KNOWLEDGE TRANSFER
AND ITS PROCESS

CHECKLIST FOR THE RESEARCHER

• Material Transfer Agreement
• Freedom To Operate
• IP Transfer of rights
• Computer software: Distribution strategy
• Patent as a source of information
• IP Charter of the LIEU Network and the UWE
• Prior art searching
• Technology Readiness Level
• Laboratory notebook
• Electronic laboratory notebook
• Invention disclosure form
• Software disclosure form
• Trademarks
• Trade secret
• Plant variety rights
• Designs
• Copyright protection
• Patent procedure
• Transfer or collaboration opportunities
• Computer software: Marketing strategy
• Business Model Canvas
• Social Business Model Canvas

Request the help of an advisor of your Knowledge Transfer Office (KTO)

An initiative of partners of the LIEU Network (SynHERA, UCLouvain, ULB, ULiège, UMONS, UNamur, USL-B) with the essential contribution of Céline Lefèbvre for the illustrations and graphic design.

With the support of

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In response to a request from researchers, the LIEU Network has developed an interactive guide enabling any researcher, new or experienced, to have an overall view of the process leading to knowledge transfer and to have concise summarised information at each step.

By making the process of research promotion more transparent and accessible, the LIEU Network hopes to see more initiatives among universities and Higher Education Institutions (HEI) leading to knowledge transfer within civil society.

1 Via the Knowledge Transfer Offices (KTOs) of the universities and HEI of the Fédération Wallonie-Bruxelles (SynHERA, UCLouvain, ULB, ULiège, UMONS, UNamur, USL-B)

The information in this guide is necessarily summarized and not exhaustive. Also, do not hesitate to contact us to find out more.

Finally, this guide only makes sense if it is really useful to you: all your suggestions for improvements are therefore welcome!

Have fun surfing and reading!

Important note: many links allow you to move around inside this guide. If you use Foxit Reader, don’t forget to activate the hand tool function. This is not necessary with Adobe Reader.
If knowledge transfer is envisaged, scientific publication should be done in agreement with the KTO.

TOOLS AVAILABLE TO RESEARCHERS DURING KEY STEPS OF THE KNOWLEDGE TRANSFER

If knowledge transfer is envisaged, scientific publication should be done in agreement with the KTO.
For any shipment or receipt of material used generally for research purposes.

For all types of material, don’t send anything before contacting the KTO. They will draft a material transfer agreement!

Our research collaborators ask us to send them some stem cells. That can’t be true! They used a bacterial strain from our lab that we transferred to them! And all of this without notifying us or crediting us! A MTA would have prevented such problems. The KTO is here to help you provide a contractual framework for the transfer of material. Don’t hesitate to contact us in the future!

The MTA (Material Transfer Agreement) is a contract governing the transfer of material between two parties, whether public or private usually for research purposes only.

It defines the terms and conditions of the transfer of material, including those regarding ownership of the material and its modifications. Such a contract also defines the terms of use, of publication, and those related to confidentiality, etc.

The KTO is here to help you provide a contractual framework for the transfer of material. Don’t hesitate to contact us in the future!

Do you receive or provide material from research?

The MTA defines the terms and conditions of the transfer of material!
The research project relying on the use of the material and the objectives pursued to limit the permitted use of the material within this framework, i.e.:

- ownership of the transferred material
- ownership of modifications, discoveries and inventions made by the receiving party
- the conditions of use that the receiving party is entitled to do (manipulations, improvements, etc.)
- the persons authorised to use the material
- confidentiality related to the material, for example in the case where a patent application is being considered
- the conditions related to scientific publications that may be written about the material
- Liability for damages which may arise from use of the material

As soon as there is a possibility of exchanging the material.

You should then contact your KTO as soon as possible because the agreement must be concluded before the transfer of any material between the providing and the receiving organisations.

The MTA is concluded between legal entities. Within the Academic institution, it is signed by the legal representative authorised to engage the academic institution (Rector) and by the recipient researcher.

The MTA is negotiated by your KTO. It may be drafted by your KTO or proposed by the external providing party in which case your KTO will anyway carefully review such a contract.

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FREEDOM TO OPERATE

(FTO)

WHAT IS FREEDOM TO OPERATE? (FTO)

An FTO analysis is a study carried out to check that you don’t risk infringing an intellectual property title that belongs to a third party, such as a brand, a design, a plant variety, a printed circuit or a patent.

This document details the case of the patent FTO.

FTO OR PATENTABILITY?

A patentability analysis involves analysing the prior art to check that an invention is new and inventive. It can be used to draw up a patent that covers the product or process concerned, while limiting the possibilities for competitors to market a product or process that is too similar.

The FTO analysis itself consists of checking that a product or process that is to be marketed does not fall partially or wholly within the field of protection (which may be definitive or provisional) of patents held by third parties.

FOR WHOM?

Anyone who ultimately wishes to market a product or a process. At universities and higher education institutions, FTO primarily concerns collaborative or applied research projects and spin-offs.

FOR WHAT?

• To make sure that you are free to operate a product or process.
• To check that the product or process you wish to develop/market is not protected by a third-party patent and is therefore not a counterfeit.
• To avoid investing in research for which no product can be marketed.
• To reassure investors.
• To avoid lawsuits.

WHEN?

Ideally, the FTO analysis should be carried out when the research begins. There is always time to think about this during the research, but once marketing has begun, it is too late.

The FTO analysis should be regularly updated during the development of the product or process until the final product or process is marketed.

My freedom to operate stops where that of others starts!


**FREEDOM TO OPERATE**
**(FTO)**

### HOW?

**Stage 1:** Prior art searching  
**Stage 2:** Results analysis

- Document that describes the Product or Process (PP)
- Patent granted
  - In force
  - Expired
- Patent application
  - Abandoned
  - Pending

**FTO**  
*Freedom to operate*

**Confirmation once granted or abandoned**

- Do the patent claims cover the PP?
  - No
  - Yes

**NO FTO**  
*No freedom to operate*

- Do the claims to patents that may be granted cover the PP?
  - No
  - Yes

### EXAMPLES

**NO FTO**

- Third-party patent  
  - PP
  - A + B + C + D

**FTO**

- PP
  - Third-party patent
  - A + B + C + D

**FTO**

- Third-party patent
  - PP
  - A + B + C + D + D'

---

**CALL UPON AN EXPERT**

Conducting an exhaustive FTO analysis is a complex and costly procedure that requires the intervention of an outside expert:

- to conduct the prior rights search in order to find all the relevant documents that could impede operation;
- to check the status of patent applications and patents (abandoned, pending, in force, stage of the issue procedure);
- to conduct a country-by-country analysis, because the scope of the protection may differ from one country to another.

**LINKS**

- Patent procedure
- Prior art searching
- Patent as a source of information

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The document is interactive and cannot be printed on its entirety. Only the selected example will appear on the printed page.
What could block my research?

It is important as soon as possible to identify in which context your software will be distributed: commercially? open source? This choice has a strong impact on your research as it could open or close doors. It will also help you identify what you should or shouldn’t do in terms of collaboration, code reuse, and distribution.

Here are some examples of problematic situations you must be aware of:

If part of the code belongs to an EXTERNAL PARTNER, this partner has the right to veto any project that includes the software, be it a research programme or a commercialisation.

In every research project, try to keep the software property undivided.

Once all or part of the software has been licenced with EXCLUSIVE RIGHTS, or is developed under CONFIDENTIALITY, the licencee can block future collaboration research.

Try to keep confidentiality on data, not on code (nor algorithm or methods) and limit exclusivity by sector and geographic zone.

If you include OPEN SOURCE code, check the licence beforehand: some licences may prevent you from distributing a proprietary software.

If you want to keep your know-how private (proprietary code), integrate only open source code with a permissive licence: MIT, BSD, Apache, (LGPL), etc.

If you include code with DIFFERENT OPEN SOURCE LICENCES, beware of legal incompatibility between those licences (e.g.: GPLv2 and Apache are incompatible). This could prevent you from distributing your software (even free, even with source code, etc.).

Choose a licence as soon as you begin developing the software, and choose to integrate only open source code with a compatible licence (see chart).
Version control system (Git, SVN, Mercurial, etc.)
As soon as you start, store all your code in a Version control system (Git, etc.). This will allow to:
• Easily collaborate and keep track of every contribution
• Make reproducible science (identify the specific version linked to a publication)

Source code header
Start all your code files with a Copyright and Licence header. These examples should be adapted to each case:

GPL  MIT  Proprietary (commercial)

Copyright (C) 2016-2017 University of "...
This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public Licence as published by the Free Software Foundation, either version 3 of the Licence, or any later version.
This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public Licence for more details.
You should have received a copy of the GNU General Public Licence along with this program.
If not, see <http://www.gnu.org/ licences/>.  // these are the licence specific terms (mandatory)

Protection
Don’t forget: only the institution is entitled to protect Intellectual Property.
• Copyright: protects the form (source code).
• Patent: protects functionality (~algorithm). And yes, software is patentable, even in Europe.
• Trademark and domain name: protects reputation.
• Confidentiality agreement: necessary for collaborating on proprietary software.
• Industrial design: protects original graphic interface.
• Sui generis law on databases: protects the investment necessary to obtain a quality database.

