



CRETE CENTER FOR
QUANTUM COMPLEXITY
AND NANOTECHNOLOGY

GUIDE to IPRs and Patents



UNIVERSITY OF CRETE
Department of Physics

The Guide has been prepared by the Managing Company of the Science and Technology Park of Crete SA.

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Purpose & objectives of the Guide

The purpose of this Guide is to offer practical information about basic concepts and principles related to Intellectual Property Rights (IPR) and patents. It provides a brief overview of the most common forms of Intellectual Property (IP) protection including patents, industrial designs, utility models, copyright and related rights, trademarks, trade secrets, plant breeder's rights and geographical indications.

The Guide is written for non IP experts and addresses researchers from different scientific fields interested in understanding how to protect and make sense of their own inventions. The information contained in the Guide will be beneficial to those involved in Research and Development (R&D) projects with IPR issues in question. Acknowledging the role of various national and international IP organisations from which researchers may get support according to the nature and scope of their intellectual assets, the Guide summarises a set of useful resources and online tools that readers may use before, during and after the procedures of the IP protection. It also recommends practical methods of IP commercialisation routines, and presents good practices and hints that can be employed to tackle IPR issues and challenges.

The Guide was prepared in the context of the Crete Center for Quantum Complexity and Nanotechnology (CCQCN) and it is not meant to be a substitute for professional legal advice.

CCQCN profile

Starting its operation on September 1, 2013 (as an EC-supported FP7-REGPOT-2012-2013-1 project; Project number: 316165), the Crete Center for Quantum Complexity and Nanotechnology (CCQCN) has actively pursued high-caliber theoretical, experimental and computational research in promising areas of Condensed Matter Physics and applications.

The CCQCN is located at the premises of the Physics Department of the University of Crete and is pursuing research in areas such as:

- Josephson junctions (theory)
- Ultrafast phenomena (theory)
- Magnetics (theory)
- Quantum metamaterials(theory)
- Holographic models for strongly correlated electrons

- Graphene (experiment)
- Nanoelectronics, flexible semiconductors (experiment)
- Measurements, atomic physics(experiment)
- Superconductivity (experiment)
- Computational condensed matter physics

CCQCN members and researchers interact closely with researchers, via twinning links, in 9 leading institutions, namely the:

- Max Planck Institute for Dynamics and Self-Organization, Goettingen
- Institute for Solid State Research (IFW), Dresden
- Cambridge University, incl. Department of Applied Mathematics and Theoretical Physics (DAMTP) Cavendish Laboratory and Center for Advanced Photonics and Electronics including specialized scientists in the focus areas in other UK institutions
- Leiden University
- Laboratory of Analysis and Architecture of Systems (LAAS-CNRS), Toulouse
- Institute of Solid State Physics, Technion, Haifa including I-Core collaboration and scientists in Israel
- Cologne University
- Physics Institute, Karlsruhe Institute of Technology (KIT)
- Laboratoire de Physique Theorique de l'Ecole Normale Supérieure (LPT ENS), including scientists of the Paris area.

CCQCN is equipped with a state-of-the-art high-performance computational facility (HPC) and experimental equipment (to enhance its low temperature and micro-nanoelectronics facilities), thus enabling its large number of researchers to advance collaborative research work in the focus areas. The interaction (twinning) with the leading European institutions and the strong visitors/workshops/conference-organization program of the Center enables major advances in research, in order to turn CCQCN into a Center of Excellence with long term viability.

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Understanding the basics of IP

1.1 Defining and understanding IP

The notion of Intellectual Property (IP) refers to the creations of the human mind, and embodies legal rights which allow their owners to exclusively make sense of their own work. IP rights relate to different sets of information and knowledge and protect their inventors by granting the exclusive right to receive recognition and financial benefits. WIPO defines Intellectual property (IP) as follows:

“Intellectual property refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce”.

Intellectual property was placed in context in 1883 under the Paris Convention for the Protection of Industrial Property, which is currently administrated by the World Intellectual Property Organization (WIPO). WIPO is a self-funding agency of the United Nations established in Geneva, Switzerland in 1967 with 188 member states throughout the world. The aim of WIPO is to support and promote the protection of IP.

1.2 Classic fields of IP Protection

Traditionally, IP falls into two main categories: Industrial Property and Copyright (Intellectual Property). Each of these two categories includes several types of IP protection which differ in terms of practises, duration, costs etc. Intellectual property takes a range of different forms including:

- Patents
- Industrial Designs and Integrated Circuits
- Utility models
- Copyright and related Rights
- Trademarks
- Trade secrets
- Plant breeder's rights
- Geographical indications

**IP
definition**

**Types of IP
protection**

Figure 1 Classic fields of IP

IP	Industrial Property	Inventions	Patents	Trade Secrets
			Utility Models	
			Plant Varieties	
			Topographies of semiconductor products	
	Distinctive Signs	Aesthetic creations	Trade Marks	Industrial Designs
			Trade Names	
			Geographical Indications	
	Intellectual Property	Literacy, artistic scientific creations	Copyright (and neighbouring rights)	

Source: IPR help desk

1.2.1 Patents

The most well known form of IP protection is probably the patent. Typically, patents are limited duration territorial rights which prevent third parties to commercially use the invention without the permission of the inventor, namely the patentee, in specific territories (areas in which patents have been filed and granted – not everywhere).

WIPO defines a patent as *‘an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application’*.

Another interesting definition of patents is given by OBI: *‘A patent is a title of protection with duration of 20 years, granted to the inventor or beneficiary for an invention, which is new, involves an inventive step and is susceptible of industrial application’*.

OBI assures that an invention is considered "new" if it is unknown to the general public by any means (written, oral etc), before its filing date, involves an inventive step if, in an expert's opinion, it is not based on the existing state of the art in any obvious manner and it is subject of industrial application no matter the field or the industry. It is important to note that after 20 years of the date of filling, patents expire and can be used for commercial reasons by anyone.

Patent definition by WIPO

Patent definition by OBI

Usually patents consist of the following:

- ✓ **apply for grant**
- ✓ **provide an abstract**
- ✓ **description of the invention** (provide detailed information and explain fully the state of the art)
- ✓ **set of claims** (one or more which should meet patentability requirements including novelty, usefulness, and non-obviousness characteristics)
- ✓ **drawings** (if any)

Information about patents is fully presented in the section '*Understanding the patent system*'.

