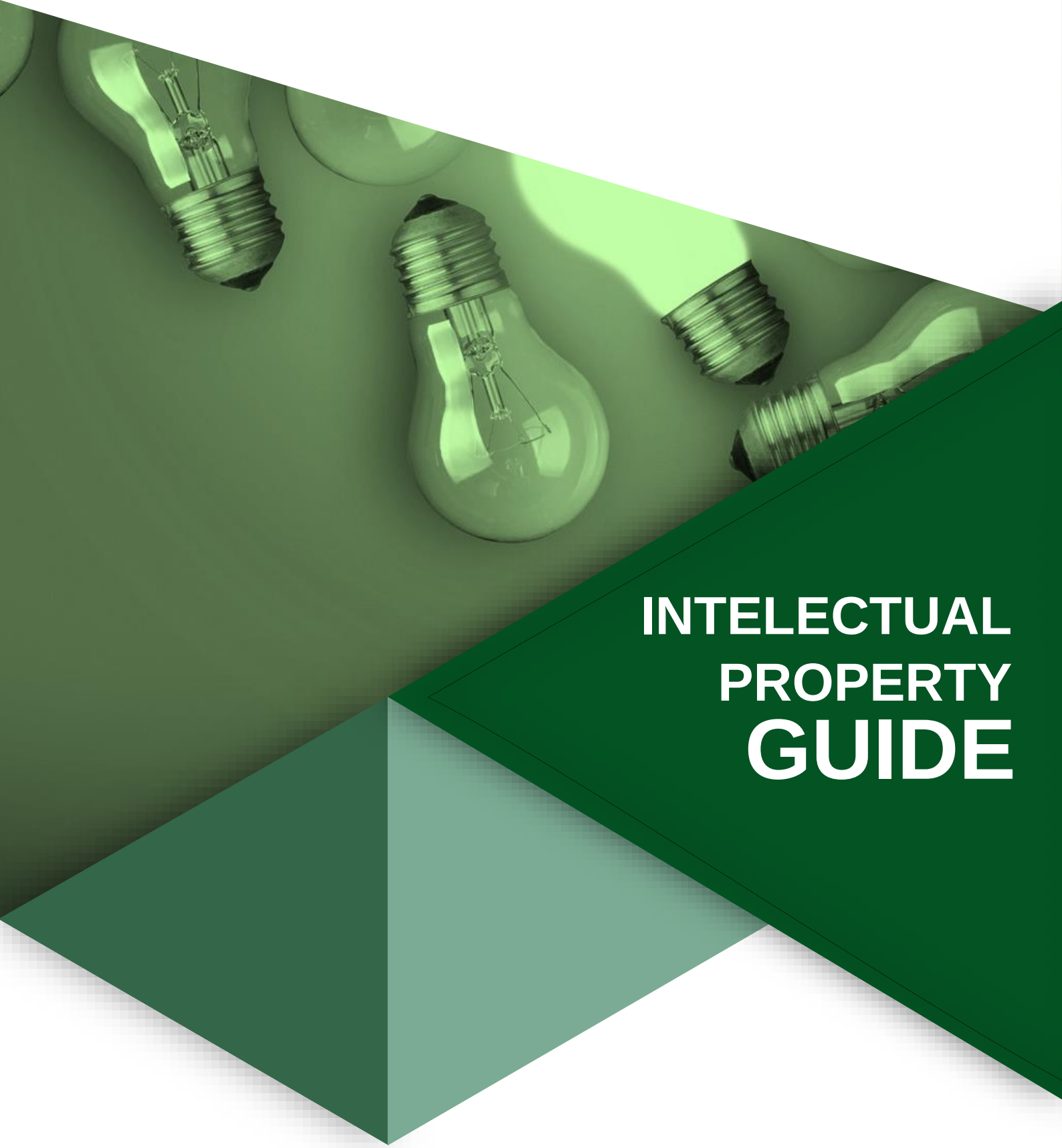

INTELECTUAL PROPERTY GUIDE

Knowledge Circle

POLITÉCNICO DE LEIRIA
IPCA INSTITUTO POLITÉCNICO DO CÁVADO E DO AVE
Cofinanciado por: COMPETE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

Contents

Introduction

Polytechnic Institute of Cávado and Ave (IPCA) has the mission of serving the society, creating, advancing, and disseminating knowledge, aiming to problems resolution. It is an IPCA priority to promote the dissemination of research results, as well as to promote the social and economic valuation of knowledge, through the transfer of technology between IPCA and the business world, either through support for innovation and entrepreneurship and also by establishment of several partnerships with companies, non-governmental entities (public and private) and associations.

Based on these assumptions, IPCA under the “Knowledge Circle” project has devised this Guide, which is intended to serve as a reference for use during your academic and/or research activities, helping to provide an overview of the main issues related to Intellectual Property (IP) that are likely to arise during an academic or research career. This guide aims to:

- Create and develop multidisciplinary entrepreneurship training programs;
- What is the nature of Intellectual Property and how you can create and protect it;
- How to safely use IP belonging to a third party;
- How can IP be commercialized;
- What is the importance of secrecy;
- How to promote the creation of new spin-off companies;
- How can we support the incubation and acceleration of high-impact start-ups;
- Promote the strengthening of IPCA IP protection and valuation;
- Present the initiatives and results of technological innovation and specialized services on international platforms, and
- Facilitate access to venture capital finance at an early stage.

This guide allows us to have an overview of the concepts related to Intellectual Property (IP), Knowledge Transfer (KT) and Technology Transfer (TT). It covers concepts such as:

- the property;
- benefits;
- distribution and commercial development of knowledge;
- technology developed by IPCA students, collaborators, research fellows, research visitors and other individuals who collaborate with IPCA, whether in their Organic Units and/or Research Groups/Units.

This guide is not intended to cover all potential forms of knowledge transfer and enhancement; rather, it intends to focus on the commercialization of research and the transformation of IP assets into socioeconomic value.

It will serve as a reference for those who carry out research and/or development, both professionally and in academic life. Giving an overview of IP is the main objective, as well as presenting possible questions related to this topic that will naturally arise during your professional or academic life. This guide should be read in the context of the guiding principles, mission and objectives published by the institution. IPCA, through several additional initiatives, organized by its different Organic Units and with a strong focus on innovation, hold some active patents, in the various areas of scientific knowledge.

The information that is presented here is limited in scope. In case of conflict with IPCA Intellectual Property Policy, the latter always applies.

Knowledge and Technology Transfer – Overview

This section includes a description of Knowledge and Technology Transfer concepts, as well as a summary of the main stages of this process in IPCA, setting the stage for further questions and answers throughout this guide.

> "An innovation is a new or improved product or process, significantly differentiating itself from its predecessors and which has been made available to potential users or within a unit."
>
> Oslo Handbook 2018, p.20

What is Knowledge Transfer?

Knowledge Transfer (KT) allows research results, discoveries, scientific discoveries, technology, data, software, literary works, know-how and other forms of intellectual property (IP), to pass between different interested parties. In the case of the university point of view, this refers to the transfer of these assets to industry, government institutions or to society in general, thus increasing competitiveness, development, and well-being, through the generation of social and economic value.

Knowledge transfer occurs through formal and informal channels:

- Formal channels: normally fall within the legal scope, through which the parties clearly establish the terms of the transfer of certain intellectual assets, for example:
  - licensing;
  - search by contract;
  - other forms of search marketing.
- Informal channels: refer to personal contacts and, therefore, to the implicit dimension of knowledge transfer. As examples we can present:
  - the mobility of human capital;
  - teaching;
  - mentoring, interactions at conferences and seminars;
  - informal exchanges between researchers or academia and industry, or students entering the job market.

What are typical steps in the Knowledge Transfer process?

Knowledge transfer can be summarized in 9 steps:

1. **Need of identification:** determine what knowledge is needed to achieve the organization's objectives.
2. **Knowledge acquisition:** collecting and storing relevant information, either through internal or external sources.
3. **Knowledge sharing:** making acquired knowledge available to those who need it, whether through training, documentation, or collaboration tools.
4. **Application of knowledge:** help to apply the acquired knowledge in their daily tasks and encourage innovation.
5. **Measurement and evaluation:** measure the success of knowledge transfer and assess whether objectives have been achieved.
6. **Maintenance and updating** to keep knowledge current and relevant, removing or adding information as necessary.
7. **Encouragement and recognition:** encourage and recognize employees who contribute to knowledge transfer and help maintain the culture of learning and sharing in the organization.
8. **Integration:** integrating the acquired knowledge with the organization's policies, processes, and strategies in order to maximize its impact.
9. **Continuation:** Continue to monitor and improve the knowledge transfer process to ensure that the organization's objectives are achieved and maintained.

However, note that:

i. these steps can vary in sequence and often occur simultaneously;
ii. this specific flow is essentially focused on the commercialization of research, although there are other ways of transferring and valuing knowledge;
iii. this whole process can take months or even years to complete. For inventions, the amount of time depends on several factors, such as the level of technology readiness (TRL), potential markets, competing technologies, additional work required to bring the technology to market, available resources, or the willingness of the inventors.

1. **Research :** Observations and experimentation during research activities often lead to discoveries, inventions, or other research results (eg, software, research materials) with potential commercial value. Often, several researchers may have contributed to a given Intellectual Property Right.

