yet competitive
B3: To what extent has the invention been tested?	yes	3 - Production test has been completed
B4: Does the patented technology call for new skills, qualifications, or production equipment?	yes	3 - Some development of production processes is required before the patent can be utilised
B5: How much time is required before the patented technology can be commercially worked?	yes	2,5 years
B6: Are infringing copycat products easy to produce?	yes	2 - The technology is easy to copy and produce
B7: Are products of infringing nature easy to identify?	yes	2 - It is difficult but not impossible to identify infringing copycat products
B8: Does deployment of the technology depend on licence agreements with others?	yes	4 - Use of the patent is dependent on licence agreements, but not with competitors
C1: What are the marketing options?	yes	5 - There is a well-known market and other tangible prominent markets
C4: Are competitive or substitute products active in the market?	yes	1 - There is a high degree of development of competitive or substitute technology
C9: Do commercial activities require special permits/ licences	yes	5 - Life-term permit/ licence approval from public authorities, or no permit/licence required
D2: What are the necessary future development costs?	yes	15,0%
D3: What is the index for cost of production when implementing the patented technology?	yes	100,0%
D4: What investment is necessary for production equipment?	yes	100,0%
D5: Does the company have the financial capacity to cover patent renewal fees in the relevant market?	yes	5 - Over 15 countries/all current and potential countries

The risk factors are selected assessment-factor results where a low score shows high risk, and a high score, all things considered, is equal to a lesser risk. The lowest scores – and thereby those assessment factors constituting the highest risk – are represented in dark grey. The highest scores – and thereby those assessment factors constituting the lowest risk – are represented in light grey.

As mentioned in Chapter 4.3, central customisation can be used to determine whether an assessment factor is a risk, an opportunity, both or neither. If you use this feature, the Risk factors table will not update automatically. To make sure all risk factors are being shown, select the filter button in the Risk factor column (cell B1), select "yes" and then OK.

Example – interpreting the risk factor diagnosis

It is vital to understand the significance of a low risk factor score, in terms of what it means to the patented technology and the company. For example, A7: "Yes – legal proceedings are very customary" shows that patents are important and necessary, that they are enforced and that the rights of the patented area are not to be infringed upon. Many disputes and legal proceedings increase the financial burden on patenting, especially the enforcement process, but are a necessary element in protecting your rights.

Diagnostic report on opportunity factors

Questions	Opportu.	Patent 1
A3: For how long is the patent still valid?	yes	5 - Patent has more than a 12-year term remaining
A4: How broad and comprehensive are the patent claims?	yes	4 - The claims are broadly inclusive
A5: Does the patent's geographical coverage include the relevant markets?	yes	5 - Patent protection in all existing and potentially relevant market area countries
B1: Is the invention a unique technology?	yes	5 - The invention can change the way in which the industry operates/ works
B2: Is the invention technically superior to substitute technology?	yes	4 - There is substitute technology which is not yet competitive
B9: Does the technology have marketing value (customer value)?	yes	5 - The patent provides distinctive features which can be used for marketing the product
C1: What are the marketing options?	yes	5 - There is a well-known market and other tangible prominent markets
C2: What is the market growth in the business area where the patented technology is utilised?	yes	15,0%
C3: What is the life expectancy of the patented technology in the market?	yes	4,0 years
C4: Are competitive or substitute products active in the market?	yes	1 - There is a high degree of development of competitive or substitute technology
C5: What ultimate sales price is the consumer willing to pay compared to existing known products?	yes	2 - Lower than competitors' price
C6: What is the potential extra turnover to be obtained within the business area when utilising the patented technology?	yes	6,0%
C7: What knowledge does the company have of application potential and commercial opportunities?	yes	4 - Knowledge of application potential and commercial opportunities
C8: Does the patented technology embody potential revenue from licensing agreements?	yes	2 - Licensing revenue is possible to a lesser degree
D3: What is the index for cost of production when implementing the patented technology?	yes	100,0%

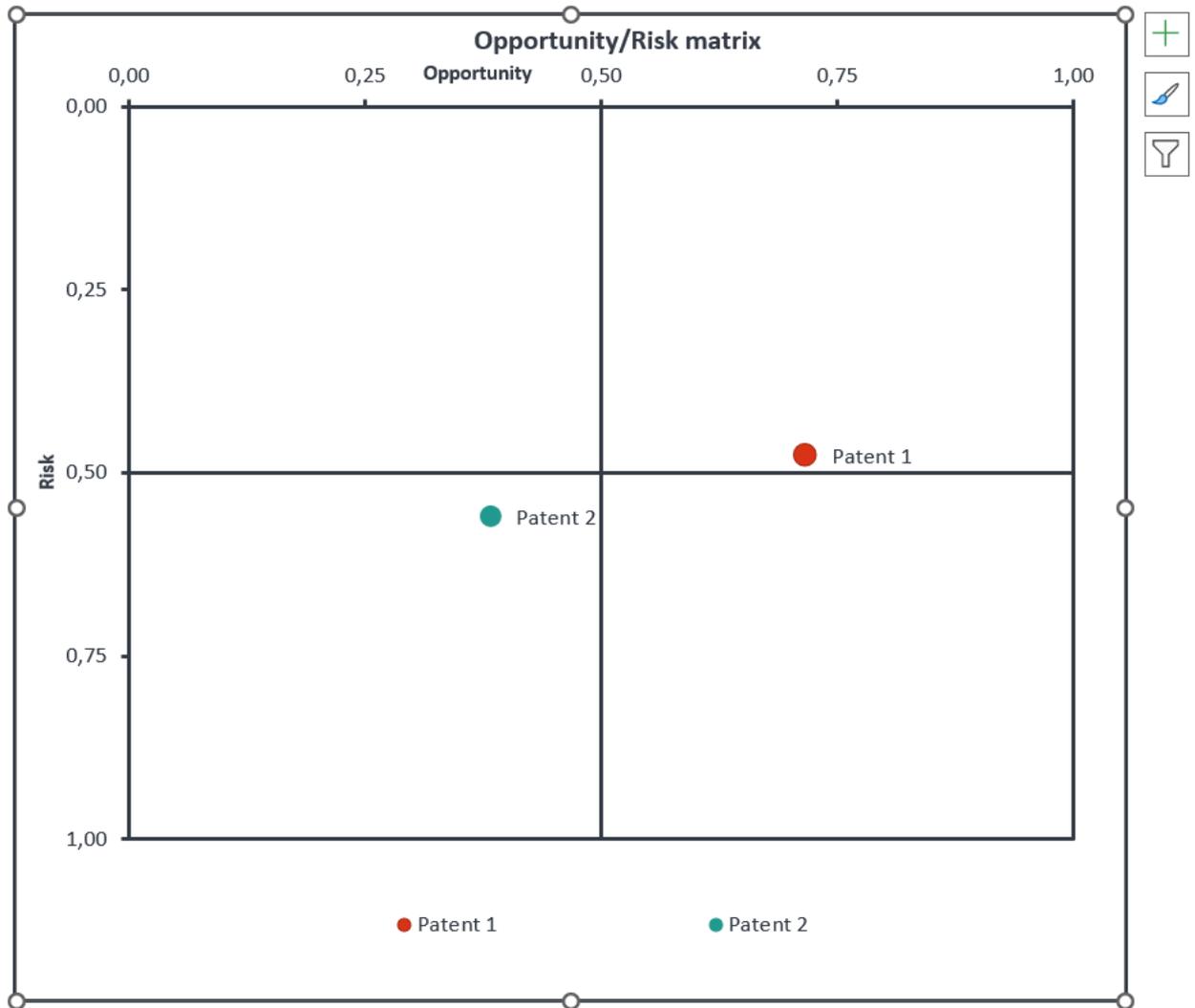
The opportunity factors are selected assessment-factor results where a high score, all things considered, means the highest opportunity, and a low score is equal to a lesser opportunity. The highest scores – and thereby those assessment factors constituting the greatest opportunity – are represented in dark green. The lowest scores – and thereby those assessment factors constituting the lowest opportunity – are represented in light green.