1.2.2 Industrial Designs

Another form of IP protection is the industrial designs. From a legal perspective, WIPO suggests that industrial designs constitute the ornamental or aesthetic aspect of an article. The industrial design registration provides legally-enforceable rights which usually last for 10 years. In fact, while the duration of the registered ID protection varies across countries, the purpose of its protection is same: '*to prevent third parties from making, selling or importing articles bearing or embodying a design which is a copy, or substantially a copy, of the protected design, when such acts are undertaken for commercial purposes*' (WIPO, 2015). In most of the countries, industrial designs are protected under industrial design laws (known as registered design) or patent laws (known as design patents). As opposed to patents, ID rights protect the appearance or aesthetic features of a product, whereas patents protect an invention. OBI provides guidance on how to register an industrial design

(http://www.obigr/obi/Portals/0/ImagesAndFiles/Files/sxedia_ypodeigmata_en.pdf)

1.2.3 Utility Models

Utility models are quite similar to patents and, normally, they are used to protect less complex inventions or inventions that might represent a relatively short commercial life. Depending on different national circumstances and traits existing amongst countries¹, utility models can be

¹ Utility models' protection can be found at the following countries:

Albania, Angola, Argentina, ARIPO, Armenia, Aruba, Australia, Austria, Azerbaijan, Belarus, Belize, Brazil, Bolivia, Bulgaria, Chile, China (including Hong Kong and Macau), Colombia, Costa Rica, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Ethiopia, Finland, France, Georgia, Germany, Greece, Guatemala, Honduras, Hungary, Indonesia, Ireland, Italy, Japan, Kazakhstan, Kuwait, Kyrgyzstan, Laos, Malaysia, Mexico, OAPI, Peru, Philippines, Poland, Portugal, Republic of Korea, Republic of Moldova, Russian Federation, Slovakia, Spain, Taiwan, Tajikistan, Trinidad & Tobago, Turkey, Ukraine, Uruguay and Uzbekistan.

(Source: WIPO, 2015)

also defined as *petty patents*, *innovation patents* or *utility innovations* which have the same purpose: to protect an invention by giving the right to the holder to prevent others from exploiting the protected invention.

Utility models are typically granted for a period of maximum 10 years (duration varies across counties) and the obtaining procedure is more straightforward, faster and cheaper as compared to patents. According to WIPO, utility models fit better to SMEs needs and, in practice, they appear appropriate to protect mechanical innovations which may not meet the patentability criteria successfully.

1.2.4 Copyright and related Rights

According to WIPO, copyrights, known also as authors' rights, relate to artistic creations, such as books, music, paintings and sculptures, films and technology-based works such as computer programs and electronic databases. In fact, there are two main types of rights under copyright: *moral rights* which allow the authors to take certain actions to protect and connect themselves with their work and *economic rights* which lead to financial rewards.

Usually, copyright is granted routinely, and no formal registration is required. However, the Hellenic Copyright Organization (OPI) suggests that '*submitting a work to a notary provides evidence confirming the date, which can be evaluated by the Court in the event of legal proceedings on the violation of the rights on that work*'. OPI is a legal entity which operates under the supervision of the Ministry of Culture and Sports and its purpose is to support the authors protecting their copyrights.

In Greece, copyrights and related rights are protected under the LAW 2121/1993, where copyrights last for all the author's life and seventy 70 years after his death, and related rights last 50 years after the date of the performance.

1.2.5 Trademarks

WIPO (2015) defines trademarks as "*a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises, using distinctive element, such as words, letters, numerals, drawings, pictures, shapes, colours, labels, or any combination of these*".

Trademarks are private rights and can be registered through the national and regional trademark offices. Registration lasts normally for 10 years but, in practice, trademarks can last indefinitely if fees are paid constantly. The European IPR Help desk provides a practical guide which provides details on how to search for trademarks using different databases (<http://www.startupgreece.gov.gr/sites/default/files/How%20to%20search%20for%2>

[Otrademarks.pdf](#)). The following table summarizes 5 different types of trademarks.

Table 1 Types of Trademarks

Type of Trademark	Explanation
Trade marks	Marks used to distinguish certain goods as those produced by a specific enterprise.
Service marks	Marks used to distinguish certain services as those provided by a specific enterprise.
Collective marks	Marks used to distinguish goods or services produced or provided by members of an association.
Certification marks	Marks used to distinguish goods or services that comply with a set of standards and have been certified by a certifying authority.
Well-known marks	Marks that are considered to be well-known in the market and as a result benefit from stronger protection.

Source: WIPO 2003

A list with national trademark offices throughout the world is provided at the following link: <https://www.tmdn.org/tmview/welcome.html>

1.2.6 Trade secrets

Trade secrets are industrial, manufacturing and business secrets which include confidential technical data and scientific information. They have commercial value and cannot be protected through a formal registration process. A successful example of a trade secret is the formula for Coca-Cola. Further information about trade secrets and undisclosed information in general can be found at WIPO official documentation:

http://www.wipo.int/sme/en/ip_business/trade_secrets/trade_secrets.htm

1.2.7 Plant breeder's rights

Plant breeder's rights, also known as plant variety rights, provide inclusive rights over any new varieties of plants which have been developed for commercial purposes. Such rights are valid for approximately 25-30 years. EU has established a system that protects IP to new plant varieties the so-called Community Plant Variety Right (CPVR). This form of IP is quite similar to a patent and it is valid throughout the EU. For those interested more in this particular IP category there is an EU link which outlines the fees' structure, provides the legislation framework and a series of useful publications, (<http://www.cpvo.europa.eu>).

Trade secrets

Plant breeder's rights

1.2.8 Geographical indications

A geographical indication is a sign used on goods that have a specific geographical origin and possess qualities or a reputation that are due to that place of origin (WIPO, 2015). Agricultural indications are usually used for agricultural products to highlight the place of origin or production. Normally, geographical indications are protected in accordance with national laws. WIPO, however, suggests a mixture of 3 different ways to protect a geographical indication (prevent its use by a third party):

- Using certification or collective marks (see table 1)
- Using methods focusing on business practices, including administrative product approval schemes.
- Using the so-called sui generis systems (i.e. special regimes of protection)

The Geographical indication handbook prepared by the EU provides useful information about the mechanisms that are available to protect geographical indications:

(http://trade.ec.europa.eu/doclib/docs/2007/june/tradoc_135088.pdf)

1.3 International treaties and conventions on IP

There are several treaties and conventions with respect to intellectual property². Table 2 summarises the most important ones.

Table 2 International treaties and conventions on IP

Treaties & Conventions	Description
The Paris Convention for the Protection of Industrial Property	Applies to industrial property in the widest sense, including patents, marks, industrial designs, utility models, trade names, geographical indications and the repression of unfair competition.
The Berne Convention for the Protection of Literary and Artistic Works	Deals with the protection of works and the rights of their authors.
Patent Cooperation Treaty (PCT)	Makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing an “international” patent application
The WIPO Copyright Treaty (WCT)	It is a special agreement under the Berne Convention that deals with the protection of works and the rights of their authors in the digital environment.

² Details for International Treaties and Conventions on Intellectual Property are provided by WIPO: <http://www.wipo.int/export/sites/www/about-ip/en/iprm/pdf/ch5.pdf>

The WIPO Performance and Phonograms Treaty (WPPT)	Deals with the rights of two kinds of beneficiaries, particularly in the digital environment: performers (actors, singers, musicians, etc.); and producers of phonograms
The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure	The main feature of the Treaty is that a contracting State which allows or requires the deposit of microorganisms for the purposes of patent procedure must recognize, for such purposes, the deposit of a microorganism with any "international depositary authority", irrespective of whether such authority is on or outside the territory of the said State.
Madrid Agreement Concerning the International Registration of Marks	An application for international registration (international application) may be filed only by a natural person or legal entity having a connection-through establishment, domicile or nationality-with a Contracting Party to the Agreement or the Protocol.
Hague Agreement Concerning the International Registration of Industrial Designs	Allows applicants to register an industrial design by filing a single application with the International Bureau of WIPO, enabling design owners to protect their designs with minimum formalities in multiple countries or regions
Trademark Law Treaty (TLT)	Standardizes and streamlines national and regional trademark registration procedures
Patent Law Treaty	Harmonises and streamlines formal procedures in respect of national and regional patent applications and patents, and thus to make such procedures more user-friendly.