2. **Pre-Disclosure :** To discuss your discovery and provide guidance regarding the disclosure, assessment and protection processes described below.
3. **Disclosure Form:** Formal report of the invention or material protected by copyright - the written notification that initiates the formal transfer process. The Invention or Copyright Disclosure Form remains a confidential document and must fully document your invention so commercialization options can be evaluated and pursued.
4. **Evaluation:** The period on the Disclosure Form is reviewed (with your entry), prior art research is conducted, and market analyses are conducted to determine the commercialization potential of the disclosed research results. The evaluation process will guide the best strategy for commercially exploiting the disclosed results, which may include selling or licensing it to an existing company, creating a new business or social enterprise, or, where appropriate, collaborating with industrial partners to increase the TRL before marketing.
5. **IP Protection:** The process in which the best protection route is defined to maximize the social and economic impact of search results. In the case of patent protection, the process normally begins with the filing of a patent application at the Portuguese Institute of Industrial Property (INPI) and, when applicable, with international applications. Protection and maintenance fees can demand thousands of euros, especially if the inventions are internationally protected. Other protection options include copyright, trademark, design, or trade secret, for example.
6. **Commercialization:** The active involvement of inventors/authors can dramatically increase its success. This process refers to the sourcing of potential licensing and/or candidate companies with the knowledge, resources, and business to bring the work or technology to the market, which includes its exposure on national and international platforms or events. Marketing efforts can also focus on finding industry sponsors to fund additional research or market studies. If the creation of a new spin-off business presents itself as the best way of valorisation, IPCA will work, within its capacities, to assist the founders in the creation of the enterprise and application of *IPCA Spin-off* seal.
7. **Negotiation / Licensing:** After a negotiation process to define the terms and conditions for the commercialization of the IP asset, a license agreement is made between IPCA and a third party, in which IPCA's rights to a technology or protected material by copyright are licensed for financial and other benefits. This applies to both new spin-offs and established companies. IPCA Spin-offs formally

recognized can obtain an exclusive license to an IP right developed by their promoters, free of charge until the commercialization stage.

8. **Business Development:** When licensee continues to advance the licensed IP could make other business investments to develop the product or service. This step may involve additional development, regulatory approvals, sales and marketing, support, training, and other activities.
9. **Income:** The income received by IPCA from licensing is distributed to inventors/authors, Organic Units and Research Units or research groups to support new R&D and innovation activities. The ultimate goal of developing and marketing innovative solutions is to give back to society, contributing to the economic and social development of the country and to the creation of highly qualified jobs.

Source : NOVA University of Lisbon

B. Intellectual Property – Brief Presentation

This part includes a description of concepts related to Intellectual Property, focusing on the main instruments of IP Protection (from inventions and industrial designs to distinctive commercial signs, trade secrets or artistic and literary works, including software).

B1. Intellectual Property Rights - General Considerations

B1.1 What is Intellectual Property (IP)?

IP is a set of rights that cover the creations of human knowledge - intellectual creations and is divided into two main areas:

- Copyright and related rights: aim to protect intellectual creations in the literary, scientific, and artistic domain, such as music, books, films, paintings, and computer programs, which enjoy protection analogous to the protection conferred by copyright.
- Industrial Property: its purpose is to protect inventions, aesthetic creations (designs) and distinctive trade signs, used to distinguish products and companies on the market, covering exclusive use, production, and marketing rights. As industrial property modalities provided for in the Industrial Property Code, we have trademarks (allow to distinguish products or services in the commercial

environment), logos (allow to distinguish an entity, trader, or establishment), patents (protect inventions of products or processes that are not known public) and drawings or models (designating the appearance of all or part of a product).

IP is a term used to describe the rights that protect your ideas and other forms of intellectual creation. It is composed of a set of different rights. Some rights have to be registered to be effective, others come automatically. IP can be divided into 6 main categories:

- **Patents.** Protect inventions for products or processes.
- **Copyright.** Protects items such as written works, diagrams, graphics, computer code, photographs, music or even performances.
- **Database Rights.** Protect collections of works or data (e.g., results, samples, or information from a particular patient)
- **Know-How.** Is any secret, technical information that is valuable and identifiable, including results, experimental techniques, formulas, chemical structures, source code, etc.
- **Drawings.** Protect 3D objects or drawings applied to them, for example laboratory, equipment or the design of a teapot or the design of a wallpaper.
- **Brands.** KELLOGG'S, MARS, ORANGE, and iPod are examples of successful brands. Their value resides in the fact that they denote the origin and quality of the products to which they relate. Trademarks can appear automatically, or they can be registered.

Being creations of the human mind, which benefit from the legal protection of a property right, they are therefore essentially intangible assets. As we saw above, the main legal mechanisms for IP protection are patents, brands, and copyrights, covering a variety of creations, from literary and artistic works, symbols, names and images to inventions and trade secrets.

Intellectual property includes all exclusive rights to intellectual creations. It covers two types of rights:

1. Industrial Property, which includes inventions (patents or utility models) and topography of semiconductor products, protecting technical creations, as well as industrial designs and models, brands, logos and geographical indications, mainly protecting aesthetic creations and commercial signs; and

2. Copyright and Related Rights, intended to protect literary and artistic works - such as:

a) Books;
b) Songs;
c) Films;
d) Photographs;
e) Computer programs.

Copyright protects both economic rights, which allow rights owners to obtain a financial reward for the use of their works by others, and moral rights, which allow authors and creators to take certain actions to preserve and protect their work. bond with your work. Related rights are usually related to rights granted to three categories of beneficiaries:

- Interpreters;
- producers of sound recordings (phonograms);
- broadcasting organizations.

The importance of trade secrets is also recognized to protect confidential information with commercial value, the acquisition of which without the consent of the holder of the trade secret constitutes an illicit act.

B1.2 What is the difference between IP and IP Rights?

IP refers to creations of the human mind, as are all forms of knowledge that we are capable of creating. As an example, we have inventions, literary and artistic works, symbols, names, images and designs used in commerce. Intellectual Property Rights (IPR) are the legal titles to which we claim the right to prevent others from using and exploiting IP.

We can thus consider in a broader sense that IP can be considered the knowledge we create every time we carry out research activities. In turn, the IPR's are the legal titles that attest to the ownership of certain knowledge, the contract that is made between the applicant and society to value the investment made by the IP holders in its development. Both IP and IPR's can be exchanged between organizations, leading to better use of that knowledge and innovation. DPI's can be considered instruments for IP transactions to be more economically valued, as they offer a competitive advantage to entities that are authorized to use and exploit them. By only transferring the IP, we cannot prevent others

from using it without our authorization. Ownership of a certain IP asset is demonstrated by the existence of those IPR's, and other entities or organizations can only use it if we allow it and under agreed conditions.

B1.3 Are intellectual property and industrial property the same concept?

No. Intellectual property encompasses all exclusive rights to intellectual creations, including industrial property and copyright. Industrial property is thus a subset of intellectual property, which takes various forms, such as patents for inventions, trademarks, industrial designs and models and geographical indications.

B1.4 What are the different IP protection instruments?

- Inventions: patents or utility models;
- Distinctive commercial signs: trademarks, logos, geographical indication or designation of origin;
- Design: industrial designs;
- Artistic and Literary Works (including software): Copyright;
- Trade secret.

B1.5 Does IP protection have a time limit?

IP is only protected for a limited period of time, after which it ceases to be protected and falls into the public domain. In general, when an IP right expires, everyone can use it without restrictions from the right holder.

- The term of protection must not be less than 20 years for patents.
- The term of protection for utility models is shorter than for patents and varies from country to country (generally between 6 and 15 years).
    - In Portugal, utility models have a maximum duration of 10 years. The term of protection is counted from the filing date of the application, not the granting date.
- In turn, the protection of trademarks and logos lasts for 10 years and may be renewed indefinitely for equal periods.

- The design registration can be kept for 25 years (the INPI registration is valid for 5 years and can be renewed for another four periods of 5 years).

In Europe and Portugal, in particular, Copyright protection generally lasts for 70 years after the author's death, but the term of Copyright protection may vary from country to country.

B1.6 What is the difference between "Background IP" and "Foreground IP"?

These are terms used in collaborative research consortia or agreements, where it is intended to establish research partnerships between various stakeholders, whether these parties are academic or non-academic partners, or both.

We can define Background Intellectual Property (Background IP) (European Commission definition) as: any data, know-how or information (whatever its form or nature - tangible or intangible), including any rights such as property rights intellectual - that:

a) is held by the Beneficiaries before they enter into the Agreement,
b) where it is necessary to implement the action or exploit the results.

Background IP therefore contains all Intellectual Property, whether protected by IPR or not, that a partner brings to a project, and which will be used as the basis of an Outcome.

Foreground Intellectual Property (Foreground IP), or also Results, as defined by the European Commission: is any result (be it tangible or intangible) of the action. Examples: data, knowledge, or information - whatever its form or nature, whether it can be protected or not - that is generated in the action, as well as any rights linked to it, including intellectual property rights.

In the context of research and development (R&D) collaborations, intellectual property (IP) is divided into:

- **Background IP:** is the intellectual property generated before the current project.
- **Foreground IP :** is the intellectual property generated during the current project.
- **Secondary IP (Side ground):** is the intellectual property generated during the current project, but not in activities related to the project.
- **Post ground IP :** is the intellectual property generated after the end of the current project.

These are the four distinct forms of IP assets. They are included in the broader and more general categories of knowledge in R&D or open innovation collaborations. While IP and background and foreground knowledge are fairly established concepts, IP and secondary and foreground knowledge have more recently been added to the conceptual vocabulary.

It is very important to define Background and Foreground IP Access Rights at the beginning of a research collaboration with a third party, i.e., the rights to use results or background under the terms and conditions set out in the research agreement.

As a general rule, these Access Rights are granted royalty-free for the implementation of the project, the use of the History and the Result, protected or not, by a Partner, must be regulated by contractual mechanisms, following IPCA IP Policy .

Therefore, it is also important to properly manage Access Rights: care must be taken not to grant the same Access Rights to different partners, for example, one should not grant exclusive worldwide licenses to two different partners, as the licenses cannot be exclusive.

B1.7 What is an invention?

An invention or act or effect of inventing, or else the ability to invent, is a product or process that provides an innovative and inventive solution to a technical problem. Products include goods and tools, equipment such as production facilities, and machinery and materials such as chemicals or textiles, while processes describe activities for specific purposes, such as manufacturing processes (work or production steps for a manufacturing process) , control procedures (process steps for using an apparatus or machine) and measurement methods.

