

**invent**

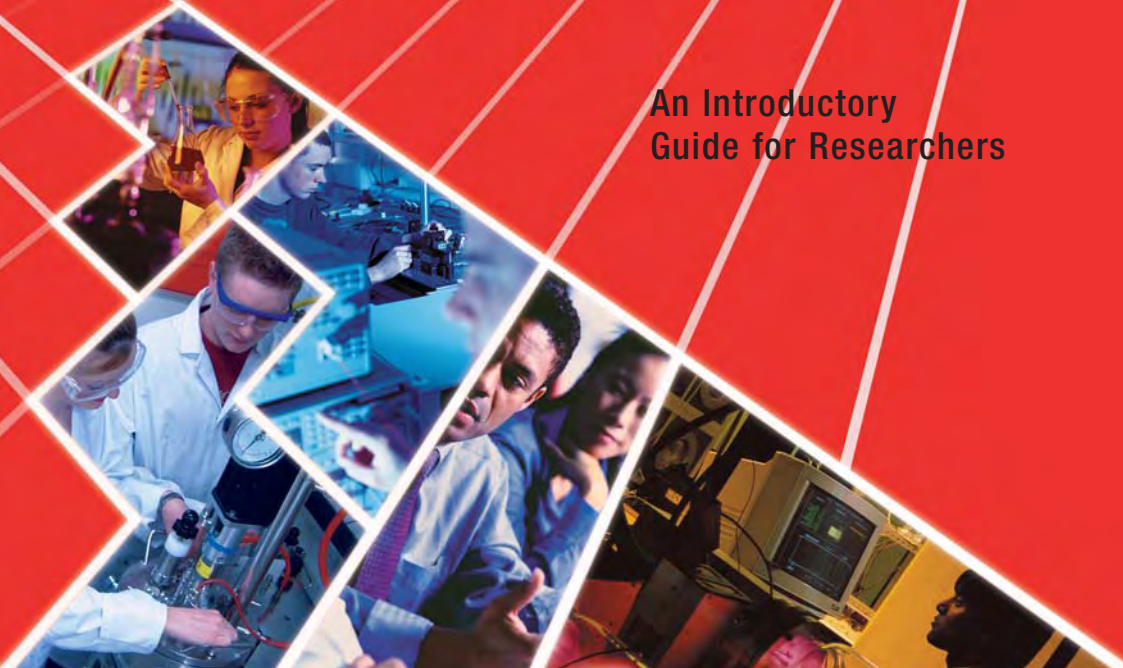
to transform knowledge into commercial success

**DCU**

The Innovation and Enterprise Centre

# Commercialisation Handbook

An Introductory  
Guide for Researchers







# Foreword

Invent has been established as a wholly owned University company which was incorporated in 2001.

## Invent has responsibility for

- The management of the University's research based Intellectual Property and its commercialisation through technology transfer, licensing and the creation of campus companies.
- The development and management of the Innovation & Enterprise Centre

Invent specialises in adding value to the outcomes of research at an early stage and fosters links between emerging technologies developed by university researchers and others, and the financial and entrepreneurial resources of industry and business.

Other publications of the University which are relevant to research commercialisation are compiled in the booklet "Technology Transfer and Entrepreneurial Activity" – Policies and Procedures.

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## Disclaimer

This handbook is not intended to be used by DCU staff or students as the basis for making decisions about the of Intellectual Property. In all cases, close collaboration with Invent is required and mandated by the university's IP and policies.

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# 1

## Introduction

*invent is about maximising the commercial impact and financial benefit of a technology or invention*

This handbook has been developed by Invent for faculty, staff and students who have developed a new technology or invention they would like to commercialise.

It aims to introduce the basic concepts and issues involved in protecting and commercialising technology. It is a reference document to help guide your discussions with the technology transfer professionals in Invent who will help you to evaluate the potential of your technology and bring it to market on behalf of DCU.

To get an innovation to market you must do more than just develop a technology that works – you must understand how your technology meets a genuine market need. This handbook gives an overview of some of the fundamental issues that you should understand. It also outlines the range of commercialisation routes for your technology.

# Invent - DCU's Commercialisation Gateway



*invent's mission is:  
to transform knowledge into commercial success*

As DCU's 'gateway'. Invent offers advice in a number of areas including:

- Identification , protection and exploitation of intellectual property
- Commercial aspects of research proposals and contracts
- Preparation of non-disclosure agreements, material transfer agreements and IP issues in industrial research contracts
- Sourcing licensees for IP
- Negotiating license agreements
- Establishing new companies

The technology exploitation pathway in DCU is straightforward and is outlined in section 6.

# 3

## Intellectual Property

*intellectual property is important because it confers exclusive legal rights which can be very valuable*

Intellectual Property can have significant commercial and financial benefits for individuals, research groups and the university including:

- It converts knowledge into tangible assets which can be transferred, licensed and sold
- It can generate significant royalty revenues for the university and inventors
- Inventors qualify for tax relief on income obtained from licensing royalties
- It can provide a legal monopoly in technology niche areas

### 3.1 What is Intellectual Property?

The most common types of intellectual property are:

#### **Patent**

Provides inventors and owners with the exclusive right for a limited period of time to prevent anyone else from making, using or selling the invention. Patents are granted on machines, articles of manufacture (devices), compositions of matter (materials), processes (methods), and improvements of any of these.

#### **Copyright ©**

Gives the author exclusive rights to reproduce the copyrighted material. Copyrights can be in published or unpublished works, e.g., original literary, musical, dramatic or artistic works, computer programs and other matter. Copyright protects the expression of ideas, but not the ideas themselves.

#### **Know-how / Trade Secret**

A broad term to cover secret information that is defined by how it is treated and protected. It provides an owner of the information with a market advantage over its competitors. To enforce trade secret actions, an owner must show that the trade secret has been maintained in a way that reasonably anticipates preventing others from learning about it. Unlike patents, trademarks, and copyrights, there is no registration of a trade secret with a government agency.