Source: based on WIPO, 2015

Administrative structure of IP: who is doing what at a glance

3

	<i>International level</i>	<i>National level</i>	<i>Related law and treaties</i>
Patents	National Patent Offices European Patent Office (EPO)	Hellenic Industrial Property Organisation (OBI)	Paris Convention, PCT, PLT, Budapest Treaty, Strasbourg Agreement Concerning the International Patent Classification
Industrial Designs	National Patent Offices Office for Harmonization in the International Market	Hellenic Industrial Property Organisation (OBI)	Paris Convention, WIPO Convention, Hague Agreement, Locarno Agreement
Utility models	National Patent Offices European Patent Office (EPO)	Hellenic Industrial Property Organisation (OBI)	Paris Convention
Trademarks	National Trademark Offices Office for Harmonisation in the Internal Market (OHIM)	Greek Trademark Office, Gen. Secretary for Commerce	Paris Convention, Madrid, Nice & Vienna Agreement, Singapore Treaty, Trademark Law Treaty, Nairobi Treaty
Trade secrets	No formal registration is required	No formal registration is required	TRIPS Agreement
Plant breeder's rights	Community Plant Variety Office (CPVO)	Rural Development Ministry, Variety Res. In. of Cultivated Plants	National law and treaties
Geog. indication	National IP offices National competent authorities	Agricultural Products Certific. & Supervision Organization	Paris Convention, Madrid Agreement, Lisbon Agreement, EU related agreements
Copyrights	National Copyright Offices	Hellenic Copyright Organization (OPI)	WIPO Copyright Treaty

³ National Patent Offices of member states: <http://www.epo.org/service-support/useful-links/national-offices.html> (Source: EPO)
Patent offices outside the European zone: <http://www.epo.org/service-support/useful-links/patent-offices.html>

World Intellectual Property Organization (WIPO)

www.wipo.int



**European Patent Organisation
(EPO)**

www.epo.org



**Office for Harmonisation in the Internal Market
(OHIM)**

<https://oami.europa.eu/ohimportal/en/home>



**Community Plant Variety Office
(CPVO)**

<http://www.cpvo.europa.eu>



Hellenic Industrial Property Organisation (OBI)

www.obι.gr



**Hellenic Copyright Organization
(OPI)**

www.opι.gr



**Greek Trademark Office, General Secretary for
Commerce
(GGE)**

<http://gge.gov.gr>



Understanding the patent system

3.1 Patents: An important source of information

Patents can be seen as a significant source of technological information and, therefore, can be used to solve different kinds of problems and technical obstacles. Researchers can benefit notably since such documents usually disclose information on new inventions earlier than any other scientific documentation (i.e. papers, journals, articles). Such information can be found in patent documents and normally includes the following forms (WIPO, 2000):

- ✓ Technical data and important scientific information deriving from the detailed description of an invention; supports the process of finding out what already exists and build on it, by looking at patents there is a potential to solve existing technical problems.
- ✓ Information about the context and status of a particular patent, i.e. patent's duration, area of protection, find patents that are no longer in force and can be legally exploited, be updated about research carried out by third parties etc.
- ✓ Avoid legal problems by infringing other patent rights

3.2 Looking for patents: available tools

There are several online tools which can be used to search for patents. WIPO runs the PATENTSCOPE which is a free and straightforward online tool where users can find approximately 43 million patent documents, including PCT applications, in many different scientific areas. Users can search information by entering a set of criteria in multiple languages such as stand-alone keywords, applicants' details etc.



- <https://patentscope.wipo.int>

Using
patents to
collect
information

PATENT
SCOPE

The European Patent Register is also a proper tool which provides access to patent databases. It contains information about the European patent applications and users can use the service free of charge to find out the stage of a European patent application, detect if a European patent application has been granted and for many other reasons.



- <https://register.epo.org>

Espacenet, another online tool provided by EPO, offers free access to more than 90 million patent documents worldwide, containing information about inventions and technical developments from 1836 to today.



- www.espacenet.com

EPO runs also a number of other practical online tools which users might find interesting when searching for patents. These are:

- **European publication server**
<https://data.epo.org/publication-server/?lg=en>
- **Global patent index (GPI)**
<https://data.epo.org/expert-services/start.html>

3.3 The process of patenting

EPO suggests that if inventors wish to apply for a patent in a small number of European countries, it might be better to go through the national patent offices of each of the country. Generally speaking, the process of patenting may vary slightly across different countries and national patent systems. In the case of Greece, OBI provides a six-step methodological approach for granting a patent fully harmonized with the European Patent Convention (EPC) in terms of patentability requirements. The steps are the following⁴:

- 1st Fill in the application form
- 2nd A 4-month term from the filing date for any corrections to be made or omissions to be supplemented
- 3rd An examination, conducted by OBI in order to confirm whether the invention is "new" and involves an inventive step drafting of the search report or search report will written opinion
- 4th A 3-month term from the date of notification of the search report, for comments by the applicant on the search report
- 5th Drafting of the final search report or final search report will written opinion
- 6th Patent granting

It is worth noting that patents are valid only if the relevant maintenance fees are being paid to OBI as required (a list of fees is provided at: http://www.obigr.gr/Portals/0/ImagesAndFiles/Files/Fees/Fees_OBI.20120301_EN.pdf).

The following table summarises OBI charges and maintenance fees for 20 years. OBI runs the **One Stop Shop** which provides information about the filing procedure for the acquisition of any protection title as well as technological information, which is a good starting point (www.obigr.gr)

⁴ OBI has issued a useful guide explaining in detail how to acquire patents and utility model certificates: (http://www.obigr.gr/Portals/0/ImagesAndFiles/Files/odhgies_de_pyx_en.pdf)

Table 3 Patents charges and maintenance fees

Description	EUR
Filing fee for a patent application (Article 24(2) of Law 1733/87)	50,00
Claims fee for 11th and each subsequent patent claim (Article 8(3) and (4) of Law 1733/1987)	30,00 per claim
Search Report Fee (including the final report) (Article 8(4) of Law 1733/1987)	300,00
Search Report with Written Opinion Fee (including the final search report with written opinion) (MD 10374/04.08.09)	800,00
Patent grant fees (Article 8(11), Article 18(1) and (6), Article 24(1) of Law 1733/1987)	150,00
Fee for registering assignments, licences, other modifications of rights or change in corporate name or legal status of patent proprietor (Article 24(1) and (2) of Law 1733/1987)	200,00

Annual patent protection fees (Article 24(2) of Law 1733/1987) (EUR)	EUR
Year 1	0,00
Year 2	0,00
Year 3	20,00
Year 4	50,00
Year 5	80,00
Year 6	90,00
Year 7	100,00
Year 8	115,00
Year 9	140,00
Year 10	190,00
Year 11	240,00
Year 12	300,00
Year 13	400,00
Year 14	500,00
Year 15	600,00
Year 16	700,00
Year 17	800,00
Year 18	900,00
Year 19	1000,00
Year 20	1100,00

Source: OBI, 2015

3.3.1 Patenting overseas

For those interested in patenting their invention overseas (acquiring patent protection in foreign countries) without using OBI services, EPO accepts applications under the European Patent Convention (EPC) and the Patent Cooperation Treaty (see below).