Inventions can be protected by a patent (but they can also be protected by a utility model). An invention usually consists of several technical characteristics, including the relationships between them. In short, an invention uses technology to solve a specific problem in a new, non-obvious, technical way. The technical character is necessary for patenting and requires that the laws of nature be used to achieve the objective.

B1.8 “Inventor” vs “Author”: What do you need to know?

These terms are often confused, and it is important to know the distinction to properly manage IP.

Inventors are responsible for creating an invention, and the term invention belongs to the intellectual property branch of Industrial Property. On the other hand, an Author is someone who created a written document or a literary/artistic work. Here, authorship belongs to the branch of Intellectual Property Copyright. In terms of relationships between these, we can also say that not all inventors are authors and vice versa.

To determine the " Inventorship " there are two main requirements:

1. **the conception of the idea** and;
2. **the realization of the idea.** An inventor to be considered as such must have made an "active contribution" to the production of the invention, in the sense that without his personal involvement the invention would not have been conceived. On the other hand, a person is not considered an inventor if he has only done work under the direction of others. For example, project managers or heads of projects or proof-readers cannot be considered inventors if they have not made any inventive contribution.

Therefore, an inventor must contribute to the design of the invention. Conceives the idea, materially contributes to the development of the invention, provides solutions to problems and/or implements the innovation. A person who presents hypotheses, passively follows instructions, performs routine tasks, and runs test results is not considered an inventor.

B1.9 How do I know if I invented or created something?

The concepts of invention and creation are contained in the IP Code. Thus, the concept of Inventor refers to all those who produce objects susceptible to protection by patent or utility model, while creator refers to those who produce objects susceptible to protection by topography of semiconductor products.

The following activities are not considered inventions:

- Discoveries (e.g., when a gene is merely found and described);
- mathematical methods and scientific theories;
- natural materials and substances (in their natural state);
- aesthetic creations;
- projects, principles, and methods of intellectual development;
- gaming-related activities or commercial activities;

- software as such without any technical application;
- information presentations.

Author refers to literary and artistic works whose concepts are contained in the Code of Copyright and Related Rights.

B2. Patents and Utility Models

B2.1 What is a patent?

A patent is a territorial and time-limited IP Right. This gives the patent owner(s) exclusive rights to the patented technical invention. Allows the owner to prevent third parties from using the invention for commercial purposes for a period of 20 years. Patents can be used to protect products, processes or the use of a product that provide a new way of doing something or offer a new technical solution to a problem.

Patents can be considered as a social contract between the applicant and society. This grants protection to applicants (innovators - also increasing the motivation to innovate) in exchange for the disclosure of the invention to society in general.

A patent must describe the technical problem that it proposes to solve, as well as the invention that solves it and how this offered solution differs from some known prior art.

The patent holder (applicant) may give permission or license other parties to use the invention on mutually agreed terms. The owner can also sell the right to the invention to someone else, who will become the new owner of the patent. Remember that a patent expires, so protection ends, and an invention enters the public domain; that is, anyone can exploit the invention without infringing the patent (e.g. generic drugs).

It should be noted that, even if a patent is granted, it is not guaranteed that the patent holder will be able to commercially use or exploit a patent, as access to other patented inventions may be necessary, for such use or exploitation, in order to to prevent the infringement of other IP rights.

B2.2 What is a utility model?

It is relatively similar to a patent. Utility models aim to protect new technical inventions by granting a right that is exclusive and limited, to prevent third parties from commercially exploiting these protected inventions, without the consent of the right

holders (generally lasting 6 to 10 years from from the filing date – in the case of Portugal it is 10 years). These rights are also called “short-term patents” or “utility innovations”.

In general, these models are considered particularly suitable for protecting inventions that make small improvements and adaptations to existing products or that have a short commercial life. They are often used by local inventors.

Utility models protection is often sought for innovations of a very incremental nature and for not meeting the patentability criteria, as the requirements for acquiring utility models are typically less stringent than for patents.

B2.3 What makes an invention patentable?

To be protected by patent, an invention must meet the following three requirements:

1. **It's new.** It must, therefore, present an element of novelty, some new feature that must not be part of the "prior art". By prior art , we mean all existing knowledge that was publicly available anywhere in the world prior to applying for a patent, including print and online publications, as well as public lectures and exhibitions. Anything that is disclosed about the invention prior to applying for a patent is considered prior art (eg, an article, an oral presentation, an internet posting, etc.). So, make sure you keep the invention a secret until it is protected.
2. **Invention involves inventive activity**. This means that the invention must not be obvious to a person who is “technically gifted”. Thus, showing the purpose of your invention to an expert in the art, if that person promptly presents the same solution, then your solution is no longer considered inventive.
3. The invention must be **industrially applicable and practicable** (it can be used or manufactured in industry or agriculture), and it must be possible to replicate its implementation.

Furthermore, the invention must be accepted as “patentable” according to the law. So according to European law, for example, mathematical models, computer programs “per se”, scientific theories, aesthetic creations, plant varieties, discovery of natural substances already existing in nature, business methods or medical treatment methods (as opposed to medical products) are not considered patentable.

Full set of patent FAQs on the WIPO website - **https://www.wipo.int/portal/en/#.**

Can ideas be patented or protected?

The direct answer is no. Ideas are a critical and valuable part of the overall innovation equation, as nothing can or will happen without ideas. However, by themselves, ideas are not monetarily valuable. If there is no identifiable manifestation of the idea, no intellectual property protection can be gained and therefore no exclusive rights will flow. So what do inventors need to do?

1. **Identify a problem;**
2. **Formulate the idea;**
3. **Work to find a technical solution.**

So, the goal is always to reach a point where the idea is capable of being realized, at least to be more than a mere idea. Let 's face it, mere ideas cannot be protected, so it's wise to think in terms of an invention.

What are the main avenues for patent protection?

It is possible to apply for a patent for an invention only in one or several countries individually or by choosing a centralized application procedure such as the European or International Procedure (PCT). Procedures can also be combined, for example, the filing date of the first application always establishes the priority date.

1. National patent application

The Portuguese patent application must be filed at the INPI - Portuguese Institute of Industrial Property, where the official language of the process is Portuguese. However , the application may initially be submitted in English. However, after a period of one month counting from the corresponding notification from the INPI, a Portuguese translation must be submitted.

i. Documents to be presented to apply for a patent in Portugal:
ii. claims of what is considered new and inventive and characterizes the invention;
iii. detailed description of the object of the invention;
iv. drawings necessary for the perfect understanding of the description (when applicable);
v. summary of the invention;
vi. drawings for publication in the IP Bulletin (if there are drawings necessary for understanding the abstract);
vii. a title for the invention;
viii. identification data of the inventor(s) and applicant(s).

The average time between filing the application and granting a patent in Portugal is 2 to 3 years.

A provisional patent application (PPA) can also be filled, to secure a priority date, without having to meet all the stringent requirements of a definitive (non-provisional) patent application. However, this PPA must be converted into a definitive order within 12 months of filing. Also, within 12 months from the filing date of the domestic application, it is possible to file an international application under the PCT (Patent Cooperation Treaty).

Learn more on the INPI website: **https://inpi.justica.gov.pt/.**

2. International patent application

Through the Patent Cooperation Treaty (PCT), applicants seeking international patent protection for their inventions can get help with making decisions about granting patents and thus have access to a wealth of technical information. By filing an international patent application under the PCT, applicants can simultaneously seek protection for an invention in most countries around the world. Thus, it is possible to apply for protection in as many member states of the Patent Cooperation Treaty (PCT) as you wish – and therefore virtually worldwide. The application is submitted to the WIPO (World Intellectual Property Organization), but it can also be done through the INPI or the European Patent Office (EPO). WIPO conducts a prior art search and publishes the search report with the application. Within a period of 30 months after the priority date, it is mandatory to start the national phase and proceed with requests for examination at the desired offices. The application will be studied in accordance with the national laws of each country, and the grant or refusal is the responsibility of that country. The same invention may be refused in one country and granted in another country.

Under the PCT procedures, we typically have up to 18 months from the time we fill an international patent application (or 30 months from the filing date of the initial patent application for which a claim takes priority) before we proceed to the national phase procedures with individual patent offices. A European application is assigned to the PCT European regional area and therefore must be filed with the European Patent Office.

Fee payments at the international stage are generally made to the receiving Offices and the International Preliminary Examination Authorities. The respective values and currencies can be found in the PCT Rate Tables.

An overview of PCT contracting states can be found on the WIPO website: **https://www.wipo.int/academy/pt/.**

3. European patent application

Through a European patent application, it is possible to obtain patent protection in member countries of the European Patent Convention (EPC).

Application examination and patent granting take place centrally through the European Patent Office (EPO). Between the filing date of the application and the granting of a European patent, it takes about 3 to 5 years. After granting the patent, it is necessary to pay the renewal fees in the countries where you want to keep the patent in force. At the time of validation of the European patent in the designated countries, national fees are due in those countries (fees vary from country to country). To request patent validation in a given country, it is necessary to present the translation of the document into the official language of that country at the corresponding institute (for example, at the INPI, in Portugal).

Through the European direct route, the procedure is governed by the EPC, which implies that a patent can be filed directly with EPO, or through INPI (if it is the first patent application to be filed - priority filing). Time and effort is saved, as through a single application provisional protection can be obtained in most European countries and with another advantage - the invention will be examined for novelty and inventive step by EPO before the patent is granted. The costs of a European patent are higher than the costs of a national application.

If the priority of a previous national application is not claimed, the European patent application must be filed with INPI, otherwise the patent, once granted, will not be effective in the national territory. Check more information on the INPI website or on the EPO website. For European fees consult: **www.epo.org/application/fees.**

What is a provisional patent application?

A Provisional Patent Application (PPP) is a patent application that can be used by applicants to secure a priority date for an invention, without the need to meet all the stringent requirements of a definitive (non-provisional) patent application. A PPP must be converted into a final application within 12 months of filing.