#### **Trademark ™ / ®**

A logo, word, slogan, symbol or design that distinguishes a product or a service. Trademarks protect corporate identity and can be legally registered.

## 3.2 University Policy

It is important to recognize the key difference between inventorship and ownership. Under Irish law, DCU owns the IP rights to inventions made by employees as part of their employment duties (unless it states specifically otherwise in their employment contract). However, as a legally recognised inventor you will benefit financially from any revenues generated from your invention. The university has put in place a very attractive incentive scheme to encourage staff to produce and disclose valuable IP which the university and inventors can commercialise. Further information is available on the Invent website.

## 3.3 The Policies of the State Funding Agencies

If you received grant funding at any time during the development of your technology, it will be important to consider the implications of any commitments or responsibilities you have to those granting organization(s). Seek advice from Invent.

## 3.4 The Implications of Collaborative Research

Determining the proper inventorship of intellectual property is fundamental to the successful of your technology. It is much easier to deal with such issues at the beginning of the process.

You may also have commitments and obligations to persons who participated in any way in the development of the technology as they may have a legitimate claim of co-inventorship and might seek to share in any of the financial benefits from the commercialisation of your research. Consider the following:

- Professors/Faculty involved your work
- Students who have worked with you on the project
- Visiting researchers or casual collaborators from other institutions
- Gifts, grants or contracts from organizations or companies

Write an exhaustive list detailing everyone who had any involvement with the development of your research, no matter how minor. For some of the participants, it may become necessary to request a written waiver of any rights to the technology they might have. For others who may have been more heavily involved in the development of the technology, or who plan on participating in its commercialisation, Invent will need to come to an agreement as to how to share the financial benefits of commercialisation.

# 4

## The Commercialisation Process

*invent will work closely with you to ensure your technology is commercialised*

There are a number of reasons for commercialising an invention.

### 4.1 Personal Benefits of Commercialising Research

- Practical application of your research fosters the widest possible recognition of your research efforts.
- Collaboration with industrial partners may also result in financial sponsorship of additional research.
- DCU has a very generous incentives scheme.

Division of Licensing Income after Deduction of Costs			
	Inventor	University	Faculty/Research Unit
0 - € 50,000	75%	15%	10%
€ 50,000 - € 150,000	50%	30%	20%
€ 150,000 +	33.3%	33.3%	33.3%

- Equity ownership in spin-off companies.

### 4.2 University Benefits of Commercialising Research

- Ensures public benefits from university research.
- Enhances the university's research environment.
- Develops lasting industry relationships.
- Generates revenue for the university.
- Meets the university's intellectual property obligations to research sponsors.

### 4.3 Disclosure

One of the most important steps in the technology transfer process is the inventor's submission of a confidential invention disclosure form. This document gives Invent the information that it needs to start working with you on the commercialisation of your technology.

The invention disclosure form asks a number of questions including:

- Who are the inventors?
- What is the invention?
- Who funded the research?
- What is published and what is unpublished data?
- Are there any likely candidates for licensing?

The form is comprehensive because the information is vital for both patenting and commercialisation. The invention disclosure form is available on the Invent website. We recommend that you should consult with Invent before filing an invention disclosure form.

### 4.4 What inventions should be disclosed?

A technology is an invention if it meets any of the following criteria:

- a) New and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter, whether or not patentable.
- b) Computer software (non-teaching).
- c) Research data or research tool, including, without limitation, biological material and other tangible research material.
- d) Proprietary information, know-how or trademark related to any of the foregoing items.

Following your disclosure, Invent will discuss with you the options and resources available, and provide an impartial opinion on the potential for commercialisation. If Invent believes your invention has significant commercial potential the Invent professionals will work closely with you to prepare a commercialisation plan for your technology.

# 4

## The Commercialisation Process

### 4.5 What If Your Invention is Made on Your Own Time?

The university policies require that you must demonstrate to the university's satisfaction, by submitting a disclosure and a statement that your invention was made without the use of any university time, resources, or facilities, and is essentially unconnected to your university-based research. If you have made such an invention, the university will provide you with a formal waiver.

### 4.6 Will The Disclosure Process Interfere With Your Publication Plan?

Publication and IP protection are not mutually exclusive.

The university will not interfere with a faculty member's right to publish research results. However, you are encouraged to advise the university of any plans to disclose or publish a potential invention as soon as possible so appropriate actions can be taken to protect it. Except in special circumstances, there is no reason why your invention cannot result in both a patent and a publication.

# Intellectual Property Protection



*the objective of protecting intellectual property is to encourage the creation of valuable ideas and to facilitate its commercialisation*

## 5.1 Is my idea Patentable?

To be patentable, your invention must satisfy three criteria:

### **Novelty**

Your invention must not have been disclosed to the public. Further, to preserve worldwide patent rights, your invention must not have been disclosed to the public before the filing date of the application by the inventor(s). However, for Canada and the United States, your invention must not have been disclosed to the public more than one year before the filing date of the application by the inventor(s).

### **Non-obviousness**

Your invention must be a new combination of features and/or give new and non-obvious results compared to known approaches. Ordinary differences in size, materials or other obvious modifications are generally not patentable.

### **Utility**

Your invention must be useful. The invention must perform a function, do what you say it does, and have some benefit. A machine that doesn't perform its intended purpose is not useful, and therefore cannot be patented.

Determining patentability can be extremely complicated and where required Invent will use an experienced patent agent or lawyer who can sort out any legal and technical complexities.

## 5.2 Why Patent?

The university offers very generous financial incentives to encourage staff to identify IP and bring it to the attention of Invent. A staff member can retain up to 75% of income generated from licensing royalties after costs are deducted. In addition, staff qualify for tax relief on this income. Further information is available on the Invent website.