The official languages are English, French and German and applicants should submit a translation in case of using another language. The process of European patent application is electronic (<http://www.epoline.org/portal/public>).

It is worth noting that there is not any 'international' or 'worldwide' patent and inventors should apply for a patent separately in each of the territory (country or region) where protection is sought.

3.3.2 The international patent system: PCT

The Patent Cooperation Treaty (PCT) deals with applicants who are seeking patent protection internationally. PCT can be achieved by filling a single 'international' patent application and it can provide protection in 148 countries throughout the world. The PCT route is highly relevant for those interested in protecting their invention in multiple countries.

Figure 2 Countries participating in PCT

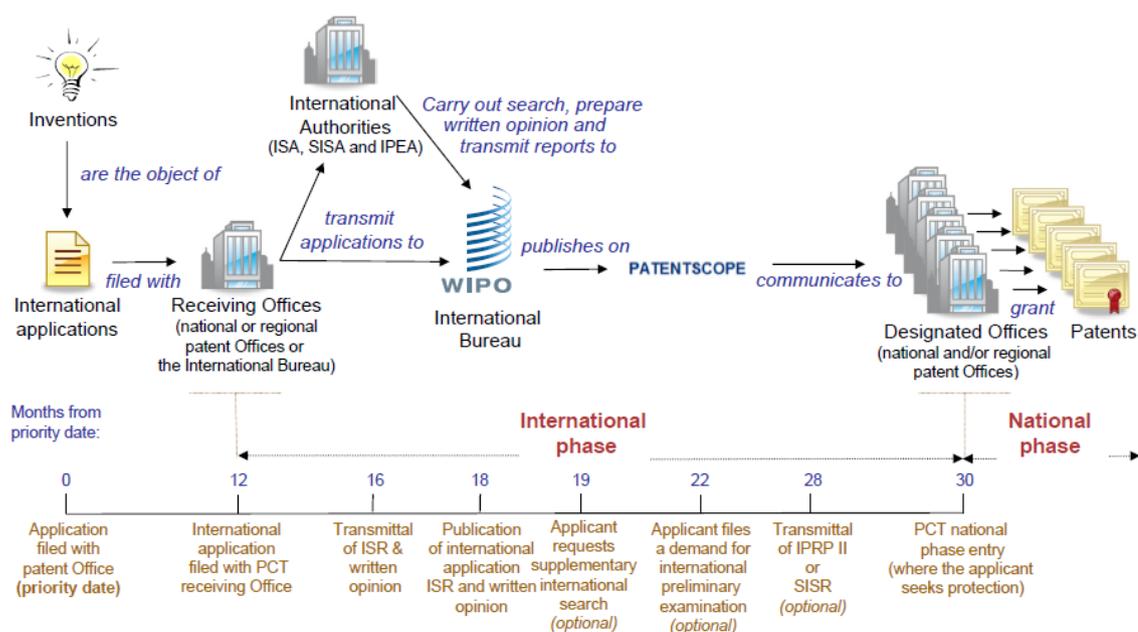


Source: WIPO, 2015

In general, it might be better for patent applicants who seek to protect their invention in more than one country to first file a national patent application using their national patent offices (WIPO, 1996), and within 12 months from the filing date of that first application, to claim priority abroad

through the PCT. If this 12-month period expires, the priority right is lost automatically. A PCT overview is illustrated by WIPO at the following figure. PCT application forms are filled electronically at WIPO website (<http://www.wipo.int/pct-safe/en>).

Figure 3 Overview of the PCT System



Source: WIPO, 2014

3.3.3 Unitary patent: protecting inventions in 25 countries

According to EPO, the unitary patent is a European patent, granted under the rules and procedures of the European Patent Convention, to which, upon request of the patent proprietor, unitary effect is given for the territory of the 25 Member States participating in the unitary patent scheme. The unitary patent will be granted by EPO (not ready at present) using EPO’s official language regime which are English, German or French. However, an integrated translation service will be available online to translate free of charge all patent information in all languages of the EU member states.

Unitary patent will be available on a one-stop shop basis at a relatively low cost (see following table). A full FAQ service is offered by EPO at <http://www.epo.org/law-practice/unitary/faq.html>

Unitary Patent

Table 4 European Patent Vs. Unitary patent

	European "bundle" patent (25 MS)	European patent with unitary effect (25 MS) - during transitional period	European patent with unitary effect (25 MS) - after transitional period
Procedural fees (filing, search, examination and grant)	4 045 € * (not concerned by the reform)	4 045 € * (not concerned by the reform)	4 045 € * (not concerned by the reform)
Validation costs:			
Translation	20 145 €	2 380 €	680 €
Local patent agents	5 250 €	0	0
Official local patent offices fees	2 679 €	0	0
Validation costs total	28 074 €	2 380 €	680 €
TOTAL COSTS	32 119 €	6 425 €	4 725 €

* On-line filing; European search; excluding renewal fees due for pending applications

Source: EC, 2015

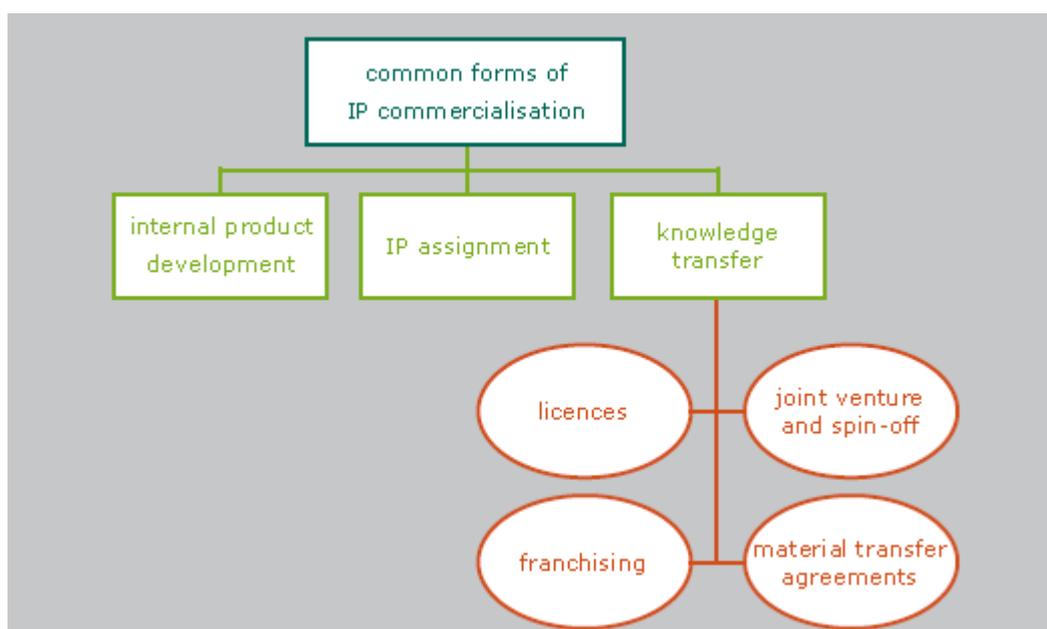
Commercialization of IPR

4.1 Methods of IP commercialization

Commercializing research results is very important for an academic and research organization. It will generate economic and social value and improve the competitiveness of the national industry, constitute an alternative source of income for the organization and promote an entrepreneurial culture within the organization.