Tools
Fossology
Software which detects open source in code files
SonarQube
Software which analyses code to provide quality metrics
Software Quality Metrics Explained
Report on how to understand those metrics
Software Disclosure Form
A preparation to a first meeting about your software with your KTO
The Researcher’s Guide for Creating Software
Guidelines mainly about software protection, and the use of open source.

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Licence Families  Compatibility Chart
Free and Open source  Distribution

The document is interactive, please refer to the electronic version for additional information.
The patent is an industrial property right which gives the patent owner the exclusive right to exploit an invention and exclude others from so doing as from a certain date and for a limited period. In return, the technical information relating to the invention must be disclosed in the patent application so that anyone can reproduce it. Patent applications are published 18 months after the filing date.

Patent applications contain technical, economic and legal information.
THE PATENT AS A SOURCE OF INFORMATION

2/2

HOW?

Scope of the search

Search in patent databases

Tools for extracting and viewing data

Gathering information

Structured data
Classification codes, references, etc.

Unstructured data
Documents: abstracts, descriptions, etc.

Images

TOOLS

Patent databases

→ PatentInnovation
http://www.patentinpiration.com

→ PatentScope
http://www.wipo.int/patentscope/search/en/search.jsf

→ Esp@cenet
http://worldwide.espacenet.com

→ Google Patents
https://patents.google.com

° These databases allow you to process information contained in patents through statistics.

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Sets of patents
(applications or granted)
**WHAT IS IT?**

- Document prepared jointly by the LIEU Network (LIaison Entreprises-Universités - Wallonia KTOs network) and the UWE (Union Wallonne des Entreprises - Walloon Union of Companies)
- The guiding principles governing ownership and application of the findings of research conducted in partnership between universities, hautes écoles (schools of higher education), research centres and businesses, as part of any collaborative project financed by regional public funds.

**WHO IS IT FOR?**

- **Partners**, such as universities, schools of higher education, research centres and/or businesses

**WHAT DOES IT APPLY TO?**

- Collaborative research between universities, schools of higher education, research centres and/or businesses

**WHEN SHOULD IT BE REFERRED TO?**

- From the early stages of a call for proposals, during discussions between partners regarding the intellectual property principles governing the project.

**WHY?**

- To launch a collaborative project funded by Wallonia on a sound basis
- To maximise the potential applications of research findings in Wallonia, for the benefit of partners
- To take into account regulations on State Aid

**KEY DEFINITIONS**

- **Collaboration agreement**
- **Consortium agreement**
- **Rights of access**
- **Partners**
- **Project**
- **Findings**
- **Pre-existing know-how**
- **Application**

**COLLABORATION AGREEMENT**

Agreement to be concluded between a project’s **academic partners** before submitting a grant application.

This stipulates the intellectual property rights over the findings, in line with the partners’ respective interests, their degree of participation in the work and their contribution to the project.
When setting up any research project, using the charter **BEFOREHAND** helps to avoid problems **AFTERWARDS**

**OVERARCHING PHILOSOPHY**

Subject to other specific provisions, **each partner owns the findings that they generate**, but grants the other industrial partners exclusive or non-exclusive rights of use over their findings in their respective fields.

All partners will focus on creating added value in Wallonia.

**OWNERSHIP**

Each partner remains the owner of their pre-existing know-how.

Unless other distribution criteria have been previously agreed between the partners, **ownership of the findings will revert to the partners who generated them**.

**PROTECTION – CONFIDENTIALITY – PUBLICATION**

Partners will ensure they:

- **strike a balance** between legal protection of findings likely to have an economic value (for example, the filing of patents or designs and models), and the dissemination of findings of scientific interest
- **prioritise the protection of the findings**, before allowing their publication
- **honour the confidentiality** of pre-existing know-how disclosed as part of the project and the findings
- **specify the arrangements for registration and maintenance of intellectual property rights** in the consortium agreement
- **submit for the prior approval of the other partners** any proposal for publication or dissemination of the findings

**RIGHT OF ACCESS TO PRE-EXISTING KNOW-HOW**

Each partner must make the following available to the other partners, free of charge:

- **pre-existing know-how** via a free, non-exclusive licence (provided they may freely grant usage thereof)
- **the tools or materials** required to implement the project

**USAGE RIGHTS OVER THE FINDINGS**

- Each partner may freely use the findings of which they are owner, subject to the rights they have granted to the other partners.
- If industrial partners involved in the project:
  - are not the owners of the findings
    - They may benefit from an exclusive licence to use the findings resulting from the project in their field of activity, in preference to any other company
  - are owners of the findings
    - They may grant the universities a non-exclusive licence to use the findings for education and research purposes.

**CONTACT**

**LIEU Network**

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- **phone**: +32(0)81/62.25.94

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This document is interactive, please refer to the electronic version for more information.
Why?

To launch a research project, file a patent application, identify partners or competitors, and to assess freedom to operate.

What is a patent?

A patent is a right of ownership granted by a public authority on a geographical territory and for a determined period. This official right gives the patent owner the right to prohibit a third party from exploiting - in other words manufacturing, using, marketing and/or importing - the protected invention without the owner's authorization.

Patent = technical solution to a technical problem

What are the conditions for an invention to be patentable?

- Novelty
- Inventive step
- Industrial applicability

What is prior art searching?

Prior art searching involves determining the state of the art, in other words all the information, patents or other publicly available sources before the filing date of an application.

Given that patents (currently several tens of millions of applications) contain a large amount of technical information that cannot be found anywhere else, patent databases are essential tools for effective state of the art analysis.

80% of the world’s technical information is only to be found in patents!
1) Conduct a prior art search BEFORE filing a research project or patent application.

2) Define the technical problem you want to resolve.

3) Stay alert to everything that is/has been published by third parties or by inventors themselves! (patent application, scientific article, presentations by public speakers, article in non-specialist journal, invention exhibition at a trade show, commercialization of inventions, etc.) since these form part of the state of the art and are therefore likely to kill the novelty and/or inventiveness of an invention.

4) Know the state of the art in the field in question so that you can distinguish what is commonly known from what will be innovative.

5) Prepare your research strategy by combining various search parameters: key words, classification codes, names of applicants (partners, competitors) or of inventors and citations. Adapt it using an iterative process based on documents found. Document it so that you don’t lose the main thread!

6) Use public databases that are free to use (or free in part) as a first line approach.
   - PatentInspiration
     http://www.patentinspiration.com
   - Esp@cenet
     http://worldwide.espacenet.com
   - Google Patents
     https://patents.google.com
   - PatentScope
     http://www.wipo.int/patentscope/search/en/search.jsf

7) Complete the information with the help of an advisor or specialist organization such as PICARRÉ.

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TECHNOLOGY READINESS LEVEL
A scale of maturity and a tool to help innovate and collaborate

What?

Originating in the aerospace sector, the concept of TRL is a means to manage the development of a technology toward a practical application. Transposed to research, this tool will help you launch successful collaborative projects.

Comprising 9 levels corresponding to validation phases, it is generally divided into 3 time periods based on the predominant character of the work at a given time in the innovation process.

TECHNOLOGY READINESS LEVELS

EXPLORATION MARKET ORIENTATION EXPLOITATION

Share the same language to assess the levels of maturity of a project
The TRL concept is very useful since it provides a common reference framework for defining and evaluating objectives, risks and investments by the parties involved in a collaborative project.

The partners agree on a starting point at the outset of a project and together define the level of maturity to be reached within the scope of their collaboration, and the tasks to be undertaken.

It is therefore primarily a communication tool used for more effective collaboration by the partners in an innovation process, including enterprises, researchers but also financial backers. Indeed, identification of adequate funding can be more easily defined based on the levels of maturity to be passed through in the course of a project.

The generic scale presented here can of course be adapted using vocabulary specific to the area of collaboration and the partners’ circumstances.

SUCCESSFUL PRODUCT
9 Product suitable for different applications and subject to competitive production

MARKETED PRODUCT
8 Complete, clearly qualified commercial product is available

MANUFACTURED PRODUCT
7 Product demo approved in an operational environment

PRODUCT DEMO
6 Product demo approved in a meaningful environment performing in a similar way to expectations

PROTOTYPE PRODUCT
5 Prototype approved for all of its critical functions in a meaningful environment

INTEGRATIVE PROTOTYPE
4 Prototype incorporating the solution approved in the laboratory

FEASIBILITY
3 Proof of concept for the solution/application and feasibility study

INVENTION
2 Concept of the solution and/or the application formulated

IDEA
1 Basic principles observed and described

Based on a work carried out by the LIEU (Liaison Entreprises-Universités) Network and AEI (Agence pour l’Entreprise et l’Innovation)

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USE THE LABORATORY NOTEBOOK WITHOUT MODERATION

Your research down in black and white!