Because patents confer market monopolies they can be extremely powerful business tools. Patents have a lifetime of 20 years and during this time the intellectual property is the sole property of the owner. The patent enables its owner to prevent others from making, using, selling or importing the technology or product claimed in the patent.



# Intellectual Property Protection

## 5.3 The Dangers of Public Disclosure

If you do not file a patent application for an invention before disclosing it to the public, you will not be able to patent it in any country other than Canada or the United States. In Canada and the United States, you have a one-year grace period after your public disclosure to apply for patent protection – after this time your invention will be un-patentable.

If you would like an invention to be protected as a trade secret, you must not publish it in the public domain. By its very nature, a trade secret or know-how that has already been published will leave the intellectual property with no commercial value.

Evaluating the intellectual property protection options is one of the first steps in the commercialisation of your technology. Consult Invent as early as possible in the process.

## 5.4 What is the Meaning of Public Disclosure?

The term "public disclosure" not only includes conventional publication in a journal or conference proceedings, but also refers to anything in the 'public domain'. In other words, public disclosure means any communication medium that can be read, spoken and/or viewed by the general public, such as internet, radio, television, written publications, e-mail, presentation slides, posters at conferences or talks, workshops or lectures, advertisements, public use, or, in the United States, sale or offer for sale.

If you are concerned about how the sharing of certain information might impact the protection of your invention, you can request that the recipient sign a 'Confidentiality Agreement' that legally commits them to not disclosing the information they receive and protects you against public disclosure of your invention.

## 5.5 Provisional Patent Applications

A provisional patent application can be an effective vehicle for securing patent protection. A provisional application is typically a simplified document that requires a specification and drawings, optionally with claims, and no

oath/declaration, and is never examined by the patent office. A full patent application filed within 12 months may claim the benefit of the filing date of the provisional application. When patent budgets are limited, or a premature disclosure cannot be avoided, or market validation is desired before defining the scope of the patent, provisional patent applications can be quite useful.

The advantage of a provisional patent application is that it can be significantly less expensive to prepare than a regular patent application, and can help buy extra time to obtain market validation before incurring the cost of a full patent application. There are also some pitfalls involved with provisional patent applications. First, the invention claimed in the subsequent full patent application must be supported by the invention described in the provisional application. Otherwise, the priority date of the provisional application may not be valid. Second, because examination by the patent office will not begin until the full patent application is filed, the grant of any patent is delayed.

## 5.6 Patent Application Preparation Workflow

The drafting of a patent application is the product of collaboration between the patent agent and the inventor. The key contribution of the inventor is the technical disclosure. The leading enabler for a good patent is a good invention disclosure. There are sections that are critical to creating a good invention disclosure. The first is a "technical disclosure" of the invention; the second is an "invention summary". These are used by the patent agent to prepare the "detailed description" and the claims that are key components of a patent application.

It is important that the detailed description be an "enabling disclosure". That is, the patent must provide a full disclosure that is sufficient to allow others to make and use the invention. Patents can be invalidated if they fail to disclose an aspect of the invention in terms readily understood by a person with ordinary skill based on information that is commonly available.

The information required for a patent application filing, depending on the invention, can be fairly extensive. The following is a description of the process through which patent applications are prepared and revised:

### 5.6.1 Explanation of Requirements

Inventors should first understand the items that the detailed description should include, namely:

- Extensive drawings illustrating the invention. These generally include illustrations, tables, flowcharts and the like; whatever best explains the particular invention.
- Technical description of the invention, based on a logical order. Usually this means describing the "large pieces" first, and then explaining the invention in greater and greater detail.
- All aspects of the invention should be explained. For example, a method, a computer program that implements the method, and a system in which the computer program is loaded on a computer. An illustrative explanation of how the invention would be implemented in each of its aspects is important. This may include reciting, for example, sample hardware configurations for the system aspect of the invention. The same is true in other art areas as well.
- One or more examples of the implementation of the invention. Where relevant, sample data should be provided.
- Summary of the advantages of the invention over the prior art.

In addition, a Background section is required and should include:

- Summary of the relevant prior art (may include art found in the patentability search, below).
- Explanation of the disadvantages of the prior art, resulting in the need for the invention.

### 5.6.2 Patentability Search

When sufficient disclosure of the invention has been obtained to gain a detailed understanding of the invention, it is recommended that a thorough literature/patent search be conducted of the relevant databases to identify the closest prior art. Identifying any relevant art early in the application process will aid in determining the appropriate patenting strategy.

### 5.6.3 Establish any Due Dates

All due dates should be established and logged immediately. For example, for Canada and the United States, if aspects of the invention were disclosed less than one year ago, the one-year anniversary of the date is logged.

### 5.6.4 Review of Existing Material

Documentation may have been prepared for other uses that can be valuable in the preparation of the technical disclosure. For example, journal articles, papers and theses, invention disclosures, grant applications, and research notes could all be useful. Feedback from the patent agent should be provided on this documentation, indicating where further documentation is required, and examples of the type of content required based on existing documentation.

### 5.6.5 Create List of Action Items

Based on due dates, a detailed list of action items is prepared for completing the technical disclosure. This will include assignment of tasks to specific individuals and due dates. Where preparation of the technical disclosure requires collaboration of several individuals, a formal project management approach is often critical.

### 5.6.6 Casting Invention in Light of Prior Art

As soon as possible, the technical disclosure is reviewed along side the patentability search by both the inventors and the patent agent. Based on this review, a draft of the summary of Invention is agreed to. This document ideally abstracts the key aspects of the invention or inventions as broadly as possible in light of the prior art identified in the patentability search.

### 5.6.7 Completion of Technical Disclosure

The technical disclosure is completed which provides an "enabling disclosure" on all key aspects of the invention identified in the summary of invention.