As mentioned in Chapter 4.3, central customisation can be used to determine whether an assessment factor is a risk, an opportunity, both or neither. If you use this feature, the Opportunity factors table will not update automatically. To make sure all risk factors are being shown, select the filter button in the Opportunity factor column (cell B1), select "yes" and then OK.

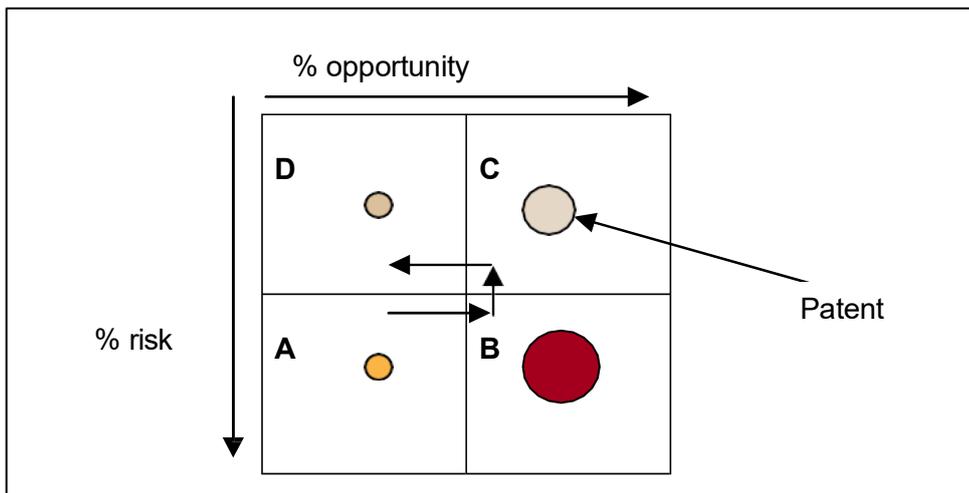
Example – interpreting the opportunity factor diagnosis

It is vital to understand the significance of a high opportunity factor score, in terms of what it means to the patented technology and the company. For example, an area of great opportunity is possible if the patent is valid for a long time and the patent-related products also have a long life expectancy. Otherwise, opportunity is illusory.

3.8. Opportunity/Risk matrix



The matrix shows the relation between opportunity and risk factors in the IPscore evaluation, i.e. the risk/opportunity position:



The risk factors are selected assessment factor results where a low score shows high risk, and a high score, all things considered, is equal to a lesser risk. The opportunity factors are selected assessment factor results where a high score, all things considered, means the highest opportunity, and a low score is equal to a lesser opportunity.

Customisation can be used to determine whether an assessment factor is a risk, an opportunity, both or neither, as mentioned in Chapter 4.3.

The horizontal axis shows the patent's opportunity score as a percentage of the highest achievable opportunity score. The higher the percentage, the greater the opportunity. The perpendicular axis – downwards! – shows a patent's risk score as a percentage of the highest achievable risk score. The higher the percentage, the higher the risk.

The four quadrants, A, B, C, and D, contain different characteristics:

A: High risk and low opportunity – not a very attractive area. If the patent is situated here, take one day at a time and be grateful for earnings achieved. There are no prospects worthy of any larger investment.

B: High risk and high opportunity – a challenging area with great opportunity, but with little certainty of success for the patent/project. Working on high profit margins may be a solution.

C: Low risk and high opportunity – clearly the most attractive area, with great opportunity and, in general, a good degree of security.

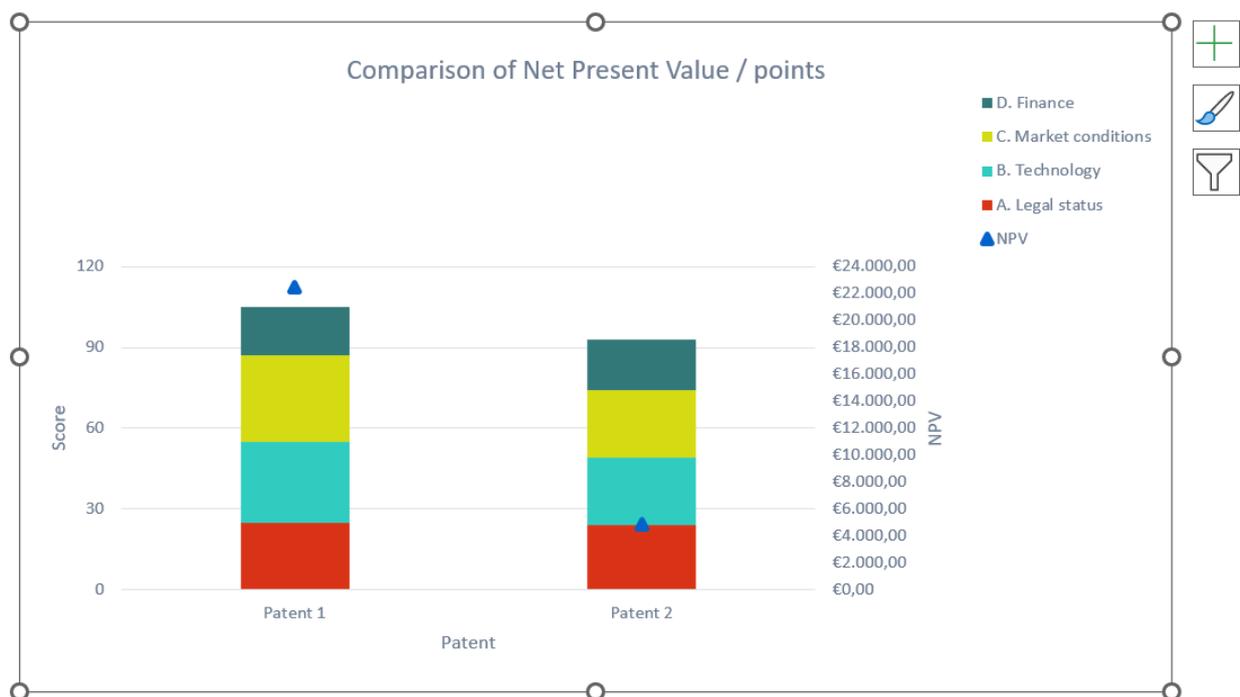
D: Low risk and low opportunity – opportunity here may relate to a mature or over-ripe market. If the patent still has something to offer, it will be at no great risk. Otherwise the patent should be dropped, as there would be little reason to keep it.

Select the patents to be included in the matrix using the filter icon next to the chart (🔍).

Example – interpreting the portfolio matrix

Some projects can 'move' through the chart analogously to the life cycle of the product – starting in the A quadrant as an idea with possible but unclear potential and with a high risk of never becoming a product. As the product develops in the direction of greater and more clearly defined potential, it moves into the B quadrant. As a phase in the project, efforts are made to reduce areas of uncertainty (thereby reducing risk) and to further develop the potential so that the project can move into the C quadrant. Here, the product has entered the market and the potential is being exploited. When demand for the product decreases, it enters the D quadrant. At this stage it may become necessary to consider terminating the project/patent.