**Traceability tool:** the researcher’s and the laboratory’s memory

**Legal tool:** evidences

**Scientific tool:** log book

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**WHO DOES IT AND FOR WHOM?**

- Each researcher (including students) should have their own lab notebook to **RECORD AND DATE** their research experiments and findings
- The lab notebook must be signed by the researcher **AND** countersigned by the promoter
- The book remains within the laboratory and serves as its memory

**HOW TO COMPLETE IT**

- **Chronologically and daily**
- **Clearly and exhaustively** (dates, procedures, references of the products and reagents used, results and observations, interpretations and comments, new ideas and hypotheses, etc.) so that a third party can reproduce the experiments
  - With **non-erasable** ink
  - Regularly **signed and countersigned**

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The information contained in the lab notebook is confidential and the property of the University or the Higher Education Institution
This lab notebook has been designed by the LIEU Network and is common to all the Higher Education Institutions and Universities in the Fédération Wallonie-Bruxelles.

- Notebook with unique identification
- Notebook with numbered pages and no loose sheets of paper

WHAT ABOUT THE ELECTRONIC VERSION OF THE LABORATORY NOTEBOOK?

Electronic versions exist

- To improve the management and traceability of data
- To simplify the search for information
- To optimize reporting
- To facilitate teamwork and collaborations
- To better take into account the needs and constraints of certain disciplines such as the Humanities and Social Sciences, Information and Communication Technologies, etc.

But they are often difficult to implement and have high purchase costs. The LIEU Network is considering this other version of the laboratory notebook.

HOW TO GET IT

Interface Entreprises-Université:
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The laboratory notebook is essential for the working of any research entity:
- notes details of ongoing research and experiments on a daily basis;
- ensures that knowledge is passed on and data can be traced;
- is central to the management of intellectually property.
(c.f. memo Use the laboratory notebook without moderation: your research down in black and white!)

The electronic laboratory notebook is the digital equivalent of the paper laboratory notebook. With the growth in the volume of data and the multiplicity of people involved in the same research project, it is becoming increasingly indispensable in many research fields.

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The electronic laboratory notebook is the digital equivalent of the paper laboratory notebook. With the growth in the volume of data and the multiplicity of people involved in the same research project, it is becoming increasingly indispensable in many research fields.

**THE ADVANTAGES OF THE ELECTRONIC VERSION**

**Data management**

**Data sharing**
- Data accessible to the Principal Investigator and to other researchers in the team, including those working at a distance in geographic terms (subject to predefined authorisations)
- Standardisation of processes, protocols within a research team

**Data backup**
- Regular and automatic backups
- Possibility of recording the data of several researchers working on the same experiment

**Data security**
- Access control and management of rights to safeguard the intellectual property of each individual

**Document management**
- Integration of other electronic documents (various formats: images, chemical structures, texts, etc.)

**Environment**
- Reduced paper consumption

**Data traceability**

**Protection of intellectual property**
- Meticulous audit path, version follow-up, e-signatures

**Information searches**
- Easy and intuitive to use (synopsis; classification by project; search by key word, date, researcher, etc.)
- Possibility of retrieving information easily, even several years later

**Operating procedures / protocols**
- Possibility of recording models that are easy to duplicate and adapt when repeating similar experiments

**Equipment management**
- Centralisation and planning the use of equipment within a research entity

**Reduced risk of transcription errors**
- Audio recording / data collected directly from a device

**Credibility among businesses**
- Stakeholder in a quality process that is particularly appreciated in the business world

There is an alternative: THE ELECTRONIC LABORATORY NOTEBOOK!

So what about this electronic version?

OK, but with all my data in digital format, how do I manage?

This lab notebook is very practical!

It’s great! A RELIABLE TOOL THAT STORES A GREAT MANY DATA AND ENSURES THAT THEY CAN BE TRACED: IT REALLY IS JUST WHAT I NEEDED!

This laboratory notebook is the digital equivalent of the paper laboratory notebook. With the growth in the volume of data and the multiplicity of people involved in the same research project, it is becoming increasingly indispensable in many research fields.
**Conditions of use**

**Installation of a specific software program**
- Compatibility with other environments
- Involvement of other IT services in the institution, particularly if the software is open source
- Updating necessary for long-term maintenance

**Data hosting**
On an external or a local server, as preferred
With local servers, pay attention in the long term to:
- the data storage capacity
- data preservation (backup procedures)

**Development of the tool and adoption by users**
- Involvement of researchers
- Training for users
- Definition of good practices

**Financial cost**
- To be taken into account. It may be high for proprietary software programs
- Existence of open source solutions

**Working environment**
- Computer needed for data input

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**OPEN DATA, DATA MANAGEMENT PLAN AND ELECTRONIC LABORATORY NOTEBOOK**

Given current policy guidelines all recommending Open Data, the electronic laboratory notebook is inevitably tending to become a permanent feature.

It naturally supports the Data Management Plan, becoming obligatory for European projects and probably applicable in 2020 for projects funded by the FNRS (National Fund for Scientific Research).

The electronic laboratory notebook contributes towards sound management of a research entity via:

- identification, storage and explanation of the use of data (central issue of the DMP)
- identification of the background of the research entity
- clear identification of the contribution made by inventors in the event of a patent or another type of protection (copyright, etc.)

**Some examples of use in French-speaking universities**

The Institute for Medical Immunology at the ULB has been using the OpenLAB ELN solution from Agilent since 2010.

UNamur has chosen the eLabFTW open source solution. The platform was installed on a local server in 2017 and is available to all researchers at the institution.

The laboratories at ULiège using an electronic laboratory notebook all prefer local data hosting. A laboratory at the Giga research centre in Liège currently uses the eLabFTW open source solution.

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All the advantages of the laboratory notebook with the ease of use and flexibility of an electronic solution
This document is an essential preliminary to any procedure related to the protection of research results.

The purpose of this document is to collect the information required to understand the results of scientific research and to evaluate these results for protection and commercial potential. To this end, it contains a technical section and a section concerned with the economic opportunities afforded by the results. These aspects in combination will enable a decision to be made as to the best method of exploitation.

Any university is faced with choices when it intends to disseminate and exploit the results of its scientific research. Should they publish the results, keep them secret or exploit them by means of a spin-off, collaborative research with industry. Should they protect them by means of a patent, a drawing and model, or a brand?

It is important to realize that the entire exploitation process can prove costly. In order to maximize the return on the effort, time and money expended by knowledge transfer officers and researchers, it is appropriate to clarify a few points:

1. Usable results are a set of new results that can be exploited industrially or commercially, it is therefore inadvisable to begin a complete process of exploitation when the commercial potential is limited (for example, more advantageous alternatives are already on the market; the market is too restricted or immature, etc).

2. An invention does not necessarily form the subject of a patent application. It is important to bear in mind that other methods of exploitation can be taken up, depending on the context. The non-technical section of the invention disclosure therefore proves its worth here, since it makes it possible to specify the general context and evaluate the opportunity to select one method of exploitation over another.

3. The exploitation procedure is a long-term partnership between researchers and the Knowledge Transfer Office (KTO). As such, both parties need to assess the importance of investing time and effort in the process.

4. Any researcher wishing to give an industrial dimension to his research will need to show prudence in reporting his results and in making use of the tools provided material transfer agreement (MTA), confidentiality agreements, etc.

The role of knowledge transfer officers is to support the researcher in the exploitation process. Thus, we remain at your service for any assistance you think it might be useful to obtain.

DISTRIBUTION: Please submit the completed disclosure form by e-mail or via postal mail to your KTO.
### To be completed by the researcher

**Title of the invention:**

**Inventor in charge of the file**

<table>
<thead>
<tr>
<th>Last name:</th>
<th>First name:</th>
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<tr>
<td>Institution:</td>
<td>Unit:</td>
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<td>E-mail:</td>
<td>Phone:</td>
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</table>

### For KTO (Knowledge Transfer Office) use only

**File number:**

**File manager:**

**Date:**

**KTO recommendations:**

### Co-ownership:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Percentage</th>
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<tbody>
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<td>ULB</td>
<td>.....%</td>
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<td>UNamur</td>
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<td>UMONS</td>
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<td>ULg</td>
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<td>USaint Louis</td>
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<td>UCL</td>
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<td>SynHERA – HE</td>
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<tr>
<td>Other</td>
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</tbody>
</table>

### Methods of exploitation contemplated:

- Publication
- Patent
- License
- Software
- Research project
- Spin-off
- Biological material
- Other

### 1.a. Description of the invention:

Provide a brief general description of the invention, list 5 keywords and if required include a schema/picture.

*(Please include full description in English in an appendix).*
1.b. **Scientific sectors and application:** list the scientific and the application sectors that you think that might benefit from your invention.