The PPP has no practical effect if it is too simplified, vague or not comprehensive. The document to be submitted must contain all the technical characteristics that will later be claimed in the definitive order, so new objects that may be found during the twelve-

month period in converting the first order to a definitive order cannot be added, since substantial changes may lead to to a change in priority date.

Thus, during a year, applicants can determine whether the invention is commercially viable and decide on a territorial extension and find companies interested in exploring the technology (although market “players” are often more confident with definitive patent applications).

Each case is different and must be analyzed separately to define the best strategy for the protection and commercialization of a given invention. That is, a PPP must be used wisely, not as a standard, but to be applied whenever duly justified and proven to be the most adequate tool for that particular situation.

All major research institutions must be able to simultaneously manage their scientific publications and IP rights with socio-economic potential. Therefore, the need to submit works for publication or defense of a doctoral thesis is important, for example, it should not represent an exceptional situation for the presentation of a PPP. The objective is to create conditions to always choose the best path for the inventions produced.

What is considered a public disclosure of an invention?

Any communication of an invention to the public is considered a public disclosure. This disclosure can happen by writing, orally or even just by displaying the invention to the public (for example, in a trade fair). As long as the recipient of the information is not bound by confidentiality, the communication is considered public. Therefore, all public disclosures before the filing date of a patent application are considered part of the state of the art. Publishing in technical journals, presentations in poster sessions, slides, lectures, seminars, master's or doctoral defenses (which are public according to Portuguese law), letters or even conversations, can count as an obstacle to patentability.

For these reasons, if you are considering patent protection, the patent application must be filed before you can make any public disclosure about your invention.

Why are patents useful?

Those who file a patent usually do so to reduce the risks they take on having to make large initial investments to bring innovative technologies to market. As patent holders, Universities can license and subsequently sell the rights to industrial partners

on mutually agreed terms, thus generating additional revenue streams for their activities, shared with inventors and their research units. An attempt is made to maximize the socio-economic impact of the knowledge produced at the University, contributing to the generation of new products and processes with industrial application and to new R&D projects that are increasingly collaborative with companies. It also allows positioning the University as an innovative and enterprising institution, creating value for the region but also for the country, in addition to companies and society.

What is the difference between the inventor, the applicant and the holder of a patent?

The inventor is the creator of the invention. To be considered an inventor, it is recognized that a certain level of “technical creativity” must be achieved. Since inventors are always natural persons, they always have the right to be named in the patent, regardless of who files the application. Co-inventors or “joint inventors” exist when a patentable invention is the result of the inventive work of more than one inventor (a team of inventors), even if they have not contributed equally in equal parts.

The applicant is the person or entity that applies for a patent (makes the application or deposit), who is not necessarily the inventor – for example, in Portugal Universities are normally the owners of inventions produced within the University – even if the inventor always maintains the right to be mentioned as such in the application.

Ownership is the recognition of a right over the invention that, in principle, will be attributed to the applicant after the patent is granted. Ownership of a patent can be transferred and the same applies to utility model creators.

Where is a patent valid?

Patents are territorial rights. In general, exclusive rights apply only in the country or region where a patent was filed, granted and in accordance with the law of that country or region.

In principle, an invention can be freely used by anyone in countries where it is not protected. This means that a product protected only in Portugal can be produced by someone else in France, for example. However, it reserves the right to import into

Portugal, which means that importation can be prevented or permitted upon payment of a license fee.

Can biological material, including genes, be patented?

Through the Biotechnology Directive of the European Union (EU Directive 98/44/EC), where “biological material” is defined as any material containing genetic information and capable of reproducing or being reproduced in a biological system. It covers nucleotide sequences, full length genes, complementary DNA (cDNA) and fragments. Thus, and in accordance with this Biotechnology Directive, inventions that are new, that involve an inventive step and that are susceptible of industrial application are patentable, even if they concern a product consisting of or containing biological material or referring to a process by means of which biological material is produced, processed or used.

Biological material isolated from its natural environment or produced by means of a technical process may also be the object of invention, provided that it has previously occurred in nature.

For human biological material, the provisions are slightly different. The simple discovery of the sequence or partial sequence of a gene cannot constitute a patentable invention. Naturally occurring genetic sequences of the human body can only be patented if any of the following conditions are met:

- biological material isolated or purified from its natural environment.
- biological material produced by means of a technical process (for example, to identify, purify or classify it, which only human beings are able to put into practice and which nature is unable to perform, even if it has occurred previously in nature), such as genetically modified DNA, cDNA and proteins.
- discovery in nature and a technical effect is revealed (for example, gene used in the manufacture of a particular polypeptide or in gene therapy).

Just finding and describing a new gene or identifying the structure of a protein that has no clear role or practical use, is not enough to be patented.

Can I get a patent for a software-related invention?

It depends on the region or country where you want to register the patent. Laws and practices in this regard differ from one country or region to another. There are countries or regions where software-related inventions must have a “technical character”

to be protected by patent (e.g., Europe), while in other countries such requirements are less stringent (e.g., in general, software can be patented in the US).

In Portugal and Europe, it is not possible to patent the source code of a computer program. We don't have the concept of “software patents” as in the US; instead, at the European level, there is the concept of “computer-implemented inventions”, defined as inventions whose implementation involves the use of a computer, a computer network or other programmable device, having one or more characteristics realized by means of a computer. computer program.

It is important to mention that patentability cannot be denied just because a computer program is involved. As with all inventions, computer-implemented inventions are patentable only if they are technical in nature, are new, involve an inventive technical contribution to the state of the art, and are industrially applicable. It should be noted that the technical effect provided by a computer program can be a reduced (optimized) memory access time, better control of a robotic arm, more improved user interfaces, etc.

If it is not possible to register a patent for an invention related to software, it is possible to use copyright as a means of protection. For this reason, computer programs are generally protected by copyright, in the same way as literary or similar works. This protection begins with the creation or attachment of the work, such as software or a web page, and although, generally speaking, it is not necessary to register or deposit copies of a work to obtain copyright protection, here in Portugal, the software may be registered with the IGAC or ASSOFT as Copyright and marketed through software license agreements. Many companies thus choose to protect the "object code" of computer programs by copyright, while the "source code" is kept as a trade secret.

B3. Copyright and related rights

What is Copyright and Related or Related Rights?

Copyrights are the rights that protect literary or artistic creations, granting their author the exclusive right of economic exploitation, being able to authorize third parties to enjoy and use said creation/work. Copyright also gives the author personal or moral rights, which ensure respect for the personal contribution, that is, the authorship, authenticity and integrity of the creation/work. This protection conferred by copyright applies to the expression or manifestation (form) of the creation/work and not to the ideas on which it is based. Ideas, subjects, procedures, systems, operational methods,

concepts and discoveries are not protected by Copyright, as they are commands for action or execution without artistic expression.

As a whole, the functioning of the copyright system also includes the rights of artists, audiovisual producers and broadcasters, which are often referred to as “Related Rights”. They are not the authors or creators of the works, but they have a close relationship with them, as they disseminate literary or artistic works, bring technical and organizational skill to the production of particular expressions of works protected by copyright.

According to the Berne Convention, works protected by copyright include all types of production in the literary, scientific and artistic fields, such as (non-exhaustive list):

- books, pamphlets and other writings.
- lectures, speeches and other works of the same nature.
- dramatic or dramatic-musical works and choreographic works.
- musical compositions with or without words.
- cinematographic works.
- drawing, painting, architecture, sculpture, engraving and lithography works.
- photographic works.
- works of applied art.
- illustrations, maps, plans, sketches and 3D works relating to geography, topography, architecture or science.

Copyrighted works that also include computer programs, defined as a set of instructions that control the operations of a computer to enable it to perform a specific task, such as storing and retrieving information, are not included in the Convention's list. from Bern,

How to represent a copyright notice in the appropriate IPCA?

Although copyrighted works do not require a copyright notice, we recommend that you use one. For works owned by IPCA, use the following notice:

“Copyright © [year /year] IPCA. All rights reserved / All rights reserved”.

What is open source software?

The basic principle behind Open Source Software is that the source code of the software is made available, thus allowing others to modify and add to the software. Another aspect is that an Open Source license means that there must be license conditions compatible with the principles defined by Open Source Initiative. An example

of this is free redistribution or non-discrimination against people, groups or areas of activity. For more information, see **http://www.opensource.org/osd.html.**

B4. Trademarks and designs

What is a trademark?

A trademark is a distinctive sign that identifies certain goods (products) or services of a company. They are also all graphic representations of a sign that can, in principle, be a mark within the meaning of the law, such as words, combinations of letters, logos, three-dimensional shapes, slogans, combinations of these elements or even sound marks. A trademark can acquire protection through registration or through use. It is generally accepted that the sign must be distinctive, not misleading or descriptive.

What is an industrial design?

From a legal point of view, the industrial design or “product design” constitutes the ornamental aspect of a given product. This industrial design can consist of three-dimensional features, such as the shape of a product, or two-dimensional features, such as patterns, lines or colors. These are applied to a wide variety of industry and handicraft products, such as:

- packaging and containers.
- furniture and household items.
- Lighting equipment.
- jewelry.
- electronic devices.
- textiles.

Registration is the only legal way to protect a design. In Portugal, the registration of a design must be requested from the INPI, through the design modality. Product design is one of the keys to consumer choice and it is therefore the appearance of the product that must and can be protected. By registering it, you protect the design from being used by third parties.

To register a design, it must:

i. not yet registered.
ii. be new and unique (not to be confused with any product, registered or unregistered, that already exists).

iii. there is no design identical to those made available to the public, in Portugal or abroad, before the date of application.

Designs that are not completely new but bring new combinations of already known elements or different arrangements of already used elements, giving them a unique appearance, can also be registered.

B5. Trade secrets and research materials

What is a trade secret?