3.9. Comparison of net present value/points



Comparison of net present value/points makes it possible to compare selected patents in the patent portfolio. It is a comparison of the patent's scores in categories A-D and a comparison of the net present value of the patents.

You can highlight the patents you want to compare by using the filter icon next to the chart (🔍).

The chart shows the relation between the scores from categories A-D, grouped in a column with the scores on the left side axis. The discounted net present value is shown by way of connected dots, with the value axis on the right side of the chart.

Example – interpreting the comparison of net present value/points chart

The columns in the chart show the scores from each category and the accumulated score of categories A-D. This enables cross-category comparison of scores, e.g. whether a patent is weaker than the other patents in the legal status area. The net present value curve may trace the upper outline of the columns in a more or less regular pattern. Comparing the scores (points) with the net present value will be very general, but deviations from a generally regular pattern will require investigation and explanation for new insights to be gained.

3.10. Communicating the results in reports

When the patent has been evaluated and the results examined and analysed with the help of the output reports, the graphics can be included in a report, to be used to present to decision makers, management, etc.

3.11. Export of evaluation data

Evaluations and comments are exportable or printable from IPscore to a PDF file.

To do this, in each worksheet you want to print select **File** from the main menu and then **Print**. You can change the default print area by selecting **Page Layout** from the main menu and then **Print Area**.

4. IPscore 3.0 financial model

Contents

- Introduction to the financial model
- The basis for the evaluation
- Key figures for the basic financial structure
- The technology's financial effect
- Determining the time frame
- Calculation results
- Implementation of the financial model
- Opportunity/risk matrix values

IPscore's financial model produces a financial forecast of the patented technology's net present value and future patent account. It is an assessment and calculation of the value of the patented technology when put to use in a given business area. It is not only an evaluation of the patent as a legal document, but the evaluation of a patent-protected technology when put to use in a selected business area.

The financial model is based on a number of simple and general economic principles which make it relatively easy and quick to carry out the evaluation and create an overview for the company of the order of magnitude represented by the patented technology. The financial forecast depicts the financial value that the patented technology has for the company by pinpointing the resources and opportunities the company is able to draw on and exploit.

The financial forecast is a product of specific IPscore assessment factors, as well as key data relating to the company's basic financial structure and the business area where the patented technology is being commercially worked.

The IPscore financial model philosophy

It is often difficult for a company to directly define the financial value of a patented technology. The philosophy of the IPscore financial model is based on this fact. If, however, a number of 'small' questions which are easy to answer individually are put together, significant progress is made towards answering the 'big' question: What is the financial value of the patented technology?

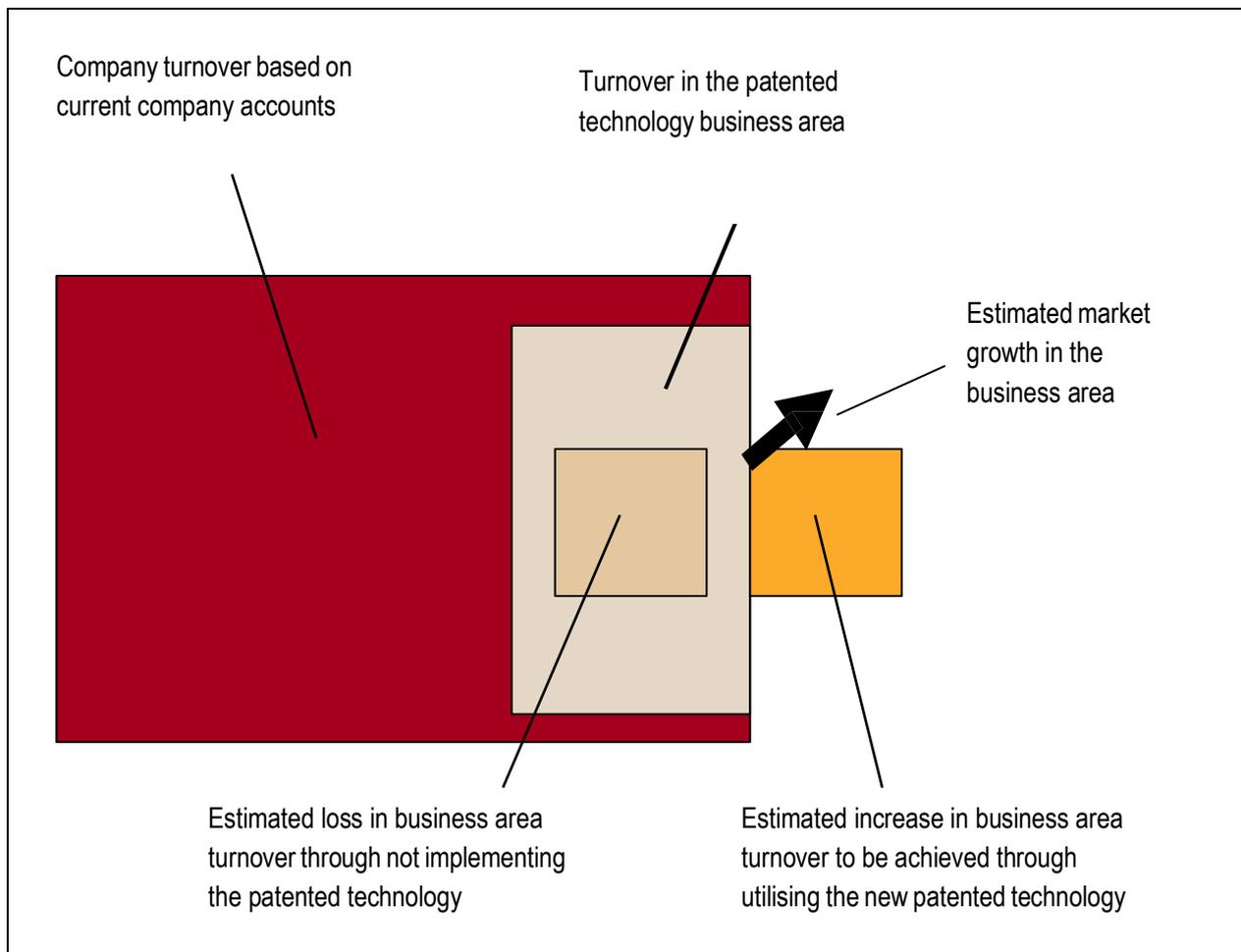
Based on a number of selected assessment factors, the IPscore 3.0 financial model calculates the patented technology's financial effects within the company by focusing on how the patented technology can potentially change the company's current financial structure. The financial structure is defined by using the company's current accounts and figures from the business area of the patented technology.

IPscore first establishes a ratio between the current and estimated future turnover in the patented technology business area and then determines how implementation/utilisation of the patented technology will affect the cost structure.

4.1. Introduction to the financial model

Diagram showing the basis for the financial calculations

The diagram below illustrates the basis for the financial calculations in IPscore, i.e. the relative size of the patented technology business area and the increase in turnover achievable by utilising the new patented technology.



The large red rectangle depicts the total company finances, as expressed in the company's current accounts. The smaller, pale grey box within this rectangle is the defined business area relevant to the patented technology. This area makes up between 1 and 100% of total company business turnover. This share is very important as it forms the basis for all the financial analyses in IPscore.