<table>
<thead>
<tr>
<th>Scientific sectors</th>
<th>Application sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Natural sciences</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Mathematics (includes research on statistical methodologies but excludes applied statistics which should be classified under the relevant field of application)</td>
<td></td>
</tr>
<tr>
<td>1.2 Computer and information sciences (hardware development to be 2.2, social aspect to be 5.8)</td>
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<tr>
<td>1.3 Physical sciences</td>
<td></td>
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<tr>
<td>1.4 Chemical sciences</td>
<td></td>
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<tr>
<td>1.5 Earth and related environmental sciences (includes oceanography, hydrology)</td>
<td></td>
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<tr>
<td>1.6 Biological sciences (medical to be 3, agricultural to be 4)</td>
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<tr>
<td>1.7 Other natural sciences</td>
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<tr>
<td><strong>2. Engineering and technology</strong></td>
<td></td>
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<tr>
<td>2.1 Civil engineering</td>
<td></td>
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<tr>
<td>2.2 Electrical, electronic and information engineering</td>
<td></td>
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<tr>
<td>2.3 Mechanical engineering (includes nuclear engineering but nuclear physics to be 1.3)</td>
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<tr>
<td>2.4 Chemical engineering</td>
<td></td>
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<tr>
<td>2.5 Materials engineering (nanoscale materials to be 2.10, biomaterials to be 2.9)</td>
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<tr>
<td>2.6 Medical engineering (biomaterials to be 2.9)</td>
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<tr>
<td>2.7 Environmental engineering</td>
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<tr>
<td>2.8 Environmental biotechnology</td>
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<tr>
<td>2.9 Industrial biotechnology</td>
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<tr>
<td>2.10 Nanotechnology (nanomaterials and nano-processes, biomaterials to be 2.9)</td>
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<tr>
<td>2.11 Other engineering and technologies</td>
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<tr>
<td><strong>3. Medical and health sciences</strong></td>
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<tr>
<td>3.1 Basic medicine (plant science to be 1.6)</td>
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<tr>
<td>3.2 Clinical medicine</td>
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<td>3.3 Health sciences (includes services, sport, social biomedical sciences, ethics)</td>
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<tr>
<td>3.4 Medical biotechnology</td>
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<tr>
<td>3.5 Other medical sciences</td>
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<td><strong>4. Agricultural sciences</strong></td>
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<tr>
<td>4.1 Agriculture, forestry and fisheries (agricultural biotechnology to be 4.4)</td>
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<tr>
<td>4.2 Animal and dairy sciences (animal biotechnology to be 4.4)</td>
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<td>4.3 Veterinary sciences</td>
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<td>4.4 Agricultural biotechnology</td>
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<td>4.5 Other agricultural sciences</td>
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<td><strong>5. Social sciences</strong></td>
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<td>5.1 Psychology (includes therapy for learning, speech, hearing and other disabilities)</td>
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<tr>
<td>5.2 Economics and business</td>
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<td>5.3 Educational sciences (includes training, pedagogy, didactics)</td>
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<td>5.4 Sociology</td>
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<td>5.5 Law</td>
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<td>5.6 Political sciences</td>
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<td>5.7 Social and economic geography (transport engineering to be 2.1)</td>
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<td>5.8 Media and communications</td>
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<td>5.9 Other social sciences</td>
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<tr>
<td><strong>6. Humanities</strong></td>
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<td>6.1 History and archeology (history of science and technology to be 6.3)</td>
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<td>6.2 Languages and literature</td>
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<td>6.3 Philosophy, ethics and religion</td>
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<td>6.4 Arts, history of arts, performing arts, music</td>
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<tr>
<td>6.5 Other humanities</td>
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<td><strong>7. Other</strong></td>
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<td>To describe</td>
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</table>
1.c. **NEED/NEW**: in the related fields, which problem or need is addressed by this invention? Does the Invention meet an unmet need or answer an unsolved problem? Why/How?

1.d. **ADVANTAGES**: define the solution this invention brings to solve this problem. What are the novel aspects of your invention? What’s the “invention core”? (Technical features, functions and advantages/results?)

1.e. **OTHER APPLICATIONS**: try to think out of the box; which other applications might be envisaged if your invention would go through adjustments; and what would these adjustments be?
1.f. BENEFITS: detail why this solution is different from existing ones and please explain why and/or how?:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>?</th>
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</table>
| ☐   | ☐  | ☐ | CHEAPER. The invention is cheaper to make or use than currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | EASIER TO USE. The product or process is less complicated, less labor intensive, more user friendly than currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | EASIER TO MAKE. The product is less complicated to make, or its manufacturing process is less complex than those of currently available products.  
  Why/How?: |
| ☐   | ☐  | ☐ | SAFER. The product or process is safer for the operator, bystanders or animals than currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | MORE ECOLOGICAL. The product or process recycles materials that normally end up in landfill sites or is less polluting than currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | FASTER. The product or process works faster than currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | MORE PRECISE. The product or process yields more accurate results than those usually achieved using currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | MORE ATTRACTIVE. The product would appeal to a broader segment of the market than the products currently on the market.  
  Why/How?: |
| ☐   | ☐  | ☐ | CLEAR VALUE. Other products or processes are so similar that the virtue of this product/process will be readily apparent.  
  Why/How?: |
| ☐   | ☐  | ☐ | BETTER SIZE. The product is more compact, or is larger and with greater capacity, than currently available products.  
  Why/How?: |
| ☐   | ☐  | ☐ | BETTER WEIGHT. The product is lighter or heavier whichever is preferable, than currently available products.  
  Why/How?: |
| ☐   | ☐  | ☐ | MOST DURABLE. The product is more durable than currently available products.  
  Why/How?: |
| ☐   | ☐  | ☐ | MORE RELIABLE. The product breaks down less frequently, or the process is more consistently successful, than with currently available products or processes.  
  Why/How?: |
| ☐   | ☐  | ☐ | EASIER TO FIX. The product is less complicated or costly to fix or adjust than currently available products.  
  Why/How?: |
| ☐   | ☐  | ☐ | GROWING MARKET. There has been steady growth in the target market for your product or processes over a number of years.  
  Why/How?: |
| ☐   | ☐  | ☐ | EASY FOR MANUFACTURERS TO SWITCH. The product or process is sufficiently similar to currently available products or processes that users or manufacturers will easily be able to switch.  
  Why/How?: |
I. General information

Why/How?:

- HIGHER PROFIT MARGIN. Their product or process is easier and cheaper to make than currently available products or processes, but can be sold at a comparable price.

Why/How?:

1. Specify the positioning of your invention on the market

- LASTING MARKET. The need or demand for the product will last for a very long time.

Why/How?:

- LARGE MARKET. There is already a large market for this product or process, or the appeal of the product or process can be expected to create a large market where none previously existed.

Why/How?:

- HARD TO DUPLICATE. Competitors will have difficulty producing an equivalent product or process, or in solving problems without it.

Why/How?:

2. Type of invention

- new compound, molecule
- new production process
- new product
- new use for a known product / process
- new device
- new method
- new service
- other, please explain:

3. Oral and/or written public disclosures made by inventors

By checking the appropriate box, please indicate whether this invention, in full or in part, has been subject to a disclosure ☐ Yes ☐ No ☐ will be subject to a disclosure ☐ Yes ☐ No ☐

Please supply copies of documents that have been or will be subject to a disclosure.

<table>
<thead>
<tr>
<th>Type of disclosure 1</th>
<th>Medium 2</th>
<th>Date of disclosure</th>
<th>Reference</th>
<th>NDA 3</th>
<th>Document</th>
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<td>upload</td>
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</table>

1 Type of disclosure: Written, past; Written, upcoming; Oral, past; Oral, upcoming

2 Medium: Journal article, Private thesis (master or doctoral), Public thesis (master or doctoral), Abstract, Conference/seminar, Poster session, Project report, Grant application, Industry meeting, Other

3 Non-Disclosure Agreement. Please supply a copy of the non-disclosure agreement.

- A sequence (DNA, protein, etc.) has been placed on a database or biological material (plasmid, micro-organism, ...) has been deposited in a collection? ☐ Yes ☐ No ☐ NA

If Yes please mention the database or the collection:.................

Confidential - January 2016
4. Funding. If you have benefited from funding, even if only in part, at any stage of the research, please state the source by filling in the appropriate boxes below. If the funding contract includes conditions relating to ownership of results of the research, please enclose the contract as appendix, together with a copy of the scientific program.

<table>
<thead>
<tr>
<th>Type</th>
<th>Name/acronym</th>
<th>Duration</th>
<th>Nature of the contract</th>
<th>Industrial sponsor/patron</th>
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<tbody>
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5. Contractual background:

- Does the invention incorporate any material supplied by a third party? [ ] Yes [ ] No
- Does the invention incorporate any confidential results supplied by a third party? [ ] Yes [ ] No

If yes, please supply a copy of the MTA (material transfer agreement) or CDA (confidential disclosure agreement)

6. Laboratory notebooks:

- Is the invention described in / supported by laboratory notebooks? [ ] Yes [ ] No
- If so, are those notebooks available on request? [ ] Yes [ ] No

1 Type: European, Regional (Walloon Region, etc.), National (FNRS, etc.), Internal funding, Other
II. Prior Art

1. Bibliographical search

Are there other research or industrial teams who work in the field of the invention?  

☐ Yes  ☐ No

*If yes, please list and attach copies of any publications (oral or written) most closely related to the invention:*

1. 
2. 
3. 

What were the **keywords** used to perform the search?

<table>
<thead>
<tr>
<th>A. Concepts</th>
<th>B. Keywords/synonyms</th>
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<tbody>
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<td>Concept 2:</td>
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<td>Concept 4:</td>
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<td>Concept 5:</td>
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<td>Exclusion concept:</td>
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2. Patent search

➢ Was a first search carried out by PICARRE in collaboration with the researchers  

☐ Yes date:.................... ☐ No

*If yes, please enclose the search strategy in an appendix, together with an analysis of previous work that is relevant in terms of its difference in relation to this invention and the drawn conclusions.*

If not, has a search been carried out based on patents databases?  