Trade secrets are information's that are not known publicly. Examples are: formulas, manufacturing processes, methods of doing business or technical know-how. This information is kept confidential to give its holder a competitive advantage. Trade secrets, unlike patents, do not grant exclusive rights to their holder, that is, if someone develops the same information, they can use it freely. However, the unauthorized acquisition, use or disclosure of such secret information contrary to honest business practices by third parties is often considered a breach of trade secret protection and is considered an illegal act, subject to a fine.

To qualify as a trade secret, information must be:

- commercially valuable because they are secret.
- the secret is known only to a limited group of people, and
- be subject to reasonable measures taken by the rightful holder of the information to keep it confidential, including the use of confidentiality agreements for business partners and employees.

What are Research Materials?

In accordance with IPCA IP Policy, Research Materials include:

- Biological materials, including DNA (deoxyribonucleic acid).
- Other non-biological materials or products.
- Engineering projects.
- Database Content.
- Prototypes.
- Equipment and associated research data.
- Other elements associated with the previous points.

It should be noted that scientific collaboration involving the transfer of research materials from IPCA to other entities, and from these to IPCA, must be agreed in writing through a Material Transfer Agreement (MTA) and approved by the Presidency or by the Organic Units, when they have specialized services, upon presentation of a substantiated request.

Where can I file the biological material?

According to the WIPO Budapest Treaty, entities seeking patent protection for biological material are required to deposit a sample of that material with an international depository authority, so that it can be tested (for viability) and be able to be stored for up to 30 years. The following link lists all recognized depositary authorities: **Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure .**

Analyzing the Budapest Treaty, it does not include any definition of the term “microorganism”. However, biological material that may be deposited includes, for example, cell cultures of unicellular and multicellular organisms, including bacterial, fungal, plant, animal and human cells; virus; nucleic acids and proteins; and embryos and seeds. Thus, and for a better understanding, the guide for the deposit of biological material under the **Treaty of Budapest (WIPO)** should be consulted .

C. IPCA Intellectual Property Policy

This part of this manual deals with IPCA Intellectual Property Policy and intends to be a complement to the formal IP Policy document with some examples and additional explanations for specific cases.

C1. General considerations

Are there any IPCA regulations in IPCA? Why and for what?

Yes. IPCA's Intellectual Property Policy is regulated by Regulation No. 1104/2020, published in Diário da República on December 22, 2020. If you work, study, research or collaborate with the IPCA, you must read the said regulation carefully.

Creating and disseminating knowledge is the focus of all academic activities. This important asset should add maximum value to the economy, society and academia itself.

It is for this purpose, in addition to the income generation potential, that IPCA has the responsibility to protect its IP rights in the best possible way and to ensure that society can benefit from the funding that is generated and granted to the Institution.

We must therefore practice an adequate and efficient management of IP, aiming at the best international practices. It should be noted that also for IPCA, the "stakeholders" have the need to guarantee both their investments in IP, but also to safeguard the ownership of IP rights. Therefore, the existence of IP policy regulations is fundamental, so that internal and external agents clearly know what to count when dealing with IP rights (industrial property and copyright). As in any entity, our researchers are more sensitive to the development of inventions or creating other forms of socioeconomic impact, if they have the adequate resources and incentives to follow this path.

Therefore, it is important that IPCA is aware of its IP Policy, based on the principles of transparency, equity, sustainability and efficiency, in order to carry out the corresponding knowledge transfer process. Once again, the importance of the Regulation, which aims to clarify who is covered by its provisions, identifies IPCA ownership of IP rights at the Institute and establishes the main duties of inventors, creators or authors, whether internal or external. It is also intended to regulate the decision-making process, the forms of protection and exploitation of IP rights (providing conditions to continue to follow the most appropriate path, aiming to maximize the socioeconomic valuation of the invention), but also with focus on the correct distribution revenue from the commercialization of IP rights. Finally, the ultimate goal is to create the conditions for maximizing the socioeconomic impact of the knowledge produced at IPCA.

Who does IPCA IP Regulation apply to?

The IP Policy applies to all IPCA faculty, researchers, students, collaborators/employees and scholarship holders. It also applies to external persons such as research visitors or other persons who collaborate with IPCA and its Organic Units and associated Research Units, if they are using significant IPCA resources (funds, infrastructure, equipment, laboratory materials, etc.).

What are considered IPCA resources?

The significant use of IPCA resources means that this use was relevant to develop or conceive the invention, creation or work. This may include, for example, the use of IPCA facilities, specialized equipment or supplies related to research, libraries and IP owned by IPCA, IP even if it is not protected by IPR.

I created or invented something, what should I do?

You should contact IPCA so that, in a preliminary conversation about the results obtained, these can be analyzed.

C2. Property

In what situations does the ownership of an IP right belong to IPCA?

Inventions, materials or other industrial creations, developed at IPCA. The participation of people outside IPCA, in non-remunerated research activities, involving the use of IPCA resources is dependent on the acceptance of this IP Policy and the assumption of the obligation to transfer to IPCA any industrial property rights or trade secrets arising from the use of these resources, through a written statement signed by them.

Regarding Copyright, including software protected by Copyright, by default, authors hold the rights to literary, scientific or artistic works conceived or developed by them even within the scope of any research or teaching activity carried out at the University, except:

When the work results from the conclusion of a contract with IPCA, or Organic Unit, which provides for a different regime (such as, for example: “work to order”), or

When the work implied the significant use of resources or financial provisions of IPCA or the Organic Unit – in this case, the ownership of the Copyright must be defined, with reason, by the President of the Institute, based on the spirit of IPCA IP Policy.

In either case, either the inventor(s) or the creator(s) retain the right to be mentioned as such in applications submitted by IPCA, and the authors retain their moral rights, as provided in Portuguese legislation.

In the case of PhD or master’s students, who are respectively writing their thesis or dissertation, how is IP regulated?

However, the results obtained during the different stages of development of a doctoral thesis or master's dissertation may have originated or originated a patent or trade secret that are the property of IPCA. For example, if the student is remunerated by IPCA or through a grant from FCT - Fundação para a Ciência e Tecnologia, or used

significant IPCA resources, then, in these cases, students must fulfill the duties defined in IP policy (for example, confidentiality or non-disclosure of the invention before being authorized to do so).

C3. Responsibilities

Who is responsible for defining the best way to protect and commercially exploit an invention or creation in IPCA?

IPCA, through its specialized IP and technology transfer services, is responsible for defining the best approach for the protection and commercial exploitation of an IP right. However, the support and cooperation of the inventor/author are considered fundamental for the success of these processes.

IPCA will manage and conduct the necessary steps to explore and also protect, IP rights that are held by IPCA. The activities of these specialized services/bodies include researching the market for the technology, identifying third parties to commercialize it, as well as entering into discussions with potential licensees in order to negotiate agreements, monitor progress, among other tasks.

For certain inventions, decisions may include not applying for a patent, for example, when it is expected that the economic value of research results will be maximized by following a trade secret route.

Therefore, the most appropriate approach to commercialization depends on several factors, most of which depend on the stage of technology development. There are many inventions that need further development or validation prior to commercial licensing, which can occur through external industry collaborations.

With regard to IPR's co-owned by other entities, who makes decisions about protection and commercialization strategies?

Collaborations that may involve an inventive step must be preceded by a written agreement, celebrated between the parties, which will regulate intellectual property.

All these agreements must include clauses that regulate:

- The property of IP, Background and Foreground;

- Assumption of costs associated with the process of preparation, maintenance, protection, promotion and commercialization of IP rights with commercial potential.
- What benefits can be attributed to IPCA, for cases in which IPCA cannot be considered the holder of IP rights.
- And also issues of confidentiality, publication and dissemination of research results.

If the other institution is a university or research institution, there will be a written agreement, defining who will take the lead in protecting and licensing the technology, what are the expenses associated with the patenting process, what are the sharing values, how processes this sharing and allocating licensing revenues.

Who is responsible for collecting statements from students or research visitors ceding rights to IPCA?

If an individual, who is not remunerated to carry out research activities or does not have an employment relationship with IPCA (for example, master students and visiting researchers), collaborates with IPCA and invents or creates something, using significant IPCA resources within the scope of its investigation activities, must assign its rights to IPCA.

The Research Unit which these individuals collaborate with is responsible for collecting the respective declarations attributing IP rights to IPCA.

Therefore, it is essential that all individuals participating in the survey are aware of their obligation to assign these rights to IPCA and collaborate in IP protection and commercialization processes, as necessary. In the case of visiting researchers from external institutions, an agreement must be previously established between the two entities, regulating the terms of the IP rights that may arise from their research activities, including background and foreground IP.

Doctoral students with a grant from the FCT- Foundation for Science and Technology, for example, consider themselves remunerated for their research activities and, by default, IPCA holds the industrial property rights arising from their work at IPCA.

D. Agreements or contracts

What types of agreements and considerations apply to technology transfer?

The main types of agreements negotiated by IPCA specialized services in IP and TT include the following:

- **Non-Disclosure Agreements (NDA's)**, or Confidential Disclosure Agreements (ADC's), are used to protect the confidentiality of an invention, technology or pre-publication information and are typically used in the research marketing process.
- **Material Transfer Agreements (TMA's)** are used for input and output materials (including biological materials) in IPCA. These agreements serve to describe under what terms IPCA researchers or investigators may exchange material with other academic, governmental, or commercial organizations, typically for research or evaluation purposes. TMA's provide important protections with respect to issues such as ownership, publish ability, and rights in the resulting inventions. IP rights may be threatened if materials are used without proper TMA.
- **IP Sharing Agreements or also Interinstitutional Agreements**, describe the terms under which two or more entities, including Institutes, Universities, companies, etc., will collaborate to share financial, administrative, marketing and other management responsibilities of the IP, which are jointly owned.
- **Industry Research Collaboration Agreements** describe the terms under which IPCA will be collaborating with a company on a research project by providing intellectual contributions to the project's outputs. The new solutions that are created, with contributions from both IPCA and the company, are jointly owned. All Background IP will remain the sole and exclusive property of the party that owns it, and specific access rights to Background IP may be negotiated in order to perform a particular project task.
- **Licensing Agreements** are defined as contracts between two parties (the licensor and the licensee) in which the licensor grants the licensee the right to use the IP right, be it a trademark, a logo, a patented technology, or know-how. - how, for the production and/or sale of goods owned by the licensor. As the sale of a right (transfer) over a patent, for example, implies the transfer of ownership, the licensing process therefore allows the holder to maintain his position as such, granting the licensee the use of the right over that patent for a certain period of time and under the agreed conditions.