The actual basis for calculating the financial value of the patented technology is the defined business area of the patented technology. As illustrated, IPscore uses three parameters for calculating the degree to which the relevant business area can be expected to develop.

Firstly, an assessment is made of the possible reduction in business area turnover without the patented technology. In other words, how valuable is the patented technology as a protector of the business area's current turnover? This value of the patented technology can be characterised as the defensive value because, on the strength of the patented technology, the company avoids losing turnover. This value is represented by the beige box.

Secondly, an assessment is made of the patented technology's foreseeable contribution to increase in business area turnover in the relevant business area. How great an increase in turnover can be expected, provided that the patented technology reaches and penetrates new product or market areas? Is it an increase reflecting the fact that the patented technology can be used in new areas, or does it show potential for gaining a share in current markets? This value of the patented technology can be characterised as the offensive value, and it is represented by the orange box.

Thirdly, an assessment is made of the business area's general market growth rate. Is the business area experiencing an increase in demand?

In this way the size and development of turnover in the patented technology business area is defined. This creates the basis for calculating some of the other economic effects generated by utilising the patented technology – effects that can be defined as cost level effects.

This includes the following:

- future development costs before the patented technology can be commercially worked
- effects when the patented technology facilitates production
- effect on the company's investment needs, e.g. when the patented technology allows less complex production technology to be used.

Elements in the IPscore financial forecast calculations

The financial forecast in IPscore requires you to do the following:

1. Determine the turnover in the patented technology business area, i.e. by establishing the share in company turnover represented by the relevant business area.
2. Determine whether this turnover is affected by the company implementing and commercially working the patented technology. The question is whether the effect on business area turnover is partly defensive, avoiding a loss in turnover, or partly offensive, by increasing business area turnover. Both elements can be present. Next, determine future prospects regarding demand, to be quantified as the estimated market growth in the business area.
3. Determine whether the patented technology has an effect on the current cost level. What are the future development costs, production costs and investments?

IPscore calculates the financial value of the patented technology by calculating its effect on future company accounts. First, the net present value is determined and then an estimated future account for the patented technology is established. Both are given a ten-year time frame. Also, the calculations are influenced by when the company anticipates working the patented technology commercially and by the life expectancy of the related products.

4.2. The basis for the evaluation

IPscore's calculations for the financial forecast are based on the company's current financial structure, a structure showing the correlation between earnings, direct costs and overheads/fixed costs, and provision for depreciation.

This data forms the basis of the calculations for the financial forecast and is entered in the IPscore "Financial results" worksheet:

Financial results from the company accounts		Patent 1
Business turnover		€252.000,00
Direct costs		€180.000,00
Indirect costs		€21.000,00
Provision for depreciation		€5.000,00
Net result		€46.000,00
Depreciation period (in yrs)		5,0 years
Definition of business area		
Share of current turnover		15,00%
Parameters used in the calculations		
Discount factor		10,0%

The data taken from the company accounts can be based on the company as a whole or a company division, a particular market or department. This basis is used to establish two things: a benchmark for the company's financial structure and the financial scope of the business area relevant to the patented technology. This defines the object of the evaluation, i.e. the business area relevant to the evaluation of the patented technology.

To ensure that the calculations are as precise as possible, it is very important that the object of the evaluation remains consistent throughout the process and that answers to the IPscore assessment factors refer to the information provided in the "Financial results" category.

The three boxes are a guide to filling in the "Financial results" category:

Guide box 1

Select the business area, specific to the patented technology, to be evaluated in IPscore. The business area is defined as the percentage share of total company turnover.

Alternative method: where available, selected business area accounts provide greater accuracy than an estimated share of total turnover, and as such can be used instead of the company accounts. In that case, the business area share of company turnover is equal to 100%.

Guide box 2

You can use a simple economic structure based on company accounts from a specific company division or department/sector, depending on the basis for the evaluation of the patented technology. If so, all financial figures must relate to the chosen sector and represent a cohesive economic structure.

The choice of financial basis for the evaluation affects the calculable results from the assessment factor questions, where the rating scales refer to percentage of turnover. This is the case in category C – Market conditions and category D – Finance. The figures for turnover given in this financial results category must be the same as the turnover figures forming the basis for your answers to the assessment factor questions.

The upper limit for the depreciation period is seven years.

Guide box 3

Determining parameters for calculations and graphs

Discount factor

A calculation is made of net present value for the patented technology, using a predefined discount factor. Here you enter the desired discount factor for the net present value.

Specification of the net present value calculation is presented in the chart "Comparison of NPV/points".

4.3. Key figures for the basic financial structure

Based on information taken from the accounts figures provided, IPscore selects a number of key figures which are used to calculate the financial value of the patented technology:

business area turnover = turnover figure from company accounts * the percentage share in turnover represented by the patented technology business area.

cash costs = direct costs + fixed costs/overheads (but excluding provision for depreciation)

net profit ratio = profit / turnover

investments = provision for depreciation * period for depreciation

investment intensity = profit / investments (or in conventional terms: asset rate of turnover / capital turnover).

Direct costs and *fixed costs/overheads*: these costs are added to form a single cost category in the analysis – *cash costs*, which define the cost level. These costs have a direct effect on liquidity. They are in this way different from the provision for depreciation, which is only calculated costs excluding direct annual provision for depreciation.

In this model, *cash costs* make no distinction between variable and fixed costs, where variables may fluctuate in proportion to sales, while fixed costs do not. IPscore's streamlining does not take this factor into consideration. This streamlining is based on the following: (a) that the calculation is a forecast, and (b) that in the long term (IPscore has a time frame of ten years) most costs are variable.

Provision for depreciation is important for determining and establishing the scope of investment. It is used to determine how the investments will be affected by the patented technology.

4.4. The technology's financial effect

As mentioned previously, the financial forecast for the patented technology is based on the company's current financial structure. Selected IPscore assessment factors are then used to demonstrate how the patented technology causes a change in the company's financial structure. This change is the patented technology's financial value to the company.

In the "Financial forecast" calculations, IPscore translates the five-point rating scale in seven selected financial assessment factors into numerical financial terms. When these assessment factor answers (i.e., "Financial assumptions") are put together, they demonstrate how the patented technology causes a change in the company's financial structure. Two further assessment factors determine the time frames used in the calculations.

Therefore, the assessment factors determine (a) the patented technology's effect on the business area economy and (b) the time frame for the financial forecast.

Determining the patented technology's financial effect

The seven assessment factors used to determine the patented technology's financial effect in the relevant business area can be divided into specific groups; the patented technology's effect on:

1. turnover
2. costs, i.e.
 - 2a. development costs
 - 2b. cash costs
3. investment

The patented technology's effect on turnover

The patented technology's effect on business area turnover is determined by:

- a) the added increase in turnover achieved by utilising the patented technology (this can be the ability of the patented technology to create an increased market share or to make it possible to conquer new markets)
- b) the business area's general market growth rate
- c) the decrease in business area turnover the company will experience through not implementing/using the patented technology

Estimated business area turnover =

total business turnover * the relevant business area's share of total business turnover * estimated increase in business area turnover when using the patented technology * business area market growth + total business turnover * the relevant business area's share of total business turnover * share of business area turnover maintained when not implementing the patented technology * relevant business area market growth

These three questions are included in IPscore, making it possible to determine how the patented technology affects future earnings. The current relevant business area turnover is multiplied by the estimated increase in turnover, market growth and earnings lost through not utilising the patented technology.