☐ Yes  ☐ No

If yes, complete the following table:

<table>
<thead>
<tr>
<th>ID</th>
<th>Keywords or classification code</th>
<th>Search tool</th>
<th>Search field</th>
<th>Number of documents</th>
<th>Number of relevant documents</th>
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➢ Select the most relevant document(s) (1-3 docs) and explain in a few words the technical differences with your invention.

*The most relevant document is generally the one that corresponds to a similar use and requires the minimum of structural and functional modifications to come to the invention.*
### 3.a. Technology Readiness Level (TRL)

Select the most suitable TRL for the technology (TRLs may be not perfectly adapted to your specific technology, select what seems closest)

<table>
<thead>
<tr>
<th>IDEA</th>
<th>TRL 0: Idea</th>
<th>Unproven idea/proposal. Paper concept. No analysis or testing has been performed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TRL 1: Research and Development begins</td>
<td>Basic functionality/principles demonstrated by analysis. Shall show that the idea is technologically conceivable.</td>
</tr>
<tr>
<td>LAB SCALE</td>
<td>TRL 2: Basic principles confirmed</td>
<td>Analytic studies, small scale testing in laboratory environment. Shall show that the technology can is likely to meet specified objectives with additional development. Practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions.</td>
</tr>
<tr>
<td></td>
<td>TRL 3: Validation at lab scale</td>
<td>Analytical studies and/or laboratory studies deliver results that validate predictions/objectives. If relevant, validation of separate elements of the technology. (Examples may include components that may not yet be integrated or representative)</td>
</tr>
<tr>
<td>PILOT SCALE</td>
<td>TRL 4: Prototype(s) available, first tests</td>
<td>Prototype(s) is/are built and functionality demonstrated through testing over a limited range of operating conditions. If scalable, these tests are realized on scaled versions.</td>
</tr>
<tr>
<td></td>
<td>TRL 5: Prototype results at full scale</td>
<td>Prototype first use at full-scale: technology qualified through testing in intended environment, simulated or actual. The new hardware is now ready for first use.</td>
</tr>
<tr>
<td></td>
<td>TRL 6: Prototype validated in relevant environment</td>
<td>A representative model/prototype is tested and validated in relevant environment. Represents a major step up in a technology’s demonstrated readiness (Examples may include testing a prototype in a high-fidelity laboratory environment or in simulated operational environment).</td>
</tr>
<tr>
<td>MARKET SCALE</td>
<td>TRL 7: Operating system in operational environment</td>
<td>Technology integration is tested in operational environment. Full-scale technology is integrated for test into intended operating system with full interface and functionality. Requires demonstration of an actual system prototype in an operational environment.</td>
</tr>
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<td></td>
<td>TRL 8: Technology is proven to work</td>
<td>Test program is realized in intended environment: the technology shows acceptable performance and reliability over a period of time.</td>
</tr>
<tr>
<td>MARKET</td>
<td>TRL 9: Market</td>
<td>Actual application of technology is in its final form - Technology proven through successful operations.</td>
</tr>
</tbody>
</table>
3.b. **RESOURCES**: what are the key resources that are required to continue the development of your invention: people (yourself, lab team,...), lab involvement (team, identified research program,...), funding, need for external partner? Please indicate whether these resources are -and will remain- available.

3.c. **ACTIVITIES**: What are the key activities (lab analysis, prototyping, scaling-up, methods, know-how...) that are required to continue the development of your invention?

3.d. **COMPETITORS**: Why are the benefits significantly better than the competition? What are the alternatives?

3.e **To whom (users, customers, industry) is this invention dedicated?** List the names of companies you think might be interested in using your technology to make, use or sell products or services. Please specify with examples (company names, press articles...) + Applications?
If you have a contact at any of these companies, be sure to provide name, position, e-mail and telephone. (We will obtain your permission before contacting anyone).

<table>
<thead>
<tr>
<th>Company</th>
<th>Have you had contacts with this company?</th>
<th>Contact Name</th>
<th>Position/Title</th>
<th>E-mail</th>
<th>Phone</th>
<th>Does this company already offer a similar product?</th>
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<tbody>
<tr>
<td></td>
<td>□ Yes □ No</td>
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</table>

3.f. **Prototype availability**: Is a prototype available? If no, how much time is needed to obtain a prototype / sample / demonstration tool?

3.g. Are you interested by the creation of a spin-off company for the valorization of this discovery? □ Yes □ No

Who could be involved in that spin-off project?

3.h. If the invention is licensed, would you be willing to collaborate with the licensing company as a principal or as a technical advisor? □ Yes □ No □ NA
Please list all contributors to the invention known at this time. The list of inventors will be finalized later, after consultation with your Knowledge Transfer Office.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>Description of contribution to the invention</th>
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<tbody>
<tr>
<td>First Name</td>
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<tr>
<td>Institution</td>
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<td>Research unit</td>
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**SIGNATURES**

**WARNING:** inventorship is a matter of law and the below list should include the name of all persons who may qualify as legal inventor. An incomplete list of inventors, or a list that includes persons who have not in fact contributed to the inventive work, may therefore result in the lapse or invalidity of a patent.

**Inventors (to be signed before witnesses)**
I have acquainted myself with the University’s rules, which I accept.

My signature at the foot of this document confirms my agreement to the Research Department’s administrative procedure for an invention disclosure. I agree to co-operate fully with the KTO by supplying any document or information required for the registration, upkeep and possible defense of patents, negotiations of license contracts and the exploitation of the results of my research. I undertake to sign any document required for the registration or issue of patent applications, also an inventor’s agreement, whose purpose is to settle the method of distributing income earned by exploiting the invention. I **undertake not to disclose the invention either orally or in writing during the priority period of the patent application without notifying the KTO.**

<table>
<thead>
<tr>
<th>Inventor #1</th>
<th>Inventor #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name:</td>
<td>First name:</td>
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**Witnesses.** To be signed by two witnesses, including the head of department and an external witness (the last-named to be subject to a confidentiality agreement) who have understood the invention solely on the basis of this document.

On **(date)**, I read this invention disclosure and understood its content.  
Last name, first name  
Signature

On **(date)**, I read this invention disclosure and understood its content.  
Last name, first name  
Signature
# SOFTWARE DISCLOSURE FORM

This PDF version gives an overview of the document. Please contact the Interface to access and fulfil the electronic version.

## 1. SOFTWARE DISCLOSURE IDENTIFICATION

**Date:**

**Contact Person:**

**Software Name:**

**Version Number:**

## 2. SOFTWARE DEVELOPMENT INFORMATION

**Development Phase** (final, beta, production...) / **Technology Readiness Level** (see annex 1):

**Type of Development**

- [ ] Generic Software or Stand alone software
- [ ] Algorithm
- [ ] App
- [ ] Module/Plug-in

If Module/Plug-in, name the framework/platform associated:

**Software protection information**

- [ ] Is there a logo? If yes, please send the logo together with this document.

**Brand protected:**  [ ] no / [ ] yes : date and reference :

**Source code protected?** If yes, please describe the type of protection :

**Programming language(s) used** (C++, PHP/MySQL, Fortran...):

**Desired Distribution** (open-source / commercial / both):

**Requirement(s) to run the software** (OS/Hardware/Software license/other codes):

**Support** (manual/Online help/Tech support?)

Software Disclosure  
KTO contact : [nom du valorisateur]  
Confidential
Dependencies of the Software (e.g. open-source libraries, modules developed by a partner...):

<table>
<thead>
<tr>
<th>Copyright Holder</th>
<th>Name (or short description)</th>
<th>License type (GNU, BSD etc.)</th>
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Funding: (type = Internal Funding, Regional, National, European or Other)

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<th>Type</th>
<th>Name/acronym</th>
<th>Duration</th>
<th>Nature of the contract</th>
<th>Industrial sponsor/partner</th>
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3. GENERAL INFORMATION

1. Description of the software: provide a brief general description of the software and its added value, list 5 keywords and if required include schema/pictures.

2. NEED: which problem(s) or need(s) is (are) addressed by this software? Does the software meet an unmet need or answer an unsolved problem? Why/How?
SOFTWARE DISCLOSURE FORM

3. **BENEFITS**: detail why this software solution is different from existing ones and please explain why and/or how?

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**CHEAPER.** The software is cheaper to make or use than those currently available on the market.

**EASIER TO USE.** The software is less complicated, less labor intensive, more user friendly than those currently available on the market.

**EASIER TO MAKE.** The software is less complicated/complex to develop than those currently available on the market.

**FASTER.** The software works faster than those currently available on the market.

**MORE PRECISE.** The software yields more accurate results than those usually achieved.

**MORE ATTRACTIVE.** The software would appeal to a broader segment of the market than those currently on the market.

**CLEAR VALUE.** Other software currently available on the market are so similar that the added value of this one will be readily apparent.

**MORE RELIABLE.** The software breaks down less frequently, or is more consistently successful, than those currently available on the market.

**EASIER TO FIX.** The software is less complicated or costly to develop and maintain than those currently available on the market.