### 5.6.8 Finalisation of Detailed Description

The patent agent transforms the technical disclosure into a detailed description that contains an "enabling disclosure" but also abstracts the invention to the



## Intellectual Property Protection

necessary scope from a patent perspective. Where a provisional filing is being made, claims may be included that foreshadow the claims that will be filed at a later date, and at any rate, the detailed description should foreshadow the claims that will be filed at a later date.

### 5.6.9 Finalisation of Claims

Where a non-provisional patent filing is being made, the claims are finalised at this stage. There should be adequate support for each of the claims in the detailed description.

### 5.6.10 Completion of Patent Related Documents

A "Multiple Inventorship Form" is signed by all inventors stating their respective contributions to the invention. Assignments are signed by all the inventors. An extra original copy of all documents is retained for the file.

### 5.6.11 Filing

The patent application or applications is (are) filed.

### 5.6.12 Due Dates

All due dates are logged, including due dates for making foreign filings or for considering filing further patent applications on improvements.

### 5.6.13 Monitoring

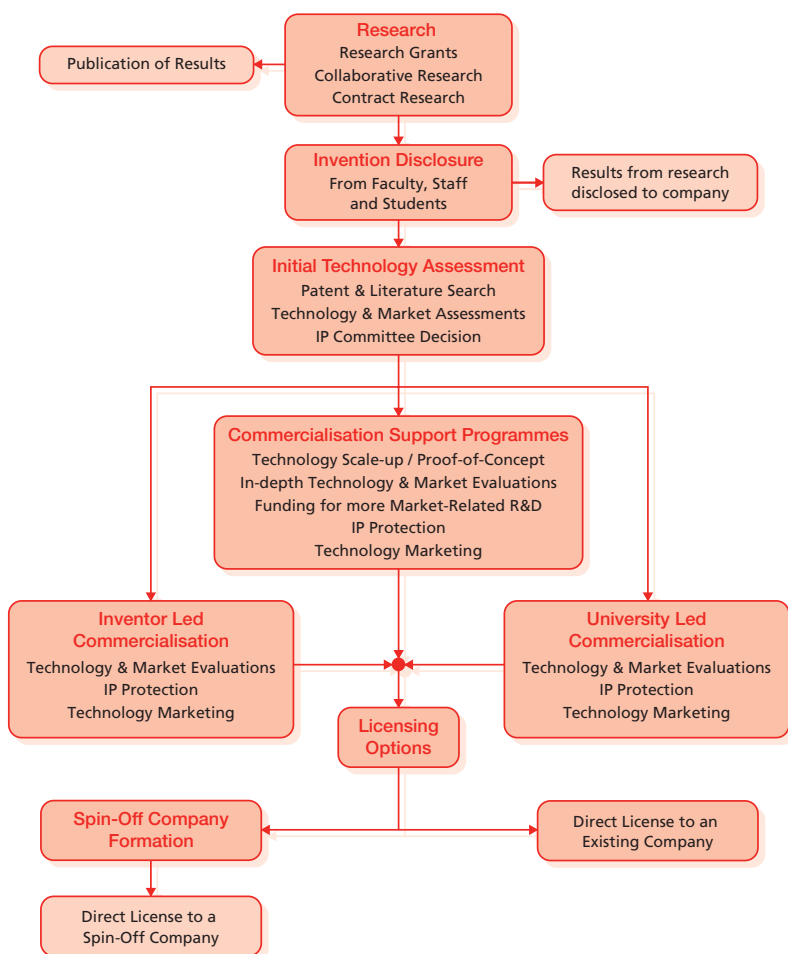
An appropriate monitoring process is put in place, for example, monitoring of newly published patent applications in a specific technical area, or newly published patent applications of a particular competitor. The monitoring process may also include a process for identifying infringements in the marketplace.

*Please note that the information contained herein is only of general application. It is important to obtain specific advice based on particular circumstances.*

# Choosing the Right Commercialisation Path

*the critical factor in ensuring successful commercialisation is choosing the correct commercialisation route*

The following diagram outlines the commercialisation process in Invent - the key steps from research to the transfer of the technology to a new or existing company.



# 6

## Choosing the Right Commercialisation Path

Invent will work closely with the inventor(s) to determine and implement the commercialisation pathway.

### 6.1 Defining Your Objectives

Following the technology disclosure process, it is time to pause and consider your personal and commercial objectives. You must define your end game so that you are able to devise a strategy to achieve it.

A commercialisation effort of any sort is likely to take up considerable personal resources so it is of the utmost importance that you consider your personal objectives. These objectives may encompass any of the following:

- The achievement of personal wealth
- Academic recognition
- A short-term exit to enable you to pursue other activities
- The avoidance of personal risk
- The most effective way to maximize the impact of your technology

Be honest with yourself about what you really want to put in to the commercialisation effort and what you really expect out of it. Be upfront with Invent or potential partners as it is vital that all participants have clear and realistic expectations.

### 6.2 The Channels of Commercialisation

There are three broad channels for the commercialisation of your technology:

- a) Selling or assigning ownership of the technology to an existing company
- b) Licensing the technology to an existing company
- c) Starting a new company

The choice of the right channel is critical. Key variables that can affect this decision include the nature of the technology itself, the industry it will be applied to, and the objectives of the inventor.

### 6.3 Selling or Assigning Ownership of the Technology

Selling your technology could be a viable solution in the following situations:

- When there are major companies who control the market and will make starting a competitive business very difficult
- When your technology could offer a competitive advantage to one of these major companies, who may offer to buy it in order to improve their products and services
- When there is only one market in which the technology could be commercialised, or when one company in particular is an ideal target for the technology

A key disadvantage to selling the technology is that, once sold, you will no longer have any influence in how the technology is used or commercialised. You may lose the right to use it yourself, even for research or teaching purposes, unless it is part of the assignment agreement.