The relevant information for the financial model is taken from the following assessment factors:

C6: What is the potential extra turnover to be obtained within the business area when utilising the patented technology?

This assessment factor determines what effect utilising the patented technology has on the current business area turnover. Does utilising the patented technology capture market share and thereby increase business area turnover?

The current turnover figure is given in the "Financial results" category.

The information is used in the forecast of financial results to calculate the share of the total increase in turnover attributable to the patented technology.

C2: What is the market growth in the business area where the patented technology is utilised?

This assessment factor determines the foreseeable market growth in the business area of the patented technology.

It is expressed as percentage growth in market.

The information is used to calculate the growth in turnover attributable to the patented technology. In the calculations for the forecast of financial results it is assumed that company turnover, in the business area market, will grow at an equal rate.

Note that the calculations for market growth commence from the present moment in time, i.e. regardless of a possible period of development prior to commercialisation.

A distinction is also made between the market where the patented technology is put to use and the other markets the company operates in. In this assessment factor you determine the growth in the market used by the patented technology, whereas the overall expected growth in company-operated markets, excluding those of the patented technology, is given as "% in growth" in the "Financial results" category. This information is used in the calculations for the area of total company growth in turnover, which excludes the patented technology.

D1: Can the existing business area output in the relevant market be maintained without utilising the patented technology?

This assessment factor determines whether the patented technology is a necessary element in maintaining business area turnover for the patented product/service. If the entire business area turnover can be maintained without the patented technology, it becomes, in principle, superfluous, whereas if the company is unable to maintain business area turnover/output without it, the patented technology is an essential element.

The rating scale expresses the percentage of business area turnover that can be maintained without the patent.

The information is used to calculate how great a share of the business area turnover/output can be achieved if the patented technology is kept in force.

The patented technology's effect on costs

IPscore operates with a number of cost categories

2a. The patented technology's effect on development costs:

The first cost category is for product development and pre-commercial costs, both of which precede patented technology earnings. This cost category is depicted in IPscore as percentage of business area turnover in the patented technology's business area prior to the patented technology being commercially worked as a product or process. This principle is based on the fact that research and development (R&D) costs are often listed in the figures for turnover in published accounts.

$$\text{development costs} = \text{total business turnover} * \text{business area share of total business area turnover} * R\&D \%$$

R&D % is taken from assessment factor D2:

D2: What are the necessary future development costs?

This assessment factor is for determining the development costs incurred annually before the patent product/service is ready for use commercially. It is only the future development costs which are to be assessed, including patenting costs and market introduction costs, but excluding costs already accounted for.

The estimated figure for cost of development is expressed as a percentage of the current business area turnover, where turnover refers to the turnover figure given in the "Financial results" category.

This information is used to calculate the remaining investments for product/service development before the product is saleable or the service is usable.

2b. The patented technology's effect on cash costs:

When products related to the patented technology are launched, the company is faced with production costs, which rise and fall in relation to company business turnover.

IPscore's basis for calculating the patented technology's effect on cash costs is the net profit ratio (profit / turnover). The net profit ratio defines the alignment between earnings and costs expressed in %, thereby demonstrating the average profit margin per capital unit of turnover

The new patented technology has an effect on the net profit ratio, e.g. by facilitating production, making products less expensive to produce than those currently in production. In this case the net profit ratio will increase.

To adjust the net profit ratio, the estimated/foreseeable production costs index when implementing the patented technology must be determined. This index adjusts the relation between costs and turnover.

estimated production costs for the patented technology = estimated/foreseeable turnover for the patented technology * production costs index * (1 - net profit ratio)

The production costs index is determined in assessment factor D3:

D3: What is the index for cost of production when implementing the patented technology?

The future production costs for the patent-related product are assessed in relation to the level of the current production costs in the company. You need to determine whether the patent-related product will be easier and cheaper to produce compared to production at present due to implementation of the patented technology, or whether implementation of the patented technology will make the production process more difficult and thereby more expensive.

Production costs are expressed as percentage change in level in relation to the current level of production costs.

This information is used in the calculations for the forecasts of financial results, primarily in the profit calculations.

The patented technology's effect on investments

A third element in the cost calculations are investments that involve provision for depreciation. Implementing the patented technology has a twofold effect on investments:

- a) Increased activity (increase in turnover), generated by the patented technology, gives rise to a demand on investment. An increase in turnover gives rise to a demand for greater production capacity; thus investments also rise.
- b) The patented technology, if dependent on a whole new production technology, may require an upgrading of production equipment. This effect on investment concerns investment intensity, which is expressed as turnover / investment (otherwise known as rate of turnover). Investment intensity is affected by whether or not the existing production technology can be used to produce the product. If it *can* be used, the investment intensity remains the same as current investment levels. If the new patented technology requires a more complex (i.e. more expensive) production technology, investments will rise per capital unit of turnover, whereas the opposite is the case if the patented technology requires a more simple (i.e. less expensive) production technology. Thus, investment intensity will remain at the current level of investment if the existing production technology can be used. However, if an entirely new and more complex technology/method of production is required, investment intensity will increase, and will decrease if the production process can be made more effective.

Investment intensity is measured on the company's provision for depreciation in relation to turnover. Investment level and frequency depend on the period set for depreciation. Thus the basis for calculating the level of investment is the annual provision for depreciation multiplied by the depreciation period (current year). This figure is then multiplied by the figure for investment intensity, multiplied by the business area turnover figure. This assumes that the business area turnover figure will be supported by a solid capacity for production during the provision for depreciation period.

investments = expected average business area turnover * (investment intensity * investment index)

The investment index is determined in assessment factor D4:

D4: What investment is necessary for production equipment?

This assessment factor determines whether the current level of investment for production equipment is affected by the new production technology. Does the new patented technology affect the current level of investment necessary for production of the related patent product?

This assessment factor expresses the percentage change expected in relation to the current investment intensity for production equipment. If the necessary production technology costs the same as the existing technology, the score is 100%. If it is less expensive, the score will be less than 100%. If there is a need for investments over and above the existing level, the score will be higher than 100%.

This information is used to calculate investments and re-investments when production equipment is depreciated and has an effect on liquidity.

4.5. Determining the time frame

The calculations in the financial forecast have a ten-year time frame. Included in the specifications for this time frame are two assessment factors relating to (a) the pre-commercial phase and (b) the life expectancy of the patented technology.

- a) The first assessment factor, (B5) "How much time is required before the patented technology can be commercially worked?", determines when the patented technology is expected to be put on the market, and so marks the start and length of the time frame for future development costs.

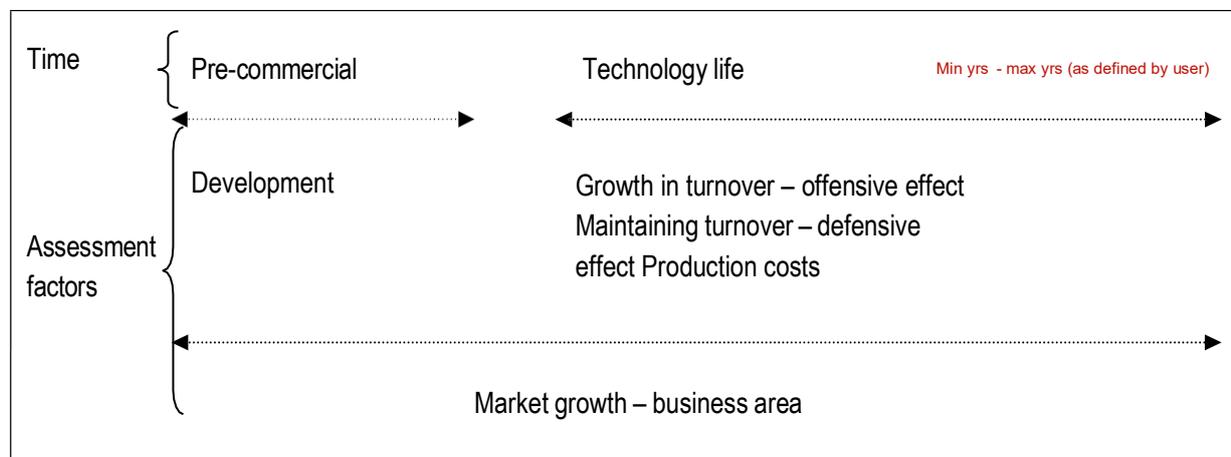
B5: How much time is required before the patented technology can be commercially worked?