---

4. **MARKET POTENTIAL**

4.1. **Specify the positioning of your software on the market**

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**LASTING MARKET.** The need or demand for the software will last for a very long time.

**LARGE MARKET.** There is already a large market for this software, or the appeal of the software can be expected to create a large market where none previously existed.

**GROWING MARKET.** There has been steady growth in the target market for your software over a number of years.

**HIGHER PROFIT MARGIN.** Their software is easier and cheaper to make than those currently available on the market, but can be sold at a comparable price.

Software Disclosure
KTO contact: [nom du valorisateur]

Confidential
**Why/How?**

- EASY FOR USERS TO SWITCH. The software is sufficiently similar to those currently available on the market that users will easily be able to switch.

**Why/How?**

- HARD TO DUPLICATE. Competitors will have difficulty developing an equivalent software, or in solving problems without it.

**4.2. To whom (users, customers, industry) is this invention dedicated?** List the names of companies you think might be interested in using your technology to make, use or sell products or services. Please specify with examples (company names, press articles...) + Applications?

If you have a contact at any of these companies, be sure to provide name, position, e-mail and telephone. (We will obtain your permission before contacting anyone).

<table>
<thead>
<tr>
<th>Company</th>
<th>Have you had contacts with this company?</th>
<th>Contact Name</th>
<th>Position/Title</th>
<th>E-mail</th>
<th>Phone</th>
<th>Does this company already offer a similar product?</th>
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Software Disclosure
KTO contact: [nom du valorisateur]

Confidential
5. CONTRIBUTORS

Please list all contributors to the software known at this time. The list of contributors will be finalized later, after consultation with your Technology Transfer Office.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Institution</th>
<th>Phone</th>
<th>Email</th>
<th>Description of contribution to the invention</th>
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Software Disclosure
KTO contact: [nom du valorisateur]
Annex 1 -- Software TRL Scale developed with the LIEU Network

<table>
<thead>
<tr>
<th>TRL</th>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>1: Idea</td>
<td>Basic research begins to be translated into applied research and development. Examples may include a concept that can be implemented in software or analytic studies of an algorithm’s basic properties.</td>
<td></td>
</tr>
<tr>
<td>2: Invention</td>
<td>Once basic principles are observed, practical applications can be postulated. The application is speculative and there is no proof or detailed analysis to support the assumptions.</td>
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<tr>
<td>3: Feasibility - Analytical and experimental critical function and/or characteristic proof of concept</td>
<td>Active research and development is initiated. This included analytical studies to produce code that validates analytical predictions of separate software elements of the technology. Examples include software components that are not yet integrated or representative but satisfy an operational need. Algorithms run on a surrogate processor in a laboratory environment.</td>
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<tr>
<td>4: Integrated prototype - Technology component and/or basic technology sub-system validation in laboratory environment</td>
<td>Basic software components are integrated to establish that they will work together. They are relatively primitive with regard to efficiency and reliability compared to the eventual system. System software architecture development initiated to include interoperability, reliability, maintainability, extensibility, scalability, and security issues. Software integrated with simulated current/legacy elements as appropriate.</td>
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<tr>
<td>5: Product prototype - Technology component and/or basic sub-system validation in relevant environment</td>
<td>Reliability of software ensemble increases significantly. The basic software components are integrated with reasonably realistic supporting elements so that it can be tested in a simulated environment. Examples include “high fidelity” laboratory integration of software components. System software architecture established. Algorithms run on a processor(s) with characteristics expected in the operational environment. Software releases are “Alpha” versions and configuration control is initiated. Verification, Validation, and Accreditation initiated.</td>
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<tr>
<td>6: Product demonstrator - Technology system/subsystem model or prototype demonstration in a relevant environment</td>
<td>Representative model or prototype system, which is well beyond that of level 5, is tested in a relevant environment. Represents a major step up in software demonstrated readiness. Examples include testing a prototype in a live/virtual experiment or in a simulated operational environment. Software run on processor of the operational environment are integrated with actual external entities. Software releases are “Beta” versions and configuration controlled. Software support structure is in development. Verification, Validation and Accreditation are in progress.</td>
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<tr>
<td>7: System prototype demonstration in an</td>
<td>Represents a major step up from Level 6, requiring the demonstration of an actual system prototype in an operational environment. Algorithms run on processor of the operational environment are integrated with</td>
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<tr>
<td>TRL 8: Actual system completed and qualified through test and demonstration</td>
<td>Software has been proven to work in its final form and under expected conditions. In most cases, this level represents the end of true system development. Examples include test and evaluation of the software in its intended system to determine it meets design specifications. Software releases are production versions and configuration controlled, in a secured environment. Software deficiencies are rapidly resolved through support infrastructure.</td>
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<td>TRL 9: Technology System proven through successful operations</td>
<td>Application of the software in its final form and under usage conditions, such as those encountered in operational test, evaluation and reliability trials. In almost all case, this is the end of the last “bug fixing” aspects of the system development. Examples include using the system under operational conditions. Software releases are production versions and configuration controlled. Frequency and severity of software deficiencies are at a minimum.</td>
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TRADEMARKS
for getting noticed and standing out!

WE’VE FOUND A NAME AND LOGO FOR OUR NEW PRODUCT!
WELL, LAUNCH IT TOMORROW!

GREAT NEWS! HAVE YOU THOUGHT ABOUT PROTECTING THEM BOTH?
OBVIOUSLY THE INVENTION HAS ALREADY BEEN PATENTED, RIGHT?
YES, BUT THAT ISN’T THE SAME THING. LET ME EXPLAIN....

WHEN?

→ Spin-off being created
→ Project, laboratory or platform that could lead to commercialization
→ Product or service to be marketed
→ Software
→ Etc.

WHY?

A trademark makes it possible for you to:
• Distinguish your products and services from those of your competitors
• Become well-known
• Establish and protect your reputation
• Convey your values
• Create an asset of commercial value

WHAT IS A TRADEMARK?

It’s a sign that can be represented. There are different types of trademark:

• **Word trademark:** one or more words, name of a product or service, brand’s company name
• **Figurative trademark:** a logo
• **Semi-figurative trademark:** a word and a logo
• **Shape trademark:** shape or packaging of a product (3D)
• **Slogan**
• **Colour(s)**
• **Olfactory trademark:** an odour
• **Sound trademark:** sound, musical notes

First to file - first served!
The first to protect a trademark on a given territory and within a market may object to its competitors using the same sign or a similar sign

Plan for the future and think carefully about the name and the graphic style! A trademark is registered for 10 years and is renewable indefinitely.
TRADEMARKS
for getting noticed and standing out!

WHAT REQUIREMENTS ARE THERE?

• Distinctiveness
  The sign must be neither descriptive nor generic

• Legality
  The sign must not contain deceptive elements that may mislead the consumer, or be contrary to morality or public order

• Availability
  The sign, must not already have been acquired as a trademark or have been earlier appropriated by a third party as its company name, trade name, domain name, etc.

HOW TO FILE A TRADEMARK

In order to make the most of your rights, consider:

• Contacting your KTO
• Checking the availability of the trademark in specific databases
• Choosing the sign or name to be registered
• Thinking about the marketing strategy
• Precisely choosing the products or services from a specific list: classification
• Choosing the route for registering: national, European, international

ALSO...

The trademark may be cancelled for lack of use:
it is subject to a duty of use within five years.

A sign can become generic:
a brand can be a victim of its own success and become a common name.
e.g.: Aspirin, Thermos, Escalator, Trampoline, Linoleum, etc.

HOW MUCH DOES IT COST?

• In Benelux
  Around €244 for 10 years for one class, €27 for the 2nd class and €81 per additional class.

• For the European Union
  Around €850 for 10 years in one class, €50 for the second class, plus €150 per additional class from the third class onward.

• Internationally
  www.wipo.int/madrid/fr/fees/calculator.jsp is a tool that can provide a quote.

  Please note that these costs do not take account of trademark attorneys or lawyers’ fees.

USEFUL LINKS

Trademarks databases
- https://www.tmdn.org/tmview/welcome
- https://register.boip.int/bmbonline/intro/show.do
- http://www.wipo.int/romarin

Classification of products and services
- http://tmclass.tmdn.org/ec2
- www.wipo.int/classification

CONTACT

Élodie Naveau
Science and Technology
elodie.naveau@uliege.be
+32(0)4/349.85.17

Fabienne Piron
Life Sciences
f.piron@uliege.be
+32(0)4/349.85.34
A pretty broad concept that affects all researchers throughout their career because it can encompass all knowledge and information, of any type whatsoever, held by a natural or legal person.

**Examples**
- trade secret
- formulation
- recipe
- chemical compound

**WHAT ARE THE CONDITIONS FOR PROTECTING TRADE SECRET?**

The European legislator requires:

- **“secret” character**: information is secretive when, in its entirety or in the exact configuration and assembly of its elements, it is not generally known to the persons forming part of the circles who normally deal with this kind of information or it is not easily accessible to them;
- **commercial value**, because of its secret nature;
- **measures taken by the person who has control of the information in order to keep the information secret**.