The success of any IP commercialization is dependent on the appropriate method and commercial tool. Channels to commercialize university and public research results are essentially similar to those used in business, with some differences related with the objectives set in the IP policy. The most common ways for launching a protected IP on the market are summarized in the following diagram:

Figure 4 Ways for launching a protected IP on the market



Source: IPR Helpdesk

Assignment of ownership

IP assignment is a permanent transfer of ownership of an IP right, such as a patent, trademark or copyright from one party (the assignor) to another (the assignee) who becomes the new owner. Such assignment agreements can be the best option when considering the different possibilities to transfer knowledge. In this case the assignor can have immediate cash flow return as a

lump-sum payment, contrary to licence agreements where royalties are usually preferred. Additionally, the assignor has no further responsibility for the management of IP issues.

Licence agreement

A Licence agreement is a contract under which the owner of IP (the licensor) grants permission for the use of the intangible asset(s) concerned to another person or entity (the licensee) within the limits set by the provisions of the contract. Negotiating license agreements, it is important to understand which is the most suitable to the specific case and what are the potential risks associated with this deal. A license agreement of IPR can be a standalone agreement or an integral part of larger partnerships including franchising, manufacturing agreements as well as trade collaborations with technical assistance obligations.

Licenses can provide research results with faster access to markets, research organizations with additional income and control of their IP. On the contrary they can lose control of information flowing from further development of the technology.

Joint venture

Joint Venture is a form of business association between two or more independent organizations. It is a situation where scientists and private companies jointly commit resources and research efforts to projects. They may range from short-term projects, normally narrow in scope to long-lasting partnerships with multiple members and stakeholders.

The most significant advantage for research organizations and universities can be considered as their ability to reap the economic benefits from the commercialization of their IP or the one resulting from the joint venture.

Research organizations and universities need to carefully define through licenses the access to their IP (background) as well as the generated IP.

Spin-off

A spin-off refers to a separate company usually established by bringing IP and a technology developed by a parent organization to the market. It is a valuable alternative to assignment or licensing-out technology.

Spin-off companies are considered as a fundamental mediator between the research environment and industry as they are a powerful means of technology transfer.

Creating spin-off companies allow research organizations to outsource the development process which not fits to their scientific objectives, obtain funding, participate in research programmes and promote entrepreneurial culture within the organization.

The creation of a spin-off is a complex process entailing the development of a separate business with the subsequent allocation of IPR and responsibilities, project and risk management and, in certain circumstances, fund raising to attract investors.

Consultancy

This type of commercialization comprises research and/or faculty consulting. Usually research is commissioned by a private company to pursue a solution to a problem. It involves the creation of new knowledge and in the case of contract research, the generated IPR belong to the private company.

Contract research is one of the most widespread activities in which academia and industry participate and usually does not compromise university objectives.

Commercialization risks

The risks associated with the commercialization are related to:

- Nature of the IP and of the product/service
- Confidentiality
- Financial matters
- Legal issues
- Business reputation

An assessment of the risks can be based on the likelihood of the event occurrence (e.g. third party infringement, ownership disputes etc) and the associated consequences. Organizations will make their decisions based on management actions to be adopted (e.g. insurance, contracts etc).

Source: IPR Helpdesk

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Knowledge_Transfer.pdf

<https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Spin-offs.pdf>

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Exploitation_channels_for_public_research_results_2.pdf

Consultancy

Commercial risks

4.2 Evaluating the commercial potential

The IP rights associated with intangible assets are the legal underpinning for potential returns on investment in research and innovation. As IP is, by its nature, innovative and therefore different, each case for valuation requires investigation, rather than having an automated approach to IP valuation. As a result, IP valuation of an organization or a company's assets is an opinion, at a particular point in time – similar in many respects to the way that a legal opinion is given. There are many factors involved and evidence and purpose can have a large impact. The valuation of IP assets is complicated by the fact that no two IP assets are the same. This is inherently the case when IP is protected by rights such as patents and trademarks, where a requisite for obtaining such rights is that the IP does not already exist. The uniqueness of IP makes comparisons with other IP difficult, thereby limiting the usefulness of comparison based pricing. As a result, valuations are often based on assumptions about the IP asset's future use, what important milestones will be met and what management decisions will be taken.

Valuing IP is not an easy task. Intellectual property rights change in value for a variety of reasons. A patent may begin its life as a unique solution to a problem, but in time other solutions to the problem may be found which reduce its worth. Alternatively, successfully marketing your product can ensure your patent is very valuable. Trademarks generally gain value as they become better known.

There are a number of ways to value IP rights (IPR). They all have their limitations and no method is appropriate in every case. The stage of development of the IPR, the availability of information and the aim of the valuation all have a bearing on the method used.

Important factors to consider when valuing IP are:

- What is the IP being valued : IP should be exactly identified and differentiated from other material and immaterial assets
- What is the purpose of the valuation: Type of value (internal, market etc) and result (qualitative, quantitative)
- For whom is the valuation being done? The target audience is necessary to be considered (prospective investors, internal management etc)
- Who is doing the valuation? (expertise of appraiser, biases)
- Date of valuation (influence the method)

The following 3 examples provide a more detailed description of the methodologies of IP valuation:

Factors to consider when valuing IP

The cost method

This valuation is based on the costs you incurred developing or creating an IPR. It also values what it might cost to recreate or develop a similar product or service. It doesn't take into consideration the current market value of your product.

Costs usually included are:

- labour
- materials and equipment
- research and development
- creating a prototype
- testing and trials
- regulatory approval and certification
- registering the IP
- overheads for utilities, accommodation and support staff

This method assumes that your potential buyer can avoid these costs by buying the IPR.

Valuable benefits may be:

- time: by purchasing the right from the you, the buyer will not waste time researching and developing their form of IP
- expenditure: if attempting to recreate their own IP, the buyer would spend at least this much
- success: a buyer may not be successful in developing the IP
- protection: a buyer may not be able to protect their IP, and may well be infringing on others.

This method of valuing intellectual property assets lends itself to an overall assessment when buying a business. It also considers assets when they are at an early stage in their development. However, the emphasis on costs, rather than profit, can skew the figures so that market potential is not fully recognised. This method does not take account of future value. It therefore misses out on a standard by which value is traditionally calculated.

The market value method

Understanding the value of your product based on its recent track record in the market place. This may be a more reliable way of establishing what people might pay for your IPR. Assessing the sale or licensing of similar products in the market may provide a useful benchmark.

The problem with this method is that it can be very hard to find published data on IP transactions as they are often confidential. IP transactions are hard to generalise. There are sources of data for various sectors, but they tend to provide a wide range of figures for sales and licences which are only broadly comparable.

Few transactions allow a valid comparison and arrangements may differ in terms of:

- exclusivity
- payment structure
- any technical/other support provided
- territory, economic climate and market conditions.

This method is unlikely to be used to value patents. That is because the value of a patent depends on its novelty. That novelty means there is unlikely to be comparable information. However, this method is objective and it can provide a realistic analysis of value based on your right's worth as perceived by both owners and their consumers. This method can be useful for researching the high, low and average royalty rates paid in any given market sector. In negotiating a licence agreement for example, an agreed industry range may form the basis of a discussion.