- b) The second assessment factor, (C3) "What is the life expectancy of the patented technology in the market?", will determine when the calculations are to cease after the patented technology has been launched on the market.

C3: What is the life expectancy of the patented technology in the market?

However, IPscore has an overall maximum time frame of ten years. This overall time frame includes the period of development and the period the patented technology is active in the market and generating income.

Diagrammatic overview of the IPscore time frame and use of assessment factors



Note that the assessment factor relating to market growth covers the whole of the time frame, which may mean having to adjust the assessment factor for market growth rate to the remaining pre-commercial phase, i.e. the time left before the patent can be commercially worked. This avoids an unrealistic estimated market growth.

4.6. Calculation results

The results of the financial model calculations – the financial forecasts – are presented in the output chart of foreseeable patent accounts and in the net present value calculation.

The following is a description of the output chart and calculation, an explanation of how the model produces them, and their role in the financial evaluation.

Calculating the net present value

Select the discount factor required and enter it in the IPscore "Financial results" category.

When the data has been entered and the discount factor selected, IPscore will provide the net present value of the patented technology.

Determining parameters for calculations and graphs

Discount factor

A calculation is made of net present value for the patented technology, using a predefined discount factor. Here you enter the desired discount factor for the net present value.

Specification of the net present value calculation is presented in the chart "Comparison of NPV/points".

Factor/Financial assumptions (to be changed in the respective categories)	Patent 1	Patent 2
B5: How much time is required before the patented technology can be commercially worked?	2,0 years	0,0 years
C2: What is the market growth in the business area where the patented technology is utilised?	15,0%	3%
C3: What is the life expectancy of the patented technology in the market?	4,0 years	2,0 years
C6: What is the potential extra turnover to be obtained within the business area when utilising the patented technology?	6,0%	6%
D1: Can the existing business area output in the relevant market be maintained without utilising the patented technology?	25,0%	100%
D2: What are the necessary future development costs?	15,0%	15%
D3: What is the index for cost of production when implementing the patented technology?	100,0%	100%
D4: What investment is necessary for production equipment?	100,0%	70%
Financial results from the company accounts		
Business turnover	€252.000,00	€252.000,00
Direct costs	€180.000,00	€180.000,00
Indirect costs	€21.000,00	€21.000,00
Provision for depreciation	€5.000,00	€5.000,00
Net result	€46.000,00	€46.000,00
Depreciation period (in yrs)		
	5,0 years	5,0 years
Definition of business area		
Share of current turnover	15,00%	40,00%
Parameters used in the calculations		
Discount factor	10,0%	10,0%
The net present value of the patented technology is:		
	€21.527,64	€4.864,84

The discounted net present value is shown here for the selected discount factor. Also shown are the assumptions IPscore uses in calculating the net present value.

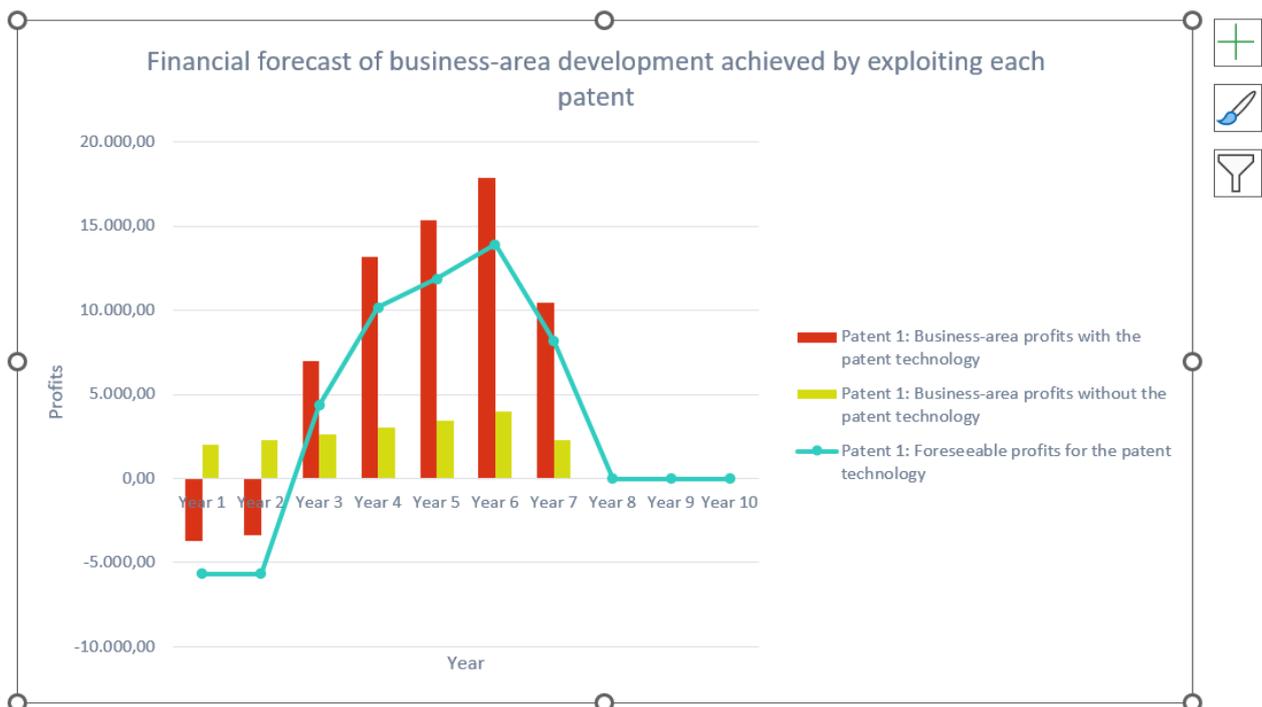
The estimated future account – patent account

In IPscore the net present value is the patented technology's financial value. This is not the same as a financial value in annual accounts, because profits in accounts are not liquidity flows but turnover and costs.

Thus IPscore can produce a future account with or without the patented technology, as developments in each of the mentioned elements are taken into account and put together to produce profits that take account of turnover, cash costs and depreciation occurring during the relevant periods of depreciation.

Thus the patent account is a projection of the patented technology's effect on accounts, and this is compared with an estimated account without implementation of the patented technology. The patented technology's value ratio then becomes apparent.

The patent account features three graphical elements. One is the line depicting the patented technology's defined effect on company accounts. The green column shows the profit achievable if the patented technology is not utilised, and the pale red column shows total profits including the patented technology, i.e. the line value added to the value of the blue column. The output chart is "Patent account".