- **Research Contracts** are used, when a company pays a commercial fee for a specific research to be carried out on IPCA premises, and the company expects to own all IP resulting from that research. All overheads charged by this type of agreement are often higher compared to collaborative research agreements.
- **Industry Sponsored Research Agreements** are contracts entered into between IPCA and an external company or organization in order to carry out research or development projects. There is thus the figure of the sponsor, who can provide funding, equipment or other resources to support the research, and in return, usually has intellectual property rights over the research results and can use them for commercial purposes. These agreements must protect the researchers' academic independence and the right to freely publish their results and may include opt-out clauses.
- **Option Agreements**, or Option Clauses within research agreements, describe the conditions under which IPCA preserves the opportunity for a third party to negotiate an intellectual property license.

E. Disclosure, evaluation, protection and marketing of IPR

This section aims to explain the main procedures applied in IPCA, from the disclosure process to the commercialization phase of a certain IPR held by IPCA.

E1. Invention or Copyright Disclosures

What is an Invention or Copyright Disclosure?

An invention is something created by human mind. It can be products, processes, systems or structures. And these can be material, like a new machine or a new device, or they can be intangible, like a production process or a new research methodology. Inventions can be protected by patents, which are granted by governments, with the aim of granting the inventor the exclusive right to commercially exploit the invention for a certain period of time.

As mentioned earlier in this manual, copyright protects the original expression of ideas, such as literary, artistic, musical and entertainment works. The author or creator of the work is granted the exclusive right to reproduce, distribute and display the work, as well as the right to license or sell it to third parties. They are bestowed automatically

when a work is created and fixed on a tangible medium such as paper, canvas or a disc, and generally last for the author's lifetime plus a specified period of years after his death.

An Invention or Copyright Disclosure involves making the invention or author's work known to the public, usually through publication or registration. Such disclosure may be necessary to obtain proper legal protection, but it may also expose the invention or work to the risk of plagiarism or copyright infringement. That's why inventors and authors must take protective measures for their inventions and author's works before they are widely disseminated. This Disclosure must include all the information necessary to initiate protection and enhancement activities, including all collaborators of the research ideas or results (students, teachers, researchers, etc.), even if they are not directly or indirectly linked to IPCA. It is very important to note the date of any future publication or other public disclosure describing the IP asset. You must contact your research unit director to fill in a disclosure form. After submitting the Disclosure Form, you will be contacted by the person in charge of IPCA knowledge transfer to discuss the next steps, which may include bibliographical research, to review the novelty of the research results, protection, commercialization, among other issues.

Is it mandatory to disclose an invention or creation?

Yes, any invention/creation must be disclosed by the inventors to IPCA. IPCA defines a maximum period of 3 months for the disclosure of the invention, provided that it is considered completed. This also applies whenever you realize that you may have discovered something of potential commercial value.

If there are two or more inventors/creators of IPCA, you must designate a representative to be the point of contact with the specialized services of IPCA.

What is the IPCA procedure for disclosing an invention or material protected by copyright?

Here must be completed and sent to IPCA valorization services. A qualified technician from these IPCA services will start the process of evaluating the invention regarding its patentability, its commercial potential and the necessary contractual obligations. As a first step there will normally be a meeting with the inventor (s)/author(s), who may also be asked to participate in a prior art literature search, if applicable.

E2. Protection

What should I do if I think I have an invention worth protecting?

You must contact IPCA valorization and innovation center.

How is the patent protection route defined? Is international protection admissible?

The patent protection route is the process by which a person or company seeks to obtain protection for an invention in different countries. This usually involves filing a patent application in each country where such protection is desired.

International patent protection is admissible through international treaties, such as the Patent Cooperation Treaty (PCT). The PCT allows a person or company to file a single international patent application which, if granted, will be recognized in many member countries of the treaty. This can be a more efficient way to obtain patent protection in multiple countries, rather than filing separate applications in each country.

By registering a certain patent, beyond Portuguese territory, the economic value of that IP right can be substantially increased. However, applying for and maintaining international patents is quite expensive (it can reach thousands of euros in a few years). Therefore, international application is often dependent on the viability of commercializing the invention, demonstrated, for example, by the existence of a commercial partner that can bear the associated costs.

In certain situations, even if there is no commercial partner, the decision may involve protecting the invention outside Portugal or maintaining an international patent application. However, the costs of this decision must be considered, based on the premise that there are good commercialization opportunities.

How is a patent application prepared? Does IPCA help in the preparation and protection of patent registration?

To file a patent application, you need to have a detailed description of the invention and how it works. It is also important to include illustrative drawings or schematics, if applicable. In addition, it is necessary to provide a detailed statement of how the invention is new and original in relation to what has been previously disclosed. Thus, writing a patent application requires extensive experience (legal and scientific knowledge). A poorly written patent application can jeopardize the successful commercialization of the invention.

The patent application must be written clearly and precisely, in order to allow any qualified person to understand how the invention works. It is important to remember that the patent granting process is very rigorous, and patent examiners will carefully review the application to ensure that the invention meets the requirements necessary to obtain patent protection.

It is necessary to ask whether we should patent the finished product, or if, on the other hand, we should only patent parts of that product, or else the manufacturing method of that same product, or even the product and its manufacturing method. All these questions must be answered by an expert.

In order to apply for a patent, it is first necessary to verify whether the invention is eligible for patent protection. Some things that cannot be patented include general ideas, laws of nature and simple scientific discoveries, as well as computer software. In addition, it is necessary to verify whether the invention has already been previously disclosed or patented. If the invention meets all the requirements, the next step is to prepare the patent application and submit it to the patent agency responsible for the country in question.

IPCA deals with external partners (linked to patent registration) specialized in this registration and we respond to patent offices in the countries where patents are deposited. These processes often involve significant expenses and are managed by IPCA's specialized services and partners.

We are also responsible for ensuring that a patent application is of sufficient quality to be filed, in order to safeguard our interests and that of the author of the invention. This is why all IPCA inventors must collaborate in this process, providing all the necessary information and documentation. This is a key aspect, as no one knows more about the invention or creation than the inventors themselves.

The patent granting process can take several years and is an expensive process. However, if the patent is granted, it can provide valuable protection for the invention and can be an important business asset.

How much does it cost to file a patent application and who pays?

Fees vary according to the path of protection defined for a given invention. With regard to national patent applications, a patent can be filled at INPI at an affordable cost. However, protecting an invention only in Portugal can make its economic valuation more difficult, as it is usually less attractive to potential licensees.

International patent applications are more expensive. For example, the deposit rate of the European Patent Office (EPO) varies, depending on the number of claims contained in the patent and the stage of the patent process. Basic fees include the filing fee, which is charged when the patent is filed, and the annual fee, which is charged to keep the patent in force. There are also additional fees that may apply. So, the fee varies greatly depending on these various factors and also on the number of designated countries for which the patent is applied for, and whether the applicant is a natural person or a company. If you have a specific patent in mind and would like to know the exact cost of filing, it is recommended that you consult the EPO website **here** .

In addition to this, there are also fees for patent attorneys. This is why the total cost of filing an international PCT patent application (including official fees and patent lawyers' fees) can easily reach more than €5000.

The patent of your invention

The following figure illustrates a typical IPCA script, from the invention disclosure form to the filing of an international PPT patent application. This roadmap presents the various decisions to be taken along the way, defining which path to start following, up to the intended territorial scope of protection. It should be noted that the illustrated process may be different in certain situations, as the best protection approach is defined on a case-by-case basis, considering the maximization of the socioeconomic impact of each invention, among a combination of other aspects, such as:

- the technological maturity of the invention.
- the anticipated commercialization opportunities.
- the importance of having a strong exam report as soon as possible (the European route can be considered in this case).
- the costs involved and financial availability of the Research Group/Unit.

Patenting your invention – Roadmap

Up to 75 days
(From receipt of the complete disclosure form)

1. Disclosure evaluation
2. Patent clinics (with inventors and patents attorney, if needed)
3. Notifications of go/ no go decision – it can be decided to keep the disclosure as a trade secret

Submit invention **disclosure form** (additional info may be requested from the inventors)

Up to 2 months

Meeting with IPCA services, inventors, and patent attorney to discuss the proposed patent-iterative process

1. Patent attorney selection
2. Approval of final draft of patent specifications

Priority filing

Priority date
(Day 0)

1. Start the scouting of potential licensees, partners, or other interested parties
2. Decision to proceed with the PCT filing – based on commercial relevance
3. **International patent PCT application**

Priority filing

Month 12

Inventors provide additional data to strengthen the patent application (between months 6-11) – **No additional data can be introduced after PCT filing**

Month 0

Inventors start to generate any data requested by the patent attorney (inventors are part of this process and may be requested to participate in meeting with third parties)

1. International Search Report (ISR) and Written Opinion (WO)
2. Publication of the PCT application, ISR and WO

Month 16 > Month 18

Inventors provide their analysis of how the invention is different from prior art

3. Identify which territories to enter in the national phase
4. Decision on whether to proceed with National Phase entry

National phase(s)

Month 30 > Up to 5 years

Considerable contributions after National Phases Entry – support required to respond to patent office's actions in each territory and assistance with potential licensees/partners

UNIVERSITY ACTIONS INVENTOR ACTIONS

Source: Universidade Nova de Lisboa. (n.d.).

E3. Marketing and Commercialization

IP Rights – What can be licensed/traded?