The income or economic benefit method

This method focuses on the revenue IP rights may generate for your business in the future. It considers both the future income, which a right may generate during its economic life, and the costs of generating that income. Risk and financial costs are factored into the equation. The end result is described as the 'Net Present Value' or NPV. This method allows a buyer to consider investment based on whether the NPV is positive or negative.

Although the NPV is a useful, easy-to-use tool, it should be remembered that the income or economic benefit method of valuation is based on an assessment of likely future events rather than past performance.

Difficulties with this method include:

- it is difficult to estimate the economic life of the IPR
- it is difficult to estimate the income over several years

Other factors that need to be taken into account include:

- the strength of the IPR
- the size of the potential market
- the nature of the competition

- changes in the economic climate
- the cost of registering, enforcing and defending the IPR need to be taken into account.

The way in which the IPR is exploited, the costs involved, the time it will take to get to market and the risks involved along the way will vary from business to business. Other things to consider are income which may be generated from other factors e.g. the skill of the business' staff.

Uncertainties about the future mean that it is unrealistic to project income for more than 4 or 5 years. Trying to estimate the income for early stage technology is very difficult.

A sub method of the income or economic benefit method is the relief from royalties method. This method assesses IP royalties. It is based on an assessment of what royalty costs a company is avoiding by virtue of owning the IP right.

Valuation tools

IP valuation tools are also available. **IPscore® 2.2** is such a tool offered for free by the European Patent Office (EPO). Originally developed by Danish Patent and Trademark Office (IPscore® 2.0), later on acquired by the EPO and transformed into a multi-language tool. IPscore® 2.2 is useful for evaluation of patents and technological development projects. It provides both qualitative and quantitative evaluation in the form of a financial forecast showing the net present value of the evaluated technology. Additionally, IPscore® 2.2 produces output in the form of graphical overviews and a report to facilitate communication of the results of the evaluation.

Source:

European Patent Office, IPscore Valuation Tool

[http://documents.epo.org/projects/babylon/eponet.nsf/0/A2A008822722C942C125755A003774C1/\\$File/IPscore_manual_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/A2A008822722C942C125755A003774C1/$File/IPscore_manual_en.pdf)

UK Intellectual Property Office

<https://www.gov.uk/valuing-your-intellectual-property>

Intellectual Property Valuation, Final report from the Expert Group, European Commission

http://ec.europa.eu/research/innovation-union/pdf/Expert_Group_Report_on_Intellectual_Property_Valuation_IP_web_2.pdf

4.3 Selecting the optimum IP exploitation route

Finding a proper channel to exploit your research outcomes might be a difficult and time-consuming process, as there are many different considerations which should be taken into account (e.g. nature and scope of the invention or technology in question, characteristics of the market(s) to be addressed, strategic priorities, available resources etc).

As a rule of thumb, it is worth noting that there is not any obvious right or wrong practice when dealing with IP exploitation. However, the following table provides some practical guidelines for typical considerations to be addressed when deciding which form of IP commercialisation could be chosen. The table summarises a set of key decision factors and indicates their possible implications.

Table 5 Guidelines for selecting IP commercialisation routes

Decision Factors	Possible implications
Unlikely to raise sufficient funds to develop or exploit the idea from in-house resources	Favours licensing to company with sufficient resources and willingness to progress development
Involves specialised assets (equipment, market access) for effective exploitation	Suggests licensing or a spin-off linked to a strategic partnership
Difficult to protect the intellectual assets	Favours spin out if it can be justified economically but business will need to move quickly
Sceptical business community is unconvinced about product feasibility or business prospects	Favours spin-off to prove concept and commercial potential
Further development needed	Consider all options but only if certain that added value outweighs cost of further development
Unlikely to raise sufficient funds to develop or exploit the idea	Either license or seek partnership with a company that has funds and essential exploitation assets
Involves specialised skills for development and/or exploitation	Depends whether skills are already in place and where they are located
Some, or all, of the essential skills or exploitation assets are already in place elsewhere	Consider licensing or spin-off with a strategic partner
Requires complementary skills or assets for effective exploitation	Favours partnership with owner(s) of complementary skills or assets
Development or exploitation involves a considerable risk	Favours strategic partnership to reduce risk exposure
Progress unlikely without drive of project champion	Favours spin-off, ideally involving someone with business experience

Guidelines for selecting IP exploitation routes

Long term perspective needed for effective exploitation	Characteristic of many spin-off or joint venture developments, though licensing should not be ruled out
Straightforward to implement	Tends to favour either spin off development or licensing depending upon expected reward
Mutual benefits would arise from exploitation involving another company	A feature of strategic partnerships and sometimes characteristic of licensing opportunities

Source: Technology Exploitation Guide, 1998

IPR and Horizon2020

5.1 Horizon 2020 and IPR⁵

One of the main issues of Horizon 2020 is a better and more effective exploitation of research results, and a strategic knowledge management, including the safeguarding and protection of intangible assets of every project, through management of IPR. Management of IPR is important at every stage of any project, from the first idea and conceptualization of the project, throughout the implementation until the end and the potential exploitation and the commercialization of research results.

At the proposal stage, it is essential to consider with the potential partners all issues related with IPR and prepare a Plan for the Dissemination and Exploitation of Project Results. To do this, it is necessary for the partners:

- To become familiar with the IP provisions of the specific call
- To define the existing background (knowledge, IP, know-how etc) and the potential access rights of third parties during the implementation of the project
- To consider confidentiality issues and prepare and sign a confidentiality agreement
- To assess the existing state-of-the-art in the area by screening existing literature and patent databases
- To have a plan concerning the dissemination and exploitation of results
- To consider the acronym and project name in order to avoid potential infringement of trademarks and to register the project name as a trademark. To avoid wasting time and money it is suggested to perform trademark searches. To check the availability of the idea, TMView, (<https://www.tmdn.org/tmview/welcome>), a free on line tool, with 24/7 availability in several languages provided by OHIM (Office for the Harmonization of the Internal market, <https://oami.europa.eu>) is available. WIPO is also offering ROMARIN, a database contains information regarding all international marks recorded under the Madrid system that are currently in force in the International Register or have expired within the past six months. (<http://www.wipo.int/madrid/en/romarin>).
- To consider potential costs for IP protection

**Proposal
Stage**

⁵Source: https://www.iprhelpdesk.eu/sites/default/files/documents/EU_IPR_Guide-to-IP-H2020.pdf

At the implementation stage and before kicking-off the project, it is necessary to sign the two important documents, the Grant Agreement and the Consortium Agreement. Handling and managing IP issues during the implementation phase, is the basis for any future exploitation. Partners have to consider:

- All IP related issues mentioned in the Grant Agreement
- Agreement on the IP provisions in the Consortium Agreement
- Installation of an efficient knowledge management of the project
- Granting access rights to the background when necessary
- Managing and transfer of ownership of the results
- Protection of project results depending on their character and the IP exploitation strategy
- Dissemination of results taking into account confidentiality obligations
- Reviewing and updating dissemination and exploitation plan
- Preparing to handle internal conflicts within the consortium

At the end of the project and beyond, when the full range of expected results is available, questions concerning exploitation are important. At this stage, partners have to consider:

- How to valorise and exploit IP following the agreed exploitation strategy.
- To decide the way of commercial exploitation and relevant tools (licensing, joint venture, spin-off, franchising, assignment etc)
- To disseminate the project results
- To be aware of future, post-project obligations concerning IP provisions e.g. transfer of results, access rights or notification to the EC when deciding to stop protection

5.2 The European IPR Helpdesk⁶

European IPR Helpdesk is an initiative of the European Commission. It is managed by the European Commission's Executive Agency for Small and Medium-sized Enterprises (EASME), with policy guidance provided by the European Commission's Enterprise and Industry Directorate - General. Its main aim is to raise awareness of IPR matters, to provide customised support for tackling general or specific IP questions and finally to empower beneficiaries of its services to develop their own capacities to deal with IP in their daily business. IPR Helpdesk provides tailor-made advice on specific IP or

⁶ Source: <https://www.iprhelpdesk.eu>

IPR questions, customized, straight-forwardly, comprehensibly and free of charge to current and potential beneficiaries of European collaborative research projects (FP7/CIP/Horizon2020/COSME) as well as to European Small and Medium-sized Enterprises (SMEs) involved in trans-national business relations.