### 6.4 Licensing a Technology

Licensing a technology could be a viable solution in the following situations:

- When the technology applies to a variety of different markets, it can be licensed to different partners who will commercialise in each of these markets and potentially create multiple revenue streams
- Unlike selling or assigning the technology, you can give the licensee only the rights that you are willing to grant
- When the inventor wants to commercialise, but does not have the resources or interest to develop a new business
- When the market opportunity is too small to warrant the creation of a new company

Although the licensing route helps share the risk associated with the commercialisation of a new technology, it will generate substantially lower returns for the inventor than might be achieved if they commercialised it themselves.

#### Licensing Agreements

Licensing agreements usually take one of two basic forms: a nonexclusive license or an exclusive license.

# 6

## Choosing the Right Commercialisation Path

### *Nonexclusive Licenses*

Typically grant to the licensee the right to make, have made, use and sell the specific technology described in the license, with or without the right to sublicense others.

These licenses can be granted with defined geographical rights, and for a specific field of use or application, depending upon the licensee's business and the purpose of the agreement.

### *Exclusive Licenses*

Grant to the licensee the right to make, use and sell the specific technology described in the license, rights to the exclusion of all others including the inventor.

Companies like exclusive licenses because they restrict their competitors from gaining access to the technology. This creates more risk for the licensor, since the successful commercialisation of the technology depends entirely on one company. Therefore, the licensing terms are usually more restrictive. For example, exclusive licensing agreements often require the payment of minimum royalties, and reasonable efforts on the part of the licensee to commercially exploit the inventions, in order to maintain the exclusivity of the license. In the event the licensee fails to meet these requirements, the agreements usually provide for termination, or conversion to a nonexclusive license.

### *Advantages of Licensing*

- Instant resources dedicated to commercialisation
- Sharing and diversification of risk
- Earlier financial reward
- Less time and resource intensive for inventor

### *Disadvantages of Licensing*

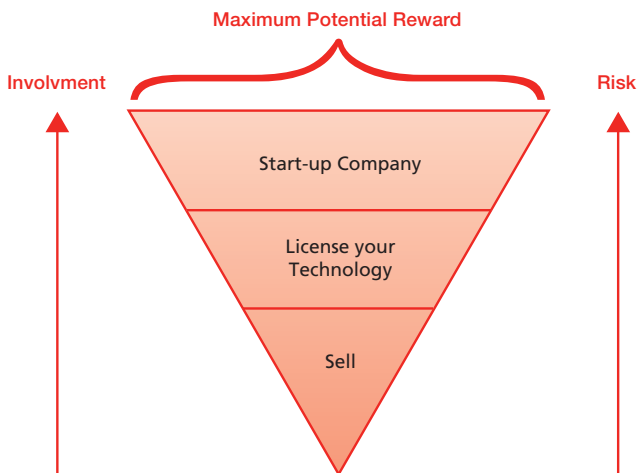
- Losing partial control of the technology
- Lower financial return than inventor-led commercialisation
- Involvement of the inventor is reduced
- Difficult to find appropriate licensee

## 6.5 Commercialisation via Start-up Company

Many staff and students will consider starting a new company for the following reasons:

- The market potential for the opportunity is worth the added risk
- They have the desire to participate in maximizing the value of the technology
- They wish to work with an experienced business person who can lead the company
- They have contacts to create a business team and access to other support and resources
- Attempts to license the technology have been unsuccessful

Creating a successful new company is very difficult and success is often heavily influenced by factors outside your control. The stark reality is that a very large proportion of start-ups fail. Although creating a new company to commercialise your technology holds the highest risk, it can also lead to the highest potential reward.



# 6

## Choosing the Right Commercialisation Path

The process of creating a new company has more to do with the quality of the market than the quality of the technology. The following describes the common steps involved in assessing the potential to create a new technology-based business:

### 6.5.1 Product or Service Options

For any given technology, there are often many potential directions or areas of application. The first step should be to explore different product or service concepts that the technology could enable, as well as the different markets to which they could be targeted.

### 6.5.2 Business Concept Development

The best product or service options from step 1 should be chosen for further analysis. This might include either primary or secondary research within each technology or market area. A brief document on each option should be prepared outlining a description of the product or service, and an analysis of its strengths, weaknesses, opportunities and threats (SWOT analysis).

### 6.5.3 Feasibility Analysis

Based on the analysis from step 2, the new company will need to select an initial product or service direction that will serve as the basis for entering the market. Too many early stage companies try to become all things to all people. Given the scarce resources available to new start-ups, it is important to begin with a specific product direction that is focused on a target market. A 5-10 page feasibility analysis should be prepared that includes a more detailed description of the product or services, the underlying technology, the market opportunity, the key competitors, your competitive advantage, and identification of any obvious issues that are not yet addressed. Concept development and feasibility analysis are discussed in more detail in Section 7.

#### 6.5.4 Identification of Initial Business Team

Although the initial product/service and target market have been identified, these plans are meaningless without the right team to develop and implement them. Where successful licensing is based on the strength of the technology, the greatest single predictor of the success of a start-up company is the strength of its management team.

In fact, investors have a maxim that goes:

*'Always choose a first rate manager with a second rate product over a first rate product in the hands of a second rate manager'*

Inventors often focus their efforts on identifying and recruiting the technical team because it is easier for them to identify the skills required. It is equally important to identify the management team as early as possible. If no experienced business leaders are involved, the technology transfer office may have links to other organizations, and the business and investment community that can help identify potential candidates.

#### 6.5.5 Preparation of the Business Plan

A business plan serves two main functions. First, it can be a management document that helps the team develop and implement the strategies essential to building a successful business. Second, it can be a sales document that is used to attract investors or strategic partners to the business. The business plan is an expansion of the feasibility analysis, but is more comprehensive, and provides full details of key strategies, the management and technical team, financial projections and the investment opportunity.