* Directive (EU) 2016/943 of the European Parliament and of the Council of 8 June 2016 on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use and disclosure (not yet transposed into Belgian law at the time of writing this memo)*

**Your know-how is valuable!**
To offer protection, without any specific registration or renewal formality with an administration and without time limit, to research results or expertise that have a potential for the institution but:

- cannot be protected by an intellectual property right
- must be kept secret for strategic reasons

→ In all instances, contact your KTO to define the most suitable protection strategy.

**TO REFLECT ON**

**The Coca-Cola Strategy**
the Coca-Cola formula is the most famous example of a trade secret. Now written and stored in a safe, it is – according to legend – only known to two people in the world, who are not allowed to travel together.

**The Michelin strategy:**
An example of the difficulty in finding a balance between protection by trade secret or by patent is the one of Michelin. Until recently, the group filed very few patents, for fear of disclosing its technologies to competitors. Until it became a victim of espionage... This demonstrates that the policy of an institution regarding commercial secret can evolve over time.

More info

**A FEW THOUGHTS**

- via the procedure specific to your institution, establish with your KTO a strategy to ensure that the secret character can be maintained in the medium and long term,
- do not reveal confidential information which is secret in your personal circle or in a professional framework (meeting, conference, poster, publication...),
- establish a system of information security,
- lock physical access to offices and labs,
- secure IT access,
- etc.

**CONTACT**

Catherine Thiry
thiry.catherine@uliege.be
+32(0)43/66.52.94
PLANT VARIETY RIGHTS

What about protecting your new vegetal varieties?

The breeder's right is only granted where the variety is:
- New
- Distinctness
- Uniform
- Stable
- Suitable denomination

I did it!!!
I developed the first variety of apple without a core or pips!

I propose that first of all we protect this new variety.
Then, if you allow it to be marketed, you can claim a fee!

It's an intellectual property right that can be filed in order to protect the investments made (in time and money) for developing a new vegetal variety.

TO PROTECT WHAT?

The varieties of all types and the botanical species, including, in particular, their hybrids.

Examples
- Tulips of a new colour
- Potatoes that are resistant to frost
- Oranges that are richer in vitamin C
- Courgettes that last for longer

WHAT ARE THE REQUIREMENTS?

The breeder's right is only granted where the variety is:
- New
- Distinctness
- Uniform
- Stable
- Suitable denomination

TO WHOM DO THE RIGHTS BELONG?

Before taking any steps to protect a new plant variety or to grant any rights to this plant variety to third parties (which could otherwise be detrimental to its protection), check with your KTO by whom and in what context the variety has been developed:

- by you in the exercise of your duties and/or your research at your institution and/or with the means made available by the latter:
  -> the rights probably belong to your institution.
- by two or more persons:
  -> the right is jointly owned by these people or their beneficiaries or their respective successors, unless otherwise agreed.
- by different people, independent from each other
  -> the rights are granted to the first person who applies for protection by making a filing in accordance with the legal requirements.
- by a person who is not entitled
  -> the rights can be claimed through a legal proceeding.

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**WHY SHOULD YOU PROTECT THE VEGETAL VARIETY THAT YOU HAVE DEVELOPED?**

- To avoid others using your protected plant variety without permission.
  - for example, the holder of the certificate (called the “breeder”) might prohibit reproduction or multiplication, offer for sale, marketing, import and export of the plant variety that he has developed, without his consent.
- to write off the investment that you have made for the development of the new plant variety.
  - the user might grant licenses to third parties (mainly to companies) in order for them to be legally able to commercially exploit the plant variety against a commercial fee to be negotiated.

**HOW CAN YOU PROTECT THIS NEW PLANT VARIETY?**

If the new plant variety rights belong to your institution, the KTO will provide you with support (technical, commercial or legal) for the negotiation of such license agreement and will proceed with the necessary administrative procedures.

**HOW LONG DOES LEGAL PROTECTION LAST?**

- **Belgian protection:**
  > 30 years for trees, vines and potatoes
  > 25 years for other plant species
- **Community protection** (for all other member countries of the European Union either together or on a per country basis):
  > 30 years for trees and vines
  > 25 years for other plant species

These time limits start to run as soon as the breeder’s right has been granted.

**WHO BEARS THE COSTS?**

Your institution will bear all (or most) costs associated with the filing and the administrative requirements prescribed by law:

- if the new plant variety rights belong to it
- if it takes a positive decision to protect it
  - Contact your KTO who will ensure that appropriate steps are taken at the Office of Intellectual Property.

**HOW MUCH DOES IT COST?**

The filing and procedure fees varies depending on the class to which the variety belongs.

**Fees grids**

- **In Belgium**
- **At Community level**

**USEFUL LINKS**

- Verification of the novelty of the plant variety
- General information for the breeder

**CONTACT**

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The design (2D and 3D) is a piece of intellectual property that protects the new aspect of an object. The appearance of a product or its aesthetic appearance can be protected! Think about it!

**WHAT IS A DESIGN?**

The appearance of a product or a part of a product can be considered as a design. The appearance of a product is conferred on it, in particular, by the characteristics of the lines, outlines, colours, shape, texture or materials of the product itself or its decoration.

**WHY FILE?**

- To ensure creations are effectively protected
- To stand out from the competition
- To increase the economic value (registration results in value added)
- To have a future development tool
- To increase awareness

**WHAT ARE THE CONDITIONS?**

To be valid, a design must meet several conditions:

- **Novelty**
  The requirement is not to publish the design in a catalogue, in a newspaper article or on the internet, and that this design is not exhibited at a fair or any other public place before the filing, otherwise the design falls into the public domain.

**BE CAREFUL!**

The publication of a design on the internet means that the design has been disclosed worldwide.

- **Individual character**
  The informed user must not have the feeling of "déjà vu".

- **It must not be contrary to public order or good morals**
WHAT IS THE PROCEDURE?

→ Above all, **check novelty** in the databases of the offices mentioned below with the help of your KTO

→ Then **register/file** the design with:

- **The Benelux Office of Intellectual Property (BOIP)**
  For protection in Benelux (Benelux designs)

- **EUIPO**
  For protection in all Member States of the EU (Community design)

- **WIPO**
  For international filing aimed at specific countries of interest to be designated among the list of countries having acceded to the system (so-called “The Hague System”)

- **National Office**
  For national filing, in countries that are not members of the international design system, for protection that is limited territorially to this specific territory (a search must be carried out based on the country of interest)

ONE NOTABLE EXCEPTION

Unregistered Community designs are protected anyway in the European Union **against any identical reproduction**, without any requirement of filing, for 3 years from the date upon which they were first available to the public within the territory of the European Union.

However, the difference with filed design is that the **proof required to establish a copy is much more restrictive** and difficult to provide...

FOR HOW LONG?

In the majority of cases:

- 5 years from the date of the filing, renewable 4 times successively up to a maximum of 25 years.
- A design that is the subject of filing cannot be changed during the registration period nor on the occasion of its renewal.

WHEN TO FILE?

- At any time (if the designs have not yet been disclosed)
- Soon after the creation of the design or model
- Contact your KTO as soon as possible!

CONTACT

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WHAT ARE THE CONDITIONS FOR COPYRIGHT PROTECTION?

**Originality**
The original work must reflect the author's personality and be the fruit of the author's intellectual effort.

**Format**
The original work must be materialised, whatever the medium.
The following in particular are covered by copyright: books, scientific papers, correspondence, software, databases, graphs, drawings, plans, photographs, paintings, sculptures, etc.

Copyright protection is acquired automatically when the original work is generated and does not depend on the completion of any specific formalities. It continues to apply for 70 years after the author's death, after which period it falls into the public domain.

WHO IS THE AUTHOR, THE OWNER OF THE COPYRIGHT?
The original owner of the copyright is the physical person who created the work.

He or she may assign his or her copyright (economic rights) or grant a licence to any third party (an editor for example) wishing to exploit the work.

The law provides for cases where transfer to a third party is presumed. So for software, the employer is presumed, unless there is evidence to the contrary, to be the owner of the copyright on software created by its employees in the course of their duties.
The law does however provide for certain exceptions where use of a work without the author’s agreement is permitted. Two of these apply more particularly to scientific publications.

- The exception regarding quotation allows copying of a short extract of a work for the purposes of review, teaching or scientific work provided that the source and author’s name are acknowledged.

- The exception regarding use for the purposes of teaching and research allows copying of all or part of a work, for the purposes of illustration for teaching or research, provided that there is no commercial purpose, no conflict with normal exploitation of the work by the author and provided that the source and author’s name are acknowledged.

Copyright covers the FORM in which an idea is expressed (a text or a drawing for example), but not the IDEA itself!

WHAT ARE THE RIGHTS OF THE AUTHOR?

- Moral rights
  Right of disclosure, right to claim authorship, right of integrity.
  They are intended to protect the integrity of the work and the author’s reputation. Being closely linked to the author’s personality, they are inalienable rights and cannot be assigned to a third party.

- Economic rights
  Right of reproduction and communication to the public, right of adaptation and translation, etc.
  They allow dissemination and economic exploitation of the work. These are exclusive rights of the copyright owner.
  This means that the third parties are prohibited from using the work without the copyright owner’s approval through a licence or assignment.

EXCEPTIONS

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What happens when a patent application is filed?

Illustration of a typical procedure. Variations may be considered by your KTO.