Those who are interested to receive information can get in touch with IPR Helpdesk team of experienced lawyers via registration on its website, phone or fax and receive a qualified answer or examination of your personal IP issue within three working days. In addition IPR Helpdesk offers free of charge training events on different aspects of IP management and IPR based on a practical and comprehensive training approach. Regular publications such as an e-Mail Newsletter, Case Studies and the Bulletin provide information on the latest developments in the field of IP and IPR. The IPR Helpline can be reached by email (service@iprhelppdesk.eu), phone (+35.225.2233.333) or fax (+35.225.2233.334). Specific questions regarding training can be directed at: training@iprhelppdesk.eu

Helpdesk team is publishing a specific information package on IP Management in Horizon 2020 in order to guide beneficiaries of EU-funded projects through the expectations and requirements of the European Commission and to offer hands-on advice and tips on how to put IP management into practice.

The information package consists of the following documents:

- i. A series of three Fact Sheets pertaining to the management of IP in central stages throughout the life-cycle of a Horizon 2020 project;
- ii. A model Memorandum of Understanding (MoU) for Horizon 2020 - a helpful tool defining the framework of the negotiations among consortium partners, generally concluded at the very beginning of negotiations on the involvement in a project, even before submitting the proposal;
- iii. A Model Non-Disclosure Agreements (NDA) - examples of a One-Way Non-Disclosure Agreement as well as a Mutual Non-Disclosure Agreement;
- iv. A Guide on IP in Horizon 2020 for Researchers and SMEs providing an overview of the most important IP aspects in a concise document.

The information package is available online at:

<http://www.iprhelppdesk.eu/node/2519>

Helpdesk Ambassadors

Awareness raising is primarily done by offering on-site training events in the different European countries, by participating in awareness-raising

events, by providing individual consultancy through the IPR Helpdesk Helpline and by developing and disseminating a broad range of useful publications such as guidelines, case studies and fact sheets that deal with different aspects of IP – in business or in collaborative research. The official language applied in all these activities is English.

However, when it comes to addressing SMEs in the specific European regions, a language barrier still becomes evident. Against this background, the EU IPR Helpdesk together with the Enterprise Europe Network (<http://een.ec.europa.eu>) has set up a cooperation scheme to foster a strong network of regional IP focal points, i.e. “EU IPR Helpdesk Ambassadors”.

EU IPR Helpdesk Ambassadors are highly experienced members of the Enterprise Europe Network based in EU Member States and CIP countries with a strong track-record in dealing with IP questions, who will help in promoting the Helpdesk services and providing basic IP training and information directly at your doorstep. SMEs and other interested organizations and individuals can get in touch with them in local language for first-line IP advice and support.

More info: IPR Helpdesk Ambassadors Team,
<https://www.iprhelpdesk.eu/ambassadorsteam>

Case studies

Case Study 1

Confidentiality considerations during project preparations

Within the framework of the Horizon 2020, a group of nine partner organisations from eight different countries, including SMEs and research organisations, has initiated discussions for the joint preparation of a proposal to be submitted under the topic “organisational innovation to increase energy efficiency in industry”.

To enable more efficient administration in setting up the proposal, the partner leading the discussions invited all partners to make use of cloud server software, where all partners could easily keep in contact with each other and share information.

One of the SMEs involved in these negotiations was concerned about the disclosure of information to the partners through the cloud without any prior agreement between the partners. At the same time, however, the period for the preparation of the proposal was of six months duration and therefore the SME was concerned about finding an easy and quick solution, to avoid losing time that should be used for the preparation of the proposal.

The SME partner shared its concerns with the coordinator of the prospective project, who agreed with the importance of indeed entering a non-disclosure agreement before any partner started to use the cloud platform. For this purpose the coordinator drafted a non-disclosure agreement based on the model available on the European IPR Helpdesk website

To facilitate the signature of the agreement, it was decided that each partner should sign a separate signature page as many times as there are parties. Once all partners sent the originals to the leading partner, this partner delivered the agreement and signature pages to all the others. To avoid any further uncertainty, the coordinator verified once again the terms of use made available by the cloud provider when signing up to the service, in order to guarantee that this provider and relevant third parties are bound by appropriate confidentiality obligations with regards to all the information which would be held in the cloud. Moreover, the coordinator also sent around to the other partners a copy of these terms of use, to make sure they were well aware of the level of security of the service.

A summary of the lessons learned from this case study are:

- In the negotiations for the preparation of the project proposal, it is suggested to conclude a non-disclosure agreement (NDA) to keep valuable information confidential between partners.
- In a consortium with a large number of partners, it is possible to facilitate the signature of agreements by requesting each partner to sign a separate page
- Before relying on a cloud provider's services, it is highly recommended to carefully go through the provider's terms and conditions before making the final decision to use the service and consider resorting to a private cloud, which generally provides for better control of confidentiality

Source: IPR Helpdesk

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/case_study_confidentiality_updated.pdf

Non-Disclosure Agreement (NDA)

The best way to keep something confidential is not to disclose it in the first place. If you do need to share information you should use a non-disclosure agreement (NDA).

An NDA is a legal contract. It sets out how somebody shares information or ideas in confidence. Sometimes people call NDAs confidentiality agreements.

Universities and research organisations usually involve in many of their projects non-employees such as students. It is important that these individuals are also covered under confidential obligations not only to keep information safe, but also to make sure there is not a breach of any NDA.

Researchers are usually the ones handling confidential information. It is therefore essential for a researcher to review carefully the confidential obligations under his/her employment contract and be sure whether and when the information is marked as "confidential".

Sources:

IPR Helpdesk

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Non_Disclosure_Agreement.pdf

UK Intellectual Property Office

<https://www.gov.uk/government/publications/non-disclosure-agreements/non-disclosure-agreements>

Case Study 2

Protection of databases

Within the 7th FP, a project involving a consortium of 14 partner organizations from 8 different countries, has been launched with the objective to create management tools for rare diseases. The partners agreed to jointly own the two databases which created as a result of the project activities since they all have an interest in the data provided.