- Patents (e.g. the product or production method)
- Copyright (e.g. software)
- Database rights (e.g. data collection)
- Design rights (for example, the shape and appearance of a product)
- Knowledge (know-how such as recipes, formulations under trade secret)
- Reagents and research materials (e.g., model organisms, proteins, DNA/RNA, etc.)
- Trademarks (e.g. name, logo)

How does IPCA commercialize its Intellectual Property Rights?

There are several ways to commercialize IPR, depending on the type of intellectual property you own and your business objectives. Examples of more common strategies include:

- **Licensing:** Being able to license the intellectual property to other companies so they can use it for a fee or royalty. This may include the licensing of trademarks, patents or industrial designs, etc.
- **Selling:** Being able to sell your IPR to another company or individual.
- **Partnership:** Being able to partner with other companies to jointly develop and commercialize your IP.
- **Direct Exploitation:** Being able to useIP to create and sell products or services directly to the public.
- **Legal protection:** Enforce IP rights through trademark registration, patents and lawsuits.

In addition, there are specialized platforms and agencies that can help to commercialize IP, such as patent banks, licensing agencies and IP brokers. Above all, it is important to remember that you need to be very aware of your rights to defend your IP.

Promising technologies can also be presented on the IN-PART international platform. IN-PART is an international scientific and technological collaboration platform. It was developed by the University of Sheffield. This platform allows universities and companies to connect and collaborate on research and development projects in diverse fields, including science, engineering, technology and business. The IN-PART platform seeks

to improve access to cutting-edge research and technology , helping companies to find research partners and universities to find opportunities that allow technology transfer. In particular cases, we have also collaborated with external IP brokers to help us through this challenging process.

What are the different types of payment for a research commercialization/licensing agreement?

There are several types of payments that can be used in research commercialization and licensing agreements. Some of the most common types:

- **One-time payment:** A sum of money paid in one lump sum, usually at the beginning of the contract.
- **Phased Payments:** Payments that are made as certain goals or milestones are reached, such as the completion of pre-clinical or clinical studies.
- **Royalties:** Payments based on revenue generated from the use or sale of licensed search results. These can be a percentage of gross or net income.
- **Revenue sharing:** Payments are divided between the parties based on the agreed proportion, and can be based on gross or net revenue.
- **Performance-Based Payments:** Payments that are made based on sales performance or the achievement of certain business objectives.
- **Maintenance payments:** Regular payments that are made to maintain the validity of a license or patent.
- **Extension Payments:** Payments to extend the duration of a contract or license.
- **Option Contracts and Option Payments:** An option is the right to make future decisions regarding the acquisition or exploitation of a technology. Option agreements usually last less than 1 year and are very helpful in setting up new companies.
- **Sublicensing payments:** if the licensee is interested in distributing the technology to third parties, the contract must provide for how the earnings will be distributed among licensors, licensees and sublicensees (common in exclusive licensing agreements).
- **Stock payments:** some universities opt for an equity stake in a spin-off, ensuring financial support for the company or technology transfer at no or reduced cost to the company. So far, IPCA has no stake in its recognized spin-offs but it provides them with several benefits, such as the license under exclusive terms of IP generated by the promoters of the spin-offs, with no fees until the commercialization stage.

These are just some of the options available, and the specific payment types of a research commercialization/licensing agreement may vary depending on the needs and objectives of each party involved.

How long does the marketing process take?

The time required to commercialize a survey can vary significantly depending on several factors such as the type of survey, the complexity of the results and the industry in question. Some research can be commercialized quickly while others can take years.

Here are some general examples of the times it can take to market a survey:

- **Market research:** Market research usually takes a few months to complete and market.
- **Medical Products and Devices:** It can take several years to take a medical product or device from the initial research stage to clinical or regulatory approval and commercialization.
- **Software technologies:** It can take less time to market a software technology, especially if there is a potential customer base.
- **Biotechnology Technologies:** It can take anywhere from several years to a decade or more to commercialize a biotechnology technology due to regulatory requirements and scientific challenges.

It is therefore important to note that the commercialization process can be made up of several stages and that each of them can take time. This entire process can include patenting, negotiating licenses, developing prototypes, clinical studies and regulatory approval. Furthermore, it is important to bear in mind that there is no single formula for marketing research, and each case is different. The different parties involved, such as universities, companies and investors, can influence the timing and effectiveness of the process.

Also Technology Readiness Levels (TRL) are an important factor to consider. TRLs are a measurement system used to assess the maturity level of a given technology and range from TRL 1 (minimum level) to TRL 9 (maximum level). For example, technologies rated at TRL level 7 or higher are easier to license. As university technologies are usually at an early stage (TRL 1 or 2), too low to attract investment from industry, it is important to continue developing this particular technology. Spin-offs also play an important role here.

I found a potential licensee - what should I do?

Finding a potential licensee for your research is an important step in the commercialization process. Here are some steps you can take once you've identified a potential licensee:

- You should **contact IPCA's specialized services**. Typically, the most successful research commercialization results are achieved when the inventor or author and licensing professionals work together as a team to commercialize and promote the use of the IP asset.
- **Contacting:** you or this team will contact the prospective licensee and provide information about the research and how it might be useful to them.
- **Make a Proposal:** After initial contact, you will be presented with a detailed proposal of what is offered, including details of the search results, pending patents, exclusive rights and any other relevant benefits.
- **Negotiation:** The negotiation process begins to establish the terms and conditions of the licensing agreement. This will include details of payments, exclusive rights, term and obligations of the parties.
- **Drawing up the contract:** Based on the agreed terms, a licensing contract will be drawn up, which must be signed by both parties.
- **Enforcement:** Once the licensing agreement is signed, the parties must fulfill the obligations set forth in the agreement and follow the rules for using the research results.

And it is always important to keep in mind that it is not guaranteed that the negotiation will take place or the proposal will be accepted, so it is advisable to continue to identify new potential licensees. It is also advisable to have a lawyer specializing in IP to assist throughout the negotiation process and to draft and revise licensing agreements.

What should I do to sell software I developed at IPCA?

Commercializing software will be a challenging process, but there are some steps you can take to help maximize your chances of success. Let’s look at some steps to commercialize the software:

- **Identify your target audience:** Before you start marketing your software, you must understand who your target audience is and how this software responds to their needs.

- **Create a demo:** Develop a demo of the software so people can try it out and understand how it works. This could include a video demonstration or a trial version of the software.
- **Do a Marketing Plan:** Do the marketing plan to help attract potential customers. You can carry out online advertisements, advertising in specialized magazines, presence at events and on social networks.
- **Offering Technical Support:** Providing technical support is important to ensure that customers can use the software easily and effectively.
- **Pricing:** Pricing the software according to your target audience and the value it provides.
- **Licensing:** Consider whether you want to sell licenses to use the software, or whether you prefer to offer a more affordable version and another with additional features at a higher price.
- **Intellectual property protection:** Make sure your software is protected by copyright, trademarks or patents (if you can).
- **Negotiate Licensing Agreements:** If you decide to license the software, be sure to negotiate clear and accurate licensing agreements with your customers.

The computer programs for which IPCA acquires rights must be protected by copyright or patented (if considered "computer-implemented inventions") and made available by IPCA for commercial purposes, under various forms of licenses or copyright patents (if applicable). Potential revenues will be shared. If authors wish to distribute software for non-commercial research purposes that has been commercially licensed by IPCA to third parties, such licensing must be validated by IPCA.

Throughout this process, it is important to have the help of a lawyer specializing in IP and specialize in contract negotiation, for guidance in protecting the software, drawing up licensing agreements, and understanding the best ways to commercialize the technology. Each software is unique and can present different challenges, so it's important to prepare and research the best strategies for your specific case.

E4. Profit sharing

What is the revenue share allocated to inventors, creators or authors?

The division of revenue attributed to inventors, creators or authors may vary depending on the institution or company in question, as well as the specific terms of a licensing agreement or commercialization agreement. With the implementation of IPCA IP Policy, you will know exactly the percentage of revenue attributed to the inventors, creators or authors of IPCA. In addition to these, the recipients of net income are also

the Organic Unit(s) to which they belong, the respective Research Group or Research Unit and the Presidency. For more information ypu must refer to IPCA IPR policy.

How do I receive revenue from the commercialization of an IP right? Are taxes applied?

Income is considered as personal income relating to Intellectual Property Rights and not as salary supplements. These recipes are compliant with uniqueness requirements. Intellectual property revenues are generally taxable. Consult a tax advisor for specific advice.

E5. Considerations for a created company

Can I create a spin-off to exploit the IPCA's respective IP right? What should I do?

Yes, it is possible to create a spin-off to exploit intellectual property (IP) rights. A spin-off is generally defined as a company that is created out of an existing section or division of another company. In that case, the new company would be created to specifically exploit the intellectual property rights related to the property in question. However, we must remember that there are laws and regulations relating to intellectual property that must be followed, and it is advisable to consult an expert IP lawyer before making any decision.

You can express your interest in creating a spin-off to commercially exploit the corresponding IP right, by sending the disclosure form or at any time after this first step. In any case, an assessment will be carried out by IPCA's specialized services, in conjunction with the inventors/authors, to determine whether this is the best way of valuing the respective IPR, taking into account the guiding principles defined in the IP Policy:

1. for the benefit of society and the country;
2. the maximization of economic value;
3. the sustainability of the technology transfer process.

What are the main factors to consider when creating a spin-off?