### 6.6 Key Issues Involved With All Paths to Commercialisation

#### *Control Issues*

Whether licensing the technology, or starting up a new company, commercialisation means giving up some measure of control over the technology. No matter which commercialisation path you follow, you will need to collaborate and communicate with others who may have different perspectives than you do. For example, you may need to deal with business people who are less interested in the technology itself and are focused more on the market opportunity and financial rewards. Commercialisation is often collaboration between people with common objectives but different motives.

## *Technology Issues*

No matter which commercialisation path you follow, you will need to prove that your technology works. In other words, you will be required to provide some tangible proof-of-concept, or better, a functional prototype. The technology transfer office may have resources to help support proof-of-concept or prototype development, or can help you access other programs that can.

## *Market Issues*

The potential market for the technology can be an important factor in the choice of commercialisation path. Not every invention warrants the creation of a new company. Some markets, quite simply, will be too small to warrant company creation. In other cases, markets may be controlled by large and mature companies that would make it difficult to compete. Be realistic about the value of the technology and carefully weigh the size and structure of the market as part of choosing the right path to commercialisation.

## *Team Issues*

Inventors must be honest about their role and commitment to the commercialisation of their technology. If inventors are not prepared to make a large commitment, or are not interested in working as part of a management team, then a licensing path might be appropriate. When creating a start-up company, inventors must recognise their skills and limitations and seek to fill any gaps with the right expertise. Most new companies fail because of poor management. Sometimes inventors believe their strengths as researchers can be equally applied to company management. While this can sometimes be the case, an inventor rarely becomes the President of the company that is created to commercialise their technology. If the inventor remains actively involved in the start-up company, they are often most productive in the role of Chief Scientist or Chief Technology Officer.

# Concept Development and Feasibility Analysis

*whether your technology will be licensed to a company or whether you decide to start a company, a feasibility analysis is vital.*

This section describes in more detail the critical steps in assessing the potential to create a new technology-based business. Concept development and feasibility analysis will guide you through the process of considering what kind of products or services could be created using the technology and analyzing the market feasibility of those products and services. These steps should not be followed in isolation. Input from the tech transfer office, potential customers and others involved in the industry can be important to choosing a product direction that meets a real market need. Whether your technology will be licensed to a company or whether you decide to start a company, a feasibility analysis is vital.

## 7.1 Developing a Business Concept

A business concept is a concise description of an opportunity that contains four elements:

- The product/service
- Customer definition
- Value proposition (benefit to the customer)
- Distribution channel (how you will deliver the benefit to the customer)

## 7.2 Feasibility Analysis

A feasibility analysis tests a business concept to determine its market potential. This is in contrast to a business plan, which assumes feasibility of the concept and simply describes a plan to execute the business concept. There are two key questions that the feasibility analysis should answer:

- a) Is there a market of sufficient size to make the concept feasible and worth the time and effort to create a new product or service?
- b) Under what conditions should the product or service be developed, or should a new company be launched? Many concepts can achieve feasibility if the right conditions are in place. The feasibility tests listed below will help you determine those conditions.

# Concept Development and Feasibility Analysis

The following are important questions to answer when considering the commercial feasibility of your project:

## *Industry*

1. What are the demographics, trends, patterns of change, life cycle stage of the industry?
2. Are there any barriers to entry? If so, what are they?
3. What is the status of technology and R&D expenditures?
4. What are typical profit margins in the industry?
5. What are distributors, competitors, retailers, etc. saying about the industry?

## *Market / Customer*

6. What are the demographics of the target market?
7. What is the customer profile? Who is the customer?
8. Have you talked with customers?
9. Who are your competitors and how are you differentiated from them?

## *Product / Service*

10. What are the features and benefits of the product or service?
11. What are the product development tasks and what is the timeline for completion?
12. Is there potential for intellectual property rights?
13. How is the product or service differentiated from others in the market?

### ***Finance***

14. What are your start-up capital requirements?
15. What are your working capital requirements?
16. What are your fixed cost requirements?
17. How long will it take to achieve a positive cash flow?
18. What is the break-even point for the business?

### ***Distribution Channels***

19. What are potential distribution channels and which customers will be served by them?
20. Are there ways to innovate in the distribution channel?

### ***The Team***

21. Can an appropriate start-up or genesis team be put together to execute the concept?
22. What experience and expertise do we have? What are the gaps and how do we fill them?

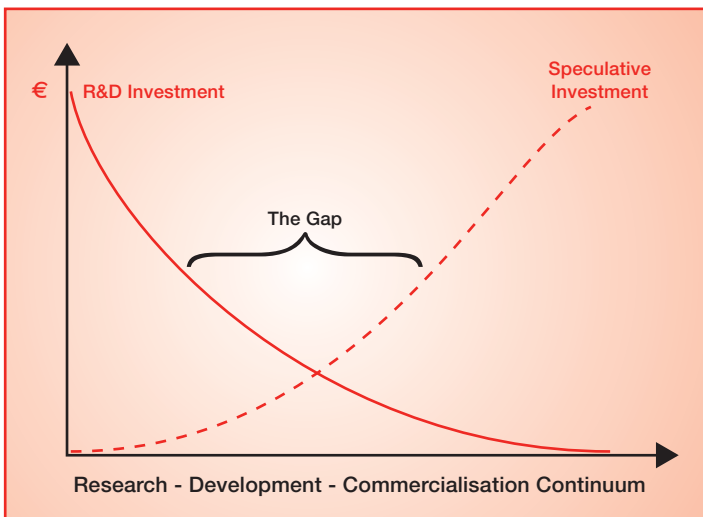
# 8

## Finding the Cash to Grow

*the funding gap can cause even the most innovative start-ups difficulty in raising first stage funding*

### 8.1 The Funding Gap

When a company grows from the concept stage towards becoming a large company its cash needs are likely to grow with it. While it may be relatively easy to raise around €50,000 through friends, family, grants, subsidies etc., there is a well known funding gap between where that funding stops and where the investment community can take the company to the next level. A company working up the ladder of investment is often left struggling to raise the vital money that it takes to carry them from concept stage to the size of a small or medium sized enterprise (SME). This situation has created this funding gap, which can cause even the most innovative and high potential start-ups difficulty in raising first stage funding.