The contents of the databases consist of guidelines, which have been developed by organizations outside the consortium, so the original expression of those guidelines can be protected by copyright to the benefit of the organizations that have created them. For this reason, the partner responsible for the development of the databases had to ensure not to infringe potential rights of the content and to seek prior authorization to integrate them into the database whenever required. However, the protection of the content of a database is independent from the one which applies to its structure. The arrangement of contents may benefit from copyright and/or database *sui generis* protection in the EU, but this protection does not extend to the database contents. As a result the databases may potentially qualify for two distinct types of protection. On the one hand they can be protected by copyright as regards the selection and arrangement of the contents. On the other hand, partners could potentially rely on the *sui generis* database right and the database maker will be granted protection for 15 years following its completion and is renewed once updates are performed.

Potentially qualifying for copyright and *sui generis* database rights the databases would be automatically protected. The partners agreed to make the databases available on the website of the project with a copyright notice (©, name of copyright partners, year of creation) as well as the indication that a *sui generis* database right protects them in accordance with the European law.

Some lessons learned from this case are:

- Seek authorization before integrating protected third party contents into databases
- Databases may potentially qualified for copyright and *sui generis* database rights protection
- Include notice of copyright protection to prevent infringements
- Verify employees rights to guarantee their strengths

Source IPR Helpdesk:

https://www.iprhelphdesk.eu/sites/default/files/newsdocuments/CS_database.pdf

Allocation of shares of jointly developed results

In the framework of an FP7 Cooperation project, a consortium composed of a University, an SME and a large company developed an invention likely to be patented. In the Consortium Agreement, different IP issues were tackled and regulated, but issues related with the distribution of foreground jointly developed, were not clear.

Since the partners had not clarified in detail a clear arrangement of ownership, they applied the default regime provided by the Grant Agreement, which states: "*in case several beneficiaries jointly carry out the work generating foreground and where their respective share cannot be ascertained, such foreground will be held by these beneficiaries under a regime of joint ownership*". Since the effort, resources and time invested by the partners were not equal and due to their different approaches, it was not possible to reach to an agreement on how to allocate their shares of ownership over the results.

As the partners were not able to agree on the joint ownership, the Coordinator proposed an equal distribution of shares which was finally accepted. After the project end it was obvious that not all partners had the same capacity to exploit the IP and both the University and the large company decided to transfer their shares to SME which was willing to hold the exploitation rights, giving as an exchange a percentage of the revenues acquired by the exploitation and in addition free use of the patent rights in further research activities.

This case shows that it is necessary to decide from the beginning the manner in which the ownership of the results is going to be governed and co-ownership of IP should be avoided as a "default solution".

Source: IPR Helpdesk,

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/CS_Allocation_of_shares_of_jointly_developed_results.pdf

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/IP_joint_ownership_updated.pdf

From University to Industry: Borean Pharma A/S

Borean Pharma A/S (<http://www.boreanpharma.com>) is a private biopharmaceutical and protein engineering company based in Aarhus, Denmark. The company was established with the objective of developing a new generation of pharmaceutical protein products. Borean's competitive advantage lies in its proprietary technology, which enables it to develop a new generation of highly efficacious protein-based compounds with potential therapeutic applications.

Borean Pharma started as a university spin-off project. In 1993, the founders, in cooperation with Cheminova A/S Denmark, commercialized the first established elements from Borean's technology platform. Together with Cheminova, they established the first spin-off company, Denzyme ApS, which was later developed and acquired by Cambridge Antibody Technology Ltd., a British firm. In 2001, the founders, their counterpart in Cambridge and the pre/seed-investor NOVI A/S agreed to unite all the elements of the technology platform of Borean Pharma to jointly endeavor to raise venture capital for the establishment of a biotechnological company.

Borean has now embarked on a mission to create the next generation of protein-based pharmaceuticals to combat major human diseases. Its scientific research aims at developing therapeutic protein products which may replace or supersede antibody products in pharmaceutical applications. In early 1990s the company came up with a revolutionary idea of folding and unfolding proteins until they take a desired shape that can be used for therapeutic purposes.

The Danish Invention Center supported the scientists from 1997 until the actual spin-off in 2001. During this period, the Center provided financial support and guidance on drafting the business plan, gathering market information and identifying investors. The firm has been backed by an investment syndicate consisting several investors including Aarhus University and the founders themselves. Borean successfully raised venture capital amounting to 10.7 million Euros in 2001, and a total of 5.5 million Euros in a series of equity financing in 2005.

Borean's initial patent applications were filed with the assistance of the Danish Invention Center, financed by the Danish Ministry of Trade and Industry. The company holds a number of pending patents and international patent applications. It has also filed a patent application with the USPTO. The trademarks of the Borean Pharma word and logo are also protected in many countries including the United States.

Two key factors played the crucial role behind the success of Borean. The firm's competitive advantage comes from its innovative research work leading to its current proprietary and technological position. At the same

time, in order to secure value addition, Borean is highly focused on protecting its IP. These two factors have enabled Borean to develop a new generation of highly efficacious compounds and antibody analogues with strong market potential.

Source: WIPO, <http://www.wipo.int/ipadvantage/en/details.jsp?id=2565>

Hydro-Coat: Duly protecting research project results

HYDRO-COAT FP7 project started in October 2009 and ended in September 2011, with a view to developing knowledge for the production of a new range of environmentally friendly machines intended for the construction and mining sectors. The consortium partners came together to find a solution to the problems that the use of oil-based hydraulic machines can cause. Fossil oil-based hydraulic fluids and lubricants are persistent and toxic. In addition, exhausted lubricants are carcinogenic. Moreover, the use of oil-based hydraulic machines poses severe fire and safety concerns in industrial environment (e.g. high temperature).

During project implementation the following three *main results* have been achieved:

- *One result* consisted of new scientific knowledge related to the integration Diamond Like Carbon & Cellular Nano Coating aiming at enhancing wear resistance and the lubrication effect by the combination of two types of coating on sliding contacts;
- A *second result* concerns a water hydraulics circuit design intended as the new design of the hydraulic coating components. This is needed for the assemblage of the final machine;
- A *final result* achieved by the consortium concerns the industrial process itself. Namely, the effective coating industrial process for high-pressure water applications properly designed to comply with the production requirements of hydraulic components on an industrial scale.

The *first result* is fully owned by one SME participant and will be permanently licensed to other three of them, since is the only one able to manufacture the new coatings, while the others are producers of the final machines or of their different components. They will therefore have permanent access to the technology, although without the right to sub-licensing.

Because the *third result* is of common interest for all the producing parties, it will be jointly owned by all SMEs. Concerning the licence regime,

these are *licences to use*, meaning that SME partners will have the right to ask for the technology to be produced and to use it at manufacturing costs. As far as *access rights* are concerned, background owned by the RTD performers or by the SME partners needed for the project implementation has been granted royalty-free to all partners for the duration of the project.

The project shortcoming concerns the fact that none of the IP respectively owned by the SME participants has been protected yet, although they are evaluating the most suitable foreground protection. The importance of the project achievements and their inherent economic value would indeed suggest an immediate action to avoid the loss of the state of the art.

Even though the results created in the HYDRO-COAT project have a great commercial potential, the SMEs involved have not taken early actions to protect them as intellectual property rights. Many other SMEs are in this same situation because they may lack awareness of the importance of IP or because they do not have the necessary financial resources or even time. In this case, the European IPR Helpdesk can assist SMEs by providing assistance.

Source:

https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Hydro_coat_case_study_0.pdf

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