Creating a spin-off involves many important considerations and decisions. Each case must be analyzed according to its particularities, but some of the main factors to be considered include:

- **Economic feasibility and target market:** It is of paramount importance to analyze whether the creation of a spin-off is economically viable and whether it will have a reasonable chance of success. For such an analysis, one must assess whether there is a sufficient market for the business, whether costs are proportional to expected revenues, whether there is a management team capable of managing the new company and whether there is motivation and commitment from the inventor(s) with this approach.
- **Separation of assets and liabilities:** It is important to clearly establish which assets and liabilities will be transferred to the spin-off and which of these will remain with the parent company. This includes tangible assets such as property and equipment, but also intangibles such as copyrights, trademarks and patents.
- **Financing or venture capital:** The spin-off must have sufficient financial resources to survive and grow independently. This may include obtaining loans or investments from outside sources, or distributing shares in the new company to existing shareholders.
- **Regulatory Impact:** It is important to understand and follow the laws and regulations applicable to a spin-off, including tax and compliance issues such as regulations related to intellectual property and data security.
- **Communication and public relations:** When creating a spin-off, the image of the parent company can be affected and, with that, relations with customers, employees and other stakeholders. That is why it is crucial to plan how to communicate the transition and ensure that all stakeholders are informed and prepared for the changes that will occur.

What if a spin-off or company to which the technology is licensed is not successful? Can the technology be licensed to another entity?

If a spin-off or company to which the technology is licensed is not successful, the technology can normally still be licensed to another entity, depending however on the terms of the original license. The IP license can be granted on an exclusive or non-exclusive basis, this means that more than one company can have the license to use the technology. Furthermore, the license may be granted for a specific period of time, or it may be permanent. In some cases, the license may include termination or non-renewal clauses, which allow the license to be withdrawn if the conditions specified in the license are not met. Likewise, technology can also be sold or transferred to another entity, but this transfer needs to be authorized by the original IP owner, with a signed agreement and the terms defined in the legal and contract documentation.

It is important to note once again that each case is different and depends on the specific conditions of the original license. Again, it is important to consult a specialist IP lawyer to assess the specific situation and advise on the available options.

F. Considerations for Research Activities

Will I be able to publish my research results and still protect the commercial value of my IP?

Yes, it is possible to publish research results and also protect the commercial value of intellectual property (IP), but this can take a careful approach and good planning, as well as a great deal of silence. It is very important to keep the invention secret until it is properly protected. That's because anything you disclose about the invention before applying for a patent is considered state-of-the-art and will compromise the novelty criterion. So the rule of thumb is protect first, publish later. One way to protect the commercial value of your IP while still publishing your search results is through the use of confidentiality or non-disclosure agreements (NDA). A non-disclosure agreement is a legally binding contract whereby parties agree not to disclose confidential information to each other. Parties can discuss and share information without fear that it will be publicly disclosed without consent. Another way to protect your IP rights is to file patents, trademarks and utility models before disclosing the invention/product/process. You guarantee that your exclusive rights over the IP will be valid under the law. In addition, you can also publish your research results in a scientific paper or conference, but carefully word the publication to exclude critical details of your invention or process.

Be sure to inform IPCA of any presentation, poster, abstract, site description, research proposal, master's thesis, publication or other public presentation of the invention, future or past. Managing the publication of scientific works with the protection of IP rights is a challenging task, although possible, as it is done by most institutions of excellence. In the case of a Provisional Patent Application (PPA), IPCA strongly discourages the publication of the invention in a scientific article. As the PPA is not definitive, any new material included in the scientific article may compromise the novelty or inventive activity of the definitive application. In addition, one of the biggest advantages of the PPA is having a first examination to verify if the invention is considered new and inventive. Sometimes PPA's are withdrawn and re-filed with more data that will strengthen the patent application. If an article was published immediately after filing the PPA, there are no more options to improve the patent document. You can be sure that

the result will always be better if the collaboration between both parties (inventors and internal IPCA services) is fast and smooth. IPCA services are always willing to collaborate and also count on your collaboration.

Again, remember that it is important that each case is different and there may be specific IP publication and protection rules in your field of study. It is therefore advisable to consult an IP specialist to assess the specific situation of your case and advise on the available options.

I want to develop an R&D project in collaboration with external entities. What should I do to regulate the PI?

If there are collaborations that may involve inventive activity, these must be preceded by an agreement entered into between the parties, regulating intellectual property, namely with clauses relating to the ownership of IP rights and their exploitation. These agreements must have the consent of the Presidency of IPCA, as they must define a priori the transfer of IP rights or IPCA trade secrets to other entities, as well as also specify a priori the percentage of benefits to be attributed to each co-holder (in the case of of co-ownership of results). This being the case, the contract will only be signed with the approval of the Office of the Presidency.

We cannot fail to consider that these agreements must contain not only clauses related to First Level IP - that is, Intellectual Property resulting from R&D carried out in a given project after the date of signature of the contract ("potential" IP) -, but also about Background IP, i.e., all IP deemed relevant to the project and already held by the Parties prior to the start of the project (“existing IP whether or not protected by IP rights).

What if I spend a certain period at another institution and the results of the research work carried out at both institutions lead to an invention with commercial potential?

As mentioned in the previous question, all collaborations are preceded by an agreement signed between the parties, in order to regulate intellectual property rights. Therefore, it is very important to know the IP Policy of the host institution, so that the agreement can take into account the IP Policies of both institutions.

What if I receive research materials from another entity outside IPCA or want to transfer research materials to external collaborators? How should I proceed?

"Research materials" can be biological materials (such as DNA, plasmids, antibodies, cell lines), other products or non-biological materials, such as drawings, engineering projects, computer databases, devices, prototypes, equipment and also associated research data, among other elements.

For cases in which research materials are transferred from one institution/entity to another, it is important to fill out a "Material Transfer Agreement" (ATM), which documents the items to be shared and the conditions for their use, or that is, regulating background IP and research results arising from the use of the transferred material(s).

There are companies that can provide research materials for research purposes free of charge (for example, expensive reagents, chemical or biological samples or a laboratory animal) by signing an ATM, which may contain clauses relating to the commercial exploitation of research results arising from the use of transferred research material. This requires a careful assessment of IPCA's specialized services to safeguard the interests of both parties.

What if I am asked to sign a confidentiality agreement?

As part of a research agreement between IPCA and a third party (or third parties), it is likely that you will be asked to sign a confidentiality agreement. The same may apply if you are in contact with IP that has been or may be protected, or that is commercially sensitive (meaning that it is perceived to be capable of generating profit or could lead to other competitive advantage).

G. Important notes for the academic and research community

1. Be sure to read IPCA Intellectual Property Policy.
2. Whenever the project involves inventive activities, you should make sure to account for filing patents in the budget of your scientific projects, as you already do for scientific publications.
3. Whenever you think you have a scientific or technical observation with potential commercial or research value, contact IPCA specialized services. The critical first

step in transforming research results into social or economic value is to give us this information, so that we can help you define the most appropriate valuation strategy.

4. Complete or submit IPCA Invention or Disclosure Form in time to file a patent application, before publicly disclosing technology or submitting a manuscript for publication (if applicable), and to help us accelerate the socioeconomic impact of IPCA research, in order to ensure that society can benefit as quickly as possible from the funding that is granted to the University.
5. In IPCA Disclosure Form, you must include companies or other contacts that you consider potentially interested in the respective Intellectual Property right or that have already approached you about its disclosure. Your network of contacts can be extremely useful in this regard.
6. To avoid potential patent rights risks and possibly jeopardize the opportunity to commercialize your invention, contact IPCA specialist services before starting any discussions with people outside IPCA community. For example, if a patent application has not yet been filed, we can help you write a Non-Disclosure Agreement for the party to sign before you start describing your invention to them.
7. Be proactive and respond to IPCA requests and collaborate with its specialized services. Many aspects of the knowledge enhancement process require your contributions, and we will do our best to make efficient use of your valuable time.
8. Always keep us informed of upcoming publications or interactions with third parties relating to the intellectual property we seek to value.

H. Usefull links

National Institute of Intellectual Property (INPI):	**www.inpi.justica.gov.pt**
General Inspection of Cultural Activities (IGAC):	**www.igac.gov.pt**
European Patent Office (EPO):	**www.epo.org**
World Intellectual Property Organization (WIPO):	**www.wipo.int**
To understand Copyright and Related Rights (WIPO):	**www.wipo.int/edocs/pubdocs/en/wipo_pub_909_2016.pdf**

Patent Databases

Spacenet:	**www.world.espacenet.com**
Patentscope:	**patentscope.wipo.int/search/en/search.jsf**
Google patents:	**www.patents.google.com**
INPI:	**www.servicosonline.inpi.pt/pesquisas/main/patentes.jsp?lang=PT**

Trademark Search

TMView:	**www.tmdn.org/tmview**
INPI:	**www.servicosonline.inpi.pt/pesquisas/main/marcas.jsp?lang=PT**

References

Universidade Nova de Lisboa. (n.d.). *NOVA's Guide to Intellectual Property and Knowledge Transfer*.

LET'S TALK!

If you have a search result worth protecting or if you have any questions, please contact us. IPCA Valorization and innovation center team is always close at hand, whether in person at IPCA Presidency or by email, to help you or to contact you with the right person at your School.

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Acronyms

DNA - Deoxyribonucleic Acid

EPC – European Patent Convention

EPO – European Patent Office

IGAC – General Inspection of Cultural Activities INPI – National Institute of Industrial Property IP – Intellectual Property

IPR – Intellectual Property Rights

IRIS - Innovation Research and Impact Strategy | FCT IPCA

MTA - Material Transfer Agreement

KT – Knowledge Transfer

NDA - Non-Disclosure Agreement

PCT – Patent Cooperation Treaty

PPA – Provisional Patent Application

R&D - Research & Development

TRL – Technology Readiness Level

TT – Technology Transfer

VCC – Value Creation Council

WIPO - World Intellectual Property Organization

DNA - Deoxyribonucleic acid

EPC - European Patent Convention

EPO - European Patent Office

IGAC – General Inspection of Cultural Activities INPI – National Institute of Industrial Property IP – Intellectual Property

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MTA - Material Transfer Agreement

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PCT - Patent Cooperation Treaty

PPA - Provisional Patent Application

R&D - Research and Development

TRL - Technological Readiness Level

TT - Technology Transfer

VCC - Value Creation Council

WIPO - World Intellectual Property Organization