1. **Filing of an International Patent Application (PCT)**
   - **6th month**
     - Receipt of the search report
   - **12th month**
     - Filing of an International Patent Application (PCT)
   - **16th month**
     - Receipt of the international search report (ISR)

2. **Publication of the patent applications**
   - **18th month**
   - **30th month**

3. **Examination in different countries/regions**
   - **20 years**

4. **National/regional entry phases**
   - (final choice of the territories to be protected)

5. **Issuing of patent**
   - **20 years**

6. **Patent expiry**
   - **20 years**

Click on each button for more information.
TRANSFER OR COLLABORATION OPPORTUNITIES

to offer visibility to your research

SPECIFICALLY

A transfer or collaboration opportunity is a form, usually written in English, containing:

• A brief description of the research results
• The benefits and advantages of the results compared to existing solutions
• The targeted areas of application
• The intellectual property status
• The state of maturation of the results (TRL scale)
• The type of partnership sought
• The keywords
• The laboratory’s/institution’s references
• The KTO’s contact details

ADD VALUE

Bringing value by transferring, selling or pursuing research through new academic and/or industrial collaboration.

TRL SCALE
(TECHNOLOGY READINESS LEVEL)

The TRL scale defines nine levels of maturity for a technology, from the idea to the market.

It provides a common frame of reference for defining the state of maturity of a project and specifies the technical developments accomplished at each level.

TYPES OF PARTNERSHIP

Licensing, transfer, academic collaboration, industrial collaboration, knowledge transfer, etc.

WHY?

• To promote and/or transfer research results, whether protected or not, from Universities and Higher Education Institutions to various partners and potential users.
• To enable the Society (companies, associations, research centres, etc.) to benefit from the advances in research.
WHO WRITES IT UP AND FOR WHOM?

The researcher writes up the transfer opportunity or the collaboration opportunity together with his/her KTO, for the following recipients:

- Commercial and non-commercial companies
- Research centres
- Associative sector
- End-users
- Business operators

When?

- Always after identifying results to which value can be added.
- According to the strategy for protecting intellectual property.

The timing of the writing and publication of the transfer opportunity or the collaboration opportunity can thus vary and is defined in consultation with the KTO.

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BEFORE ANYTHING ELSE...

Any transfer involving code requires the origin and the status of the software components to be established and any components that may require a rewrite to be identified. The use of some external libraries can, for example, compromise the marketing scheme being considered.

This can also have a significant impact on

THE DISTRIBUTION OF THE SOFTWARE

Key points to consider in developing a marketing strategy:

1. **REVENUE:**
   free, freemium, fixed payment, etc.

2. **ARCHITECTURE:**
   software, mobile app, cloud/SaaS service, etc.

3. **INTELLECTUAL PROPERTY:**
   patent protection, business commercial secrecy, open source, etc.

4. **CHANNEL:**
   third-party company, spin-off, service delivery, online platform, etc.

5. **PRODUCT**
   software, consultancy, hardware/software hybrid solution

6. **REFERRED RETURN**
   economic revenue, visibility, societal impact, etc.

A well thought-out (software) marketing strategy increases the impact and the visibility of your research!
Pricing has to rely on the usual methods, and in particular a market study, a comparative analysis of the competition... There is no universal method for estimating the value of a piece of software. It is also common to combine several evaluation criteria, which are not necessarily specific to the software. It is also usual practice to base it on the following criteria:

- **NPV** (Net Present Value)
  This allows a calculation of the value of a technology based on a financial plan, which requires some knowledge of the market.

- **benchmark**
  This allows a royalty rate to be offered based on the rates usually observed in similar transactions. Alternatively, you can also set a royalty rate based on the percentage of the budget allocated to R&D in the company or sector under review.

- **Replication cost**
  An estimation of the number of men multiplied by the months required for a competitor to redevelop the technology from scratch.

**Compensation mechanisms are varied:**

- royalties
- up-front
- milestones
- collaboration prospects
- etc.

## WHAT BUSINESS MODEL SHOULD YOU CHOOSE?

1. The quality and relevance of a Business Model
   - is measured by its relevance to the needs of the market
   - requires analysis of the expectations of the end users
   - must rely on the strengths of the developed solution

2. Examples of business model

<table>
<thead>
<tr>
<th>Proprietary</th>
<th>The creator sets the price of his product</th>
<th>Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Licencing</td>
<td>Paid version supported by a free community version</td>
<td>MySQL</td>
</tr>
<tr>
<td>Value-added service</td>
<td>Sale of intellectual services in all their forms: advice, expertise, package development, in-house, TMA</td>
<td>Odoo</td>
</tr>
<tr>
<td>In-app purchases</td>
<td>Free application with additional paid features</td>
<td>Candy Crush</td>
</tr>
<tr>
<td>Software as a service (SaaS)</td>
<td>Application available online via subscription</td>
<td>Office365</td>
</tr>
<tr>
<td>Subscription</td>
<td>Pricing based on the volume of data exchanged/stored</td>
<td>Amazon Cloud</td>
</tr>
</tbody>
</table>

## WHAT METHODS CAN YOU USE TO SET THE PRICE?

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- etc.

## TOOLS

The COCOMO II method estimates the value of software based on the development budget calculated from the number of lines of code (replication cost), from which technical debt is usually drawn.

## CONTACT

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In 2004, Alexander Osterwalder completed a Ph.D. thesis on business models with Prof. Yves Pigneur (HEC Lausanne, Switzerland).

The Business Model Canvas was born!

Two years later the approach outlined in his thesis began to be implemented around the world.


The Business Model Canvas - often referred by the acronym BMC - is a visual representation that facilitates iterative development (or adaptation) of new (or existing) business models. It is composed of nine blocks which helps an entrepreneur to build a value-added proposal to customers and understand the financial in- and outflows involved in his/her business.

The BMC is designed for building business models through brainstorming sessions.

It provides a holistic view of the business as a whole and gives people a shared language, leading to better strategic conversations and better ideas on the table.

Describe, design, challenge, invent and pivot your business model!
**VALUE PROPOSITION**
What need/problem does your project address? What is your added value? What are the strong points compared to the competition?

**KEY PARTNERS**
Do you need external providers to promote your product/service, to complete your service offer etc.?

**KEY ACTIVITIES**
Which activities are essential to allow your economic model to work (production, supply chain, software development, network, platform, problems solving etc.)?

**KEY RESOURCES**
What resources are essential to the functioning of your business: premises, equipment, machinery, financial resources, human resources, software, brands etc?

**COST STRUCTURE**
What are the different types of costs related to the business model (cost logic, value logic, fixed costs, variable costs, economies of scale etc.)?

**CUSTOMER SEGMENTS**
For each product and/or service, what groups of individuals or organizations do you want to reach? Are you targeting mass markets, niche markets, segmented markets or others?

**CUSTOMER RELATIONSHIPS**
What are the types of relationships established with each customer segment based on strategic objectives: to acquire, retain, upsell (personal assistance, self-service, automated services, communities, co-creation)?

**CHANNELS**
- How will you promote/sell your product and/or service?
- How will your customers assess your product and/or service?
- What after-sales service will you provide?

**REVENUE STREAMS**
What kind of income will be generated from each customer segment (from sale, subscription, rental/loan, licencing, brokerage, advertising etc.)?
The SOCIAL Business Model Canvas takes into account the special characteristics of social enterprises!
THE SOCIAL BUSINESS MODEL CANVAS
To structure ideas and actions in a reasonable manner!

WHAT IS THE DIFFERENCE WITH THE INITIAL TOOL?

Marketing outside the classical mechanisms of the market implies thinking more broadly about the blocks of the Business Model Canvas. For example:

**VALUE PROPOSITION**

The **value proposition** must go beyond the simple offer of a product or service. More broadly, it must consider the improvements generated by the activity (environmental, social cohesion, etc.).

**KEY PARTNERS**

In the same vein, the target of **beneficiaries** must often be extended to those who will benefit from the created impact (consumers but also users, citizens, public authorities, suppliers, etc.).

**KEY RESOURCES**

The **key resources** that will enable the company to function and achieve its goals also need to be widely understood (partnerships, collaborations, volunteering, subsidies, etc.).

**SURPLUS**

One special characteristic of the SOCIAL business model canvas is to add a block involving a definition of the management of **surplus** generated by the activity (captured value).

It is then necessary to consider set-aside, distribution of dividends, drawback or repayments, investment in another project, etc.

---

**Social Business Model Canvas**

- **Key Resources**
  - What resources will you need to run your activities? People, finance, access?

- **Key Activities**
  - What is the format of your intervention? Is it a workshop? A service? A product?

- **Type of Intervention**
  - How are you reaching your users and customers?

- **Channels**
  - Who benefits from your intervention? Beneficiary

- **Segments**
  - Customer

- **Value Proposition**
  - Impact Measures
  - How will you show that you are creating social impact?

- **Beneficiary Value Proposition**
  - Customer Value Proposition

- **Cost Structure**
  - What are your biggest expenditure areas? How do they change as you scale up?

- **Surplus**
  - Where do you plan to invest your profits?

- **Revenue**
  - Break down your revenue sources by %

Inspired by The Business Model Canvas