The chart shows the patented technology to be operating at a loss in the first year, as there are some development costs. However, profits are already positive in the second year. Similarly to other charts, after selecting the chart, you can use the filter icon () to select the patents you want to see or compare. Each patent has three components in the chart: Business-area profits with the patent technology, Business-area profits without patent technology and Foreseeable profits for the patent technology. These components have to be selected separately in the filter option. The three components for the same patent might not be displayed following each other on the filter option: please scroll down to look for each component if this is the case. After selecting all the components for all the patents you want to see or compare, select "Apply" at the bottom of the filter option.

4.7. Implementation of the financial model

This section explains the financial calculations in more detail. It is organised as follows:

1. Input variables
2. Liquidity and net present value
3. Patent accounts
4. Mapping to the formulas from Chapter 5.4
5. Financial model variables

Input variables

The following financial assumptions are used in the financial calculations:

Financial assumption (Assessment factor)	Description
B5	Time to market
C2	Business area market growth in the market where the patented technology is utilised (%)
C3	Patented technology's life expectancy in the market
C6	Estimated increase in business area turnover when utilising the patented technology (% of the business turnover)
D1	Share of business area turnover maintained when not utilising the patented technology (% of the business turnover)
D2	Development costs (% of the business turnover)
D3	Production cost index when utilising the patented technology (% of the production costs)
D4	Investment in production equipment for the patented technology (% of the current investment intensity)

The following input variables are entered on the "Financial results" worksheet:

Input variable (Financial results) (Fin = Financial, Def = Definition, Deprec = Depreciation)
Fin_BusinessTurnover
Fin_Direct_costs
Fin_Indirect_costs
Fin_ProvisionForDeprec
Fin_DeprecPeriod (yrs)
Def_of_BusinessArea (%)
Fin_DiscountFactor (%)

The sections below briefly explain the IPscore® financial model. Most values are computed per year of the calculation period of ten years. For the sake of simplicity, we omit the year index (Y_) from the variable names. The exact formulas can be found in the "Financial model variables" section.

Liquidity and net present value (NPV)

NPV = (Liquidity_{Y1} / (1+Fin_DiscountFactor) + Liquidity_{Y2} / (1+Fin_DiscountFactor)² + ... + Liquidity_{Y10} / (1+Fin_DiscountFactor)¹⁰) * Fin_BusinessTurnover / 100

Liquidity = Revenue - Costs - Investments + Regained_revenue + Efficiency +

InvestmentReduction Accumulated liquidity is the sum of the liquidity values for the current year and all previous years.

Revenue = C6*(1 + C2)^{Y-1} * Def_of_BusinessArea * (1 + C2)^Y * 100

(computed for each year in which the product is on the market within its life expectancy)

Fin_Share_Direct_costs_ = Fin_Direct_costs/Fin_BusinessTurnover*100

Fin_Share_Indirect_costs_ = Fin_Indirect_costs/Fin_BusinessTurnover*100 Share_Costs = (Fin_Share_Direct_costs + Fin_Share_Indirect_costs)/100

Costs = Revenue * D3 * Share_Costs + D2 * Def_of_BusinessArea * 100

(computed for each year before the product is introduced on the market) Regained_revenue = (100 - Share_Costs * 100) * (1-D1) * Def_of_BusinessArea * (1 + C2)^Y Efficiency = Share_Costs * 100 * (1-D3) * Def_of_BusinessArea * (1 + C2)^Y

Share_Deprec = Fin_Share_ProvisionForDeprec =

Fin_ProvisionForDeprec/Fin_BusinessTurnover*100

InvestmentReduction = Fin_DeprecPeriod * Share_Deprec * (1-D4) * Def_of_BusinessArea * (1 + C2)^Y

(computed for each first year of the depreciation period, from the market appearance until the tenth year)

Patent accounts

This section defines the values found in the corresponding chart.

Business-area profits without the patent technology:

Profits_WithoutPatent = Turnover_WithoutPatent – Costs_WithoutPatent – Deprec_WithoutPatent

(computed for each year from the introduction on the market until the end of the life expectancy)

Turnover_WithoutPatent = Fin_BusinessTurnover * D1 * (1 + C2)^Y * Def_of_BusinessArea

Costs_WithoutPatent = Share_Costs * Turnover_WithoutPatent

Deprec_WithoutPatent = Share_Deprec/100 * Turnover_WithoutPatent

Foreseeable profits for the patent technology:

Patent_Profits = Patent_Turnover - Patent_Costs - Patent_Deprec - Patent_Regained_Deprec + Patent_regained_revenue

Patent_Turnover = Revenue * Fin_BusinessTurnover/100

Patent_Costs = (Fin_BusinessTurnover * Costs/100 - ((Turnover_WithoutPatent / Def_of_BusinessArea) * (Efficiency/100) / (1 + C2)^Y)) - (Patent_regained_revenue / (Share_Costs) * Efficiency)/100

Patent_Regained_Deprec = Fin_BusinessTurnover * Def_of_BusinessArea * Share_Deprec * (1-D1) * (1 + C2)^Y / 100

(computed only if revenue for the current year is greater than zero)

$Patent_Deprec = ((Patent_Turnover * D4 * Share_Deprec / 100) - (Turnover_WithoutPatent * Share_Deprec * (1 - D4) / 100) - Patent_Regained_Deprec * (1 - D4))$
 (computed only if revenue for the current year is greater than zero)
 $Patent_regained_revenue = Fin_BusinessTurnover * Regained_Revenue/100$

Business-area profits with the patent technology:

WithoutPatent_Profits + Patent_Profits
 (computed for all years)

Mapping to the formulas from Chapter 5.4

The descriptive formulas from Chapter 5.4 are mapped to the detailed formulas here. The first column of each table shows the variables from Chapter 5.4 and the second column the variables from the sections above (and in some cases, in square brackets, the variables from the table in the "Financial model variables" section).

Estimated business area turnover

Estimated business area turnover = total business turnover * the relevant business area's share of total business turnover * estimated increase in business area turnover when using the patented technology * business area market growth + total business turnover * the relevant business area's share of total business turnover * share of business area turnover maintained when not implementing the patented technology * relevant business area market growth

estimated business area turnover	Patent_Turnover + Turnover_WithoutPatent
total business turnover	Fin_BusinessTurnover
the relevant business area's share of total business turnover	Def_of_BusinessArea
estimated increase in business area turnover when using the patented technology	$C6 * (1 + C2)^{Y-1}$ = Extra_Business_Turnover
business area market growth	$(1 + C2)^Y$ = Accum_Growth
share of business area turnover maintained when not implementing the patented technology	D1
relevant business area market growth	business area market growth

Development costs

development costs = total business turnover * business area share of total business area turnover * R&D %

development costs	$D2 * Def_of_BusinessArea * 100 * Fin_BusinessTurnover$
total business turnover	Fin_BusinessTurnover

business area share of total business area turnover	Def_of_BusinessArea
R&D % (future development costs)	D2 = DevelopmentNeed for all years before the product was introduced

Investments

investments = expected average business area turnover * (investment intensity * investment index)

investments	Investments (computed only for the 1st year of the depreciation period)
expected average business area turnover	Example for Y=6 if depreciation year number equals 1, and Fin_DeprecPeriod = 5: (6_Revenue + 7_Revenue + 8_Revenue + 9_Revenue + 10_Revenue) / Fin_DeprecPeriod
investment index	Fin_DeprecPeriod * Fin_Share_ProvisionForDeprec / 100
investment intensity	D4