## 8.2 Where to Find Funding

### *Banks and Loans*

An early stage technology company will almost certainly need some kind of financial support to successfully get started. The key problem is that most institutional funding organizations (e.g. banks and most conventional investors) will be accustomed to investing in very different propositions (see the funding gap opposite).

<b>Banks and some Investors Prefer</b>	<b>Technology Start-up Business Characteristics</b>
Stable Cash Flow forecasts	Fluctuating cash needs
Track Records	Business inexperience
Steady Growth forecasts	High growth rate
An easy to understand market	New markets/ complicated technology
Good fixed asset ratio	Low fixed assets ratios
Low gearing ratio	High debt ratios

While you may get some support from the bank you will almost certainly have to put up some sort of personal security against the loan. Be very wary of this; remember that setting up a business and commercialising research is extremely high risk. If you are unable to pay off your debts the banks will collect on their security.

### *Business Angels and Private Investors*

There are a number of business angels in Ireland and Invent and Enterprise Ireland have a wide network of contacts in this sector. Good business angels will not only introduce you to private investors but importantly should have excellent connections with relevant funds. When searching out a suitable business angel it is worthwhile to investigate their track record in closing deals in your specific technology sector.

The majority of business angels will introduce companies to private investors who, unlike the venture capitalist, may not have the ability to support a second round of funding or to deal with unexpected complications along the way. Not only does this limit the ability of the company to grow but it can create significant confidence problems for new investors when the current ones refuse to participate.



## Finding the Cash to Grow

Be aware that over enthusiastic amateur private investors can be willing to jump in to a hyped up company and end up paying at too high a valuation. While in the short term this seems to be in the company's interest it can make it very difficult to attract professional venture capitalists who may not want to pay a similar high valuation in later rounds. Dropping your valuation to a reasonable level that attracts the venture capitalists can leave a number of existing share holders angry and could price you out of the market for further investors. When it comes to valuing your company or any negotiations with a potential investor, it is of the utmost importance that you have the right advisors around you. Having a good quality legal advisor/accountant beside you will not only make a better impression with investors but should help you provide a clear and crisp capitalization structure as well as well as creating referrals to other investors.

### *Venture Capital*

There are a variety of active VC firms in Ireland many of which have been part-funded by Enterprise Ireland. Some VCs specialize in certain technology areas or at certain stages of technology development. Invent will advise you which VCs to talk to.

### *Public Markets*

An initial public offering (IPO) is the mechanism through which a company raises funds from the public by selling a given number of shares of the company in an open market like a stock exchange. Commonly referred to as "going public", an IPO is inappropriate for the majority of early stage companies attempting to raise a relatively small amount of capital.

### *Government*

Enterprise Ireland runs a number of programmes designed to help entrepreneurs start companies and assist them in commercialisation, research and product development. Invent works closely with Enterprise Ireland and entrepreneurs to ensure they can access these programmes. Additional information on these programmes is available from Invent and the Enterprise Ireland website [www.enterprise-ireland.com](http://www.enterprise-ireland.com)

# Appendix I

## Frequently Asked Questions About Intellectual Property



### 1. What is Intellectual Property?

Intellectual Property (IP) is a broad term used to describe a product of the human mind which has some value in the market place. There are five main classes of IP:

- Patents – confer exclusive rights to an invention for a period of time in designated countries. To be patentable an invention must be novel, involve an inventive step and must be capable of industrial application (very broadly defined)
- Copyright – covers all literary or artistic materials, music, software, multimedia and many other areas.
- Trademark – can be used to distinguish one good or item from all others in the marketplace. It can be a word, symbol, image, logo etc. Trademarks can be registered to give the strongest IP protection
- Design – refers to the features of an article or product and can be registered to give the strongest protection
- Know-how and trade secrets – any technical or commercial information not covered by the other forms of IP. If confidentiality is maintained it can be more valuable than people realize.

### 2. Why is Intellectual Property important?

IP is important because it confers exclusive legal rights which can be very valuable. IP can have significant commercial and financial benefits for individuals, companies and universities including:

- It converts knowledge into tangible assets which can be transferred, licensed and sold
- It can generate significant royalty revenues for the university and inventors
- Inventors qualify for tax relief on income obtained from licensing royalties
- It can act as an important product differentiator in the market place e.g. the Coca Cola logo is a registered trademark
- It can provide a legal monopoly in technology niche areas



# Frequently Asked Questions About Intellectual Property

### 3. What is the university's policy towards IP?

DCU aims to encourage the identification, protection and exploitation of IP. For this reason, the university has put in place a very attractive incentive scheme to encourage staff to produce valuable IP which the university can commercialise. Further information is available on the Invent website.

### 4. Where can I get advice and who can I talk to?

Invent is responsible for the implementation of the university's policy on intellectual property and drives the identification, protection and exploitation of intellectual property resulting from DCU research. Your Invent contact details are on our website.

### 5. What is Invent's role?

Invent is DCU's 'gateway'. Invent offers advice in a number of areas including:

- Identification, protection and exploitation of intellectual property
- Commercial aspects of research proposals and contracts
- Preparation of non-disclosure agreements, material transfer agreements and industrial research contracts
- Sourcing licensees for IP
- Negotiating license agreements
- Establishing new companies

### 6. What mistakes are commonly made?

The most common mistake researchers make is to disclose an invention before determining whether it is valuable and patentable. In order to patent an invention information about it must not have been disclosed publicly (except in the United States). Disclosure can occur in a number of ways including discussions with people not working on a project, lectures, seminars and reports, poster displays, exhibitions and open days, conference abstracts, interviews for newspapers, radio or television, publication in a thesis, magazine or journal.

## 7. Why should I want to identify and protect IP?

The university offers very generous financial incentives to encourage staff to identify IP and bring it to the attention of Invent. A staff member can retain up to 75% of income generated from licensing royalties after costs are deducted. Staff qualify for tax relief on this income. Further information is available on the Invent website.

## 8. How can I identify and protect Intellectual Property?

Carry out regular audits of your research to identify possible commercially attractive IP and then contact our experts in Invent. Every member of your research team should be made aware of the non-disclosure requirements for patenting.

## 9. Who owns the patent for my invention?

In Ireland and most countries, employers (including DCU) own the IP rights to inventions made by employees as part of their employment duties. However, as a legally recognised inventor you will benefit financially from any revenues generated from your invention.

## 10. Why don't I own the patent rights?

One important reason why employers own the patent rights is because they have the financial resources to protect and exploit IP. This makes it more likely that patents will be commercialised successfully to the benefit of all parties.

## 11. What is the process for handling potential IP in DCU?

After an initial meeting has determined that your invention could be valuable and patentable, you will be asked to complete an Invention Disclosure Form (IDF) with the help of our Invent expert. This will be used to commercially assess the invention. A patent agent will then use the IDF to prepare the patent application with your assistance.

## 12. Is patenting expensive?

Patenting can be a very expensive process if patent protection for your invention is filed internationally. However, all costs are paid by the university. There are no costs for you or your research group.



# Frequently Asked Questions About Intellectual Property

**13. If my invention is patented can I publish?**

Yes. Except in special circumstances, there is no reason why you can't get both a patent and a publication from your invention.

**14. Won't patenting slow up my research or publications?**

No, with very few exceptions. The important thing to do is to talk to Invent before submitting a paper for publication.

**15. Isn't publishing rather than patenting more beneficial for society?**

No. Publishing an invention before patenting it greatly reduces the chances of anyone investing in it, which makes it much harder to commercialise.

**16. What will happen to my invention if its patented?**

If your invention or know-how is commercially attractive, Invent will seek to commercialise it for the benefit of the university and the inventor. This can be done in a number of ways including licensing it to a company, establishing a start-up company or setting up a joint venture with a company.

**17. If my invention is licensed to a company can I still use it for research?**

Yes. As part of the licensing agreement your research group will still be able to use it. The license may even control in what commercial areas and countries the company can use the invention thus leaving open other commercialisation opportunities.

**18. If my invention/research is not patentable could it still be commercially valuable?**

Yes. Some forms of IP cannot be patented because they do not meet the three criteria for patenting. However, they may still be valuable if they can be licensed to companies/third parties as confidential know-how.

## 19. Are there any important documents I need?

Invention disclosure forms, material transfer agreements and non-disclosure agreement forms are available on the Invent website and play important roles in protecting your IP.

## 20. Why are these forms important?

- Material transfer agreements should be used when you are giving confidential information and/or material to another party which has not been patented but may be in the future.
- Non-disclosure agreements should be used when you will disclose confidential information in meetings with other parties. Without them, your research may no longer be patentable.
- Invention disclosure forms are used by Invent to assess your invention and prepare the patent for your invention.



## Appendix II

# Intellectual Property Checklist

Type of IP	Coverage	Protection	Note
Patents	An invention which must be novel, inventive and capable of industrial application	Invent files patent at the Patent Office	If you disclose your invention it will not be possible to file a patent (except in the United States)
Copyright	Literary or artistic materials, music, software, multimedia and many other areas	Automatic right	Must be able to prove your authorship
Trademark	A word, symbol, image, logo etc. which distinguishes one good or item from all others in the marketplace.	Registration at the Patent Office	Many trademarks are very valuable and are important products in the marketplace
Design	Refers to the features of an article or product and can be registered to give the strongest protection	Registration at the Patent Office	
Know-How/ Trade Secret	Any technical or commercial information not covered by other forms of IP	Keep it confidential	Often more valuable than people realise if confidentiality is maintained

### Division of Licensing Income after Deduction of Costs

	Inventor	University	Faculty/Research Unit
0 - € 50,000	75%	15%	10%
€ 50,000 - € 150,000	50%	30%	20%
€ 150,000 +	33.3%	33.3%	33.3%

# Appendix III

## IP & Commercialisation Information



### 1. Intellectual Property Information and Databases

- Irish Patents Office: <http://www.patentoffice.ie>
- European Patents Office:  
<http://www.european-patent-office.org/index.en.php>
- European Patent Search:  
<http://www.european-patent-office.org/espacenet/info/index.htm>
- United States Patent Office: <http://www.uspto.gov/>
- UK Patent office: <http://www.patent.gov.uk/>
- World Intellectual Property Organization:  
<http://www.wipo.int/portal/index.html.en>
- IP Legislation: <http://www.entemp.ie/science/ipr/legislation.htm>
- IP Europe: <http://www.ip-europe.org/>
- Trademark Information: <http://oami.eu.int/en/>

### 2. Business Supports and Technology Transfer

- Enterprise Ireland: <http://www.enterprise-ireland.com>
- AURIL (UK): <http://www.auril.org.uk>
- Association of University Technology Managers (US): <http://www.autm.net>
- Association of European Science and Technology Transfer Professionals:  
<http://www.astp.net>
- Licensing Executive Society: <http://www.les-europe.org>
- Proton Europe: <http://www.protoneurope.org>
- Gate 2 Growth: [http://www.gate2growth.com/g2g/g2g\\_welcome.asp](http://www.gate2growth.com/g2g/g2g_welcome.asp)
- Starting a business in Ireland: <http://www.startingabusinessinireland.com/>
- Small Firms Association: <http://www.sfa.ie/>
- Business Access to State Information and Services (BASIS):  
<http://www.basis.ie/>
- Fingal County Enterprise Board: <http://www.fingalceb.ie/>
- Dublin City Enterprise Board: <http://www.dceb.ie/>



# Notes

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