Y = Year

Financial model variables

Y=year (1, 2,...,10), Fin=Financial, Deprec=Depreciation, Def=Definition, Accum=Accumulated

Variable name	Defined in	Value
B5 Time to market	Input - Technology	User defined score - financial assumption
C2 Market growth	Input -Market conditions	User defined score - financial assumption
C3 Life expectancy	Input -Market conditions	User defined score - financial assumption
C6 Turnover increase w. patent	Input -Market conditions	User defined score - financial assumption
D1 Business turnover, no patent	Input - Finance	User defined score - financial assumption
D2 Development cost	Input - Finance	User defined score - financial assumption
D3 Production cost (patent)	Input - Finance	User defined score - financial assumption
D4 Investment	Input - Finance	User defined score - financial assumption
Fin_BusinessTurnover	Input - Financial results	User defined
Fin_DeprecPeriod	Input - Financial results	User defined
Fin_Direct_costs	Input - Financial results	User defined
Fin_Indirect_costs	Input - Financial results	User defined
Fin_NetResult	Input - Financial results	User defined
Fin_ProvisionForDeprec	Input - Financial results	User defined
Def_of_BusinessArea	Input - Financial results	User defined
Fin_DiscountFactor	Input - Financial results	User defined
Y_Revenue		$C6 \cdot (1 + C2)^{Y-1} \cdot \text{Def_of_BusinessArea} \cdot (1 + C2)^Y \cdot 100$ (computed for each year in which the product is on the market within its life expectancy)
Fin_Share_Direct_costs		$\text{Fin_Direct_costs} / \text{Fin_BusinessTurnover} \cdot 100$
Fin_Share_Indirect_costs		$\text{Fin_Indirect_costs} / \text{Fin_BusinessTurnover} \cdot 100$
Share_Costs		$(\text{Fin_Share_Direct_costs} + \text{Fin_Share_Indirect_costs}) / 100$
Y_Costs		$Y_Revenue \cdot D3 \cdot \text{Share_Costs} + D2 \cdot \text{Def_of_BusinessArea} \cdot 100$ (bold part computed only for each year before the product is introduced on the market)

Fin_Share_ProvisionForDeprec = Share_Deprec		Fin_ProvisionForDeprec/Fin_BusinessTurnover*100
Y_InvestmentReduction		Fin_DeprecPeriod * Share_Deprec * (1-D4) * Def_of_BusinessArea * (1 + C2) ^Y (computed for each 1st year of the depreciation period, from the market appearance until the 10th year)
Y_Regained_revenue		(100 - Share_Costs *100) * (1-D1) * Def_of_BusinessArea * (1 + C2) ^Y
Y_Efficiency		Efficiency = Share_Costs * 100 * (1-D3) * Def_of_BusinessArea * (1 + C2) ^Y
Expected average business area turnover		Example for Y=6 if depreciation year number equals 1, and Fin_DeprecPeriod = 5: (6_Revenue + 7_Revenue + 8_Revenue + 9_Revenue + 10_Revenue) / Fin_DeprecPeriod
Investment index		Fin_DeprecPeriod * Fin_Share_ProvisionForDeprec / 100
Y_Investments		expected average business area turnover * (D4 * investment index)
Y_Liquidity		Y_Revenue - Y_Costs - Y_Investments + Y_Regained_revenue + Y_Efficiency + Y_InvestmentReduction
Y_Turnover_WithoutPatent		Fin_BusinessTurnover * D1 * (1 + C2) ^Y * Def_of_BusinessArea
Y_Costs_WithoutPatent		Share_Costs * Y_Turnover_WithoutPatent
Y_Deprec_WithoutPatent		Share_Deprec/100*Y_Turnover_WithoutPatent
Y_Profits_WithoutPatent		Y_Turnover_WithoutPatent – Y_Costs_WithoutPatent - Y_Deprec_WithoutPatent (computed for each year until the sum of time to market and the life expectancy)

Y_Patent_Turnover		Y_Revenue * Fin_BusinessTurnover/100
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Y_Patent_Costs		$\text{Fin_BusinessTurnover} * \text{Y_Costs}/100 -$ $((\text{Y_Turnover_WithoutPatent} / \text{Def_of_BusinessArea}) * (\text{Y_Efficiency}/100) / (1 + \text{C2})^Y) -$ $(\text{Y_Patent_regained_revenue} / (\text{Share_Costs}) * \text{Y_Efficiency})/100$
Y_Patent_Regained_Revenue		$\text{Fin_BusinessTurnover} * \text{Y_Regained_revenue}/100$
Y_Patent_Regained_Deprec		$\text{Fin_BusinessTurnover} * \text{Def_of_BusinessArea} * \text{Share_Deprec} * (1-\text{D1}) * (1 + \text{C2})^Y / 100$ <p>(computed only if revenue for the current year is greater than 0)</p>
Y_Patent_Deprec		$((\text{Y_Patent_Turnover} * \text{D4} * \text{Share_Deprec} / 100) -$ $(\text{Y_Turnover_WithoutPatent} * \text{Share_Deprec} * (1- \text{D4}) / 100) - \text{Y_Patent_regained_deprec} * (1- \text{D4}))$ <p>(computed only if revenue for the current year is greater than 0)</p>
Y_Patent_Profits		$\text{Y_Patent_Turnover} - \text{Y_Patent_Costs} - \text{Y_Patent_Deprec}$ $- \text{Y_Patent_Regained_Deprec} +$ $\text{Y_Patent_regained_revenue}$
Y_Business-areaProfits_WithPatent		$\text{Y_Profits_WithoutPatent} + \text{Y_Patent_Profits}$ <p>(computed for all years)</p>
Net present value (NPV)		$(\text{01_Liquidity}/(1+\text{Fin_DiscountFactor})^1 +$ $\text{02_Liquidity}/(1+\text{Fin_DiscountFactor})^2 + \dots +$ $\text{10_Liquidity}/(1+\text{Fin_DiscountFactor})^{10}) * \text{Fin_BusinessTurnover} / 100$

4.8. Opportunity/risk matrix values

This section explains the calculations of the values for the opportunity/risk matrix (see Output - Portfolios).

To plot a point corresponding to a patent in the matrix, we need to know its risk value (%) and its opportunity value (%).

The base for the calculation are the assessment factors relevant to risk factors or opportunity factors. This relevance is part of the IPscore[®] design and is given in the following table:

Assessment factors	Risk relevant	Opportunity relevant
A	A1, A2, A3, A5, A6, A7, A8	A3, A4, A5
B	B2, B3, B4, B5, B6, B7, B8	B1, B2, B9
C	C1, C4, C9	C1, C2, C3, C4, C5, C6, C7, C8
D	D2, D3, D4, D5	D3

Note that some factors, such as A3 or A5, are counted as both risk and opportunity relevant. As mentioned before, the user can, however adapt whether each assessment factor is a risk, opportunity, both or neither.

The opportunity value for each opportunity relevant factor is computed as an

$\text{Opportunity}_{\text{per factor}} = (\text{Score}-1)*0.25$, where Score refers to the scoring of the opportunity relevant assessment factor as determined by the user

The opportunity value (%) is computed for all opportunity relevant factors as an average of all opportunity values per factor.

The risk value (%) is computed for each risk relevant factor as

$\text{Risk}_{\text{per factor}} = (5-\text{Score})*(-0.25)$

The risk value (%) is computed for all risk relevant factors as an average of all risk values per factor.