

# The Dissertation as an exercise in Innovation and Entrepreneurship

Iniciação à Investigação

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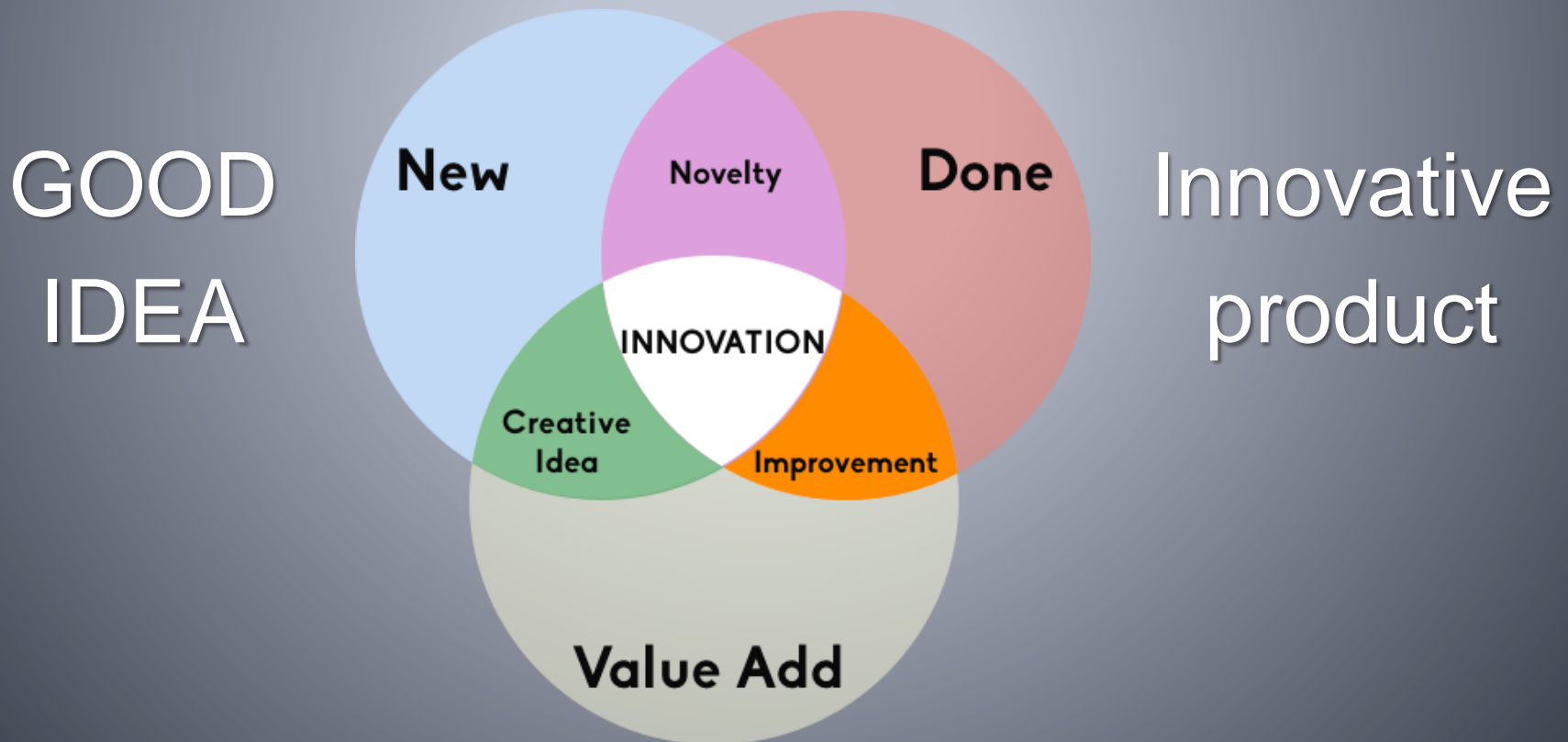
# What is Innovation ?

- Do something differently
  - Creating added value
  - More efficiently
  - In a more sustainable way
  - It's not easy...
- ... if it were easy, others would have done it



# From ideas to products

It is not enough to have a good idea, it is necessary to implement



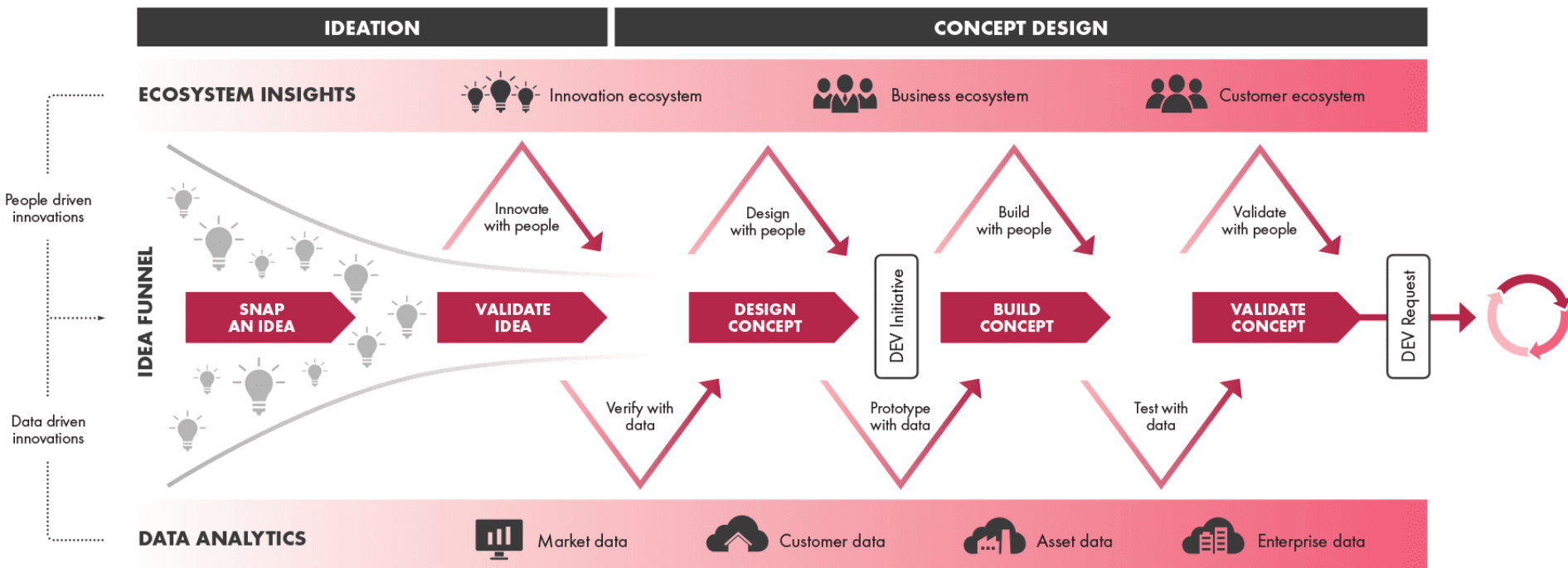
# Research // Innovation

What's the difference?

- Innovates the one who permanently seeks to create something different
  - The ones of the crazy ideas
- Do research, who turns an idea into a product or a proof of concept
  - The ones that have the knowledge and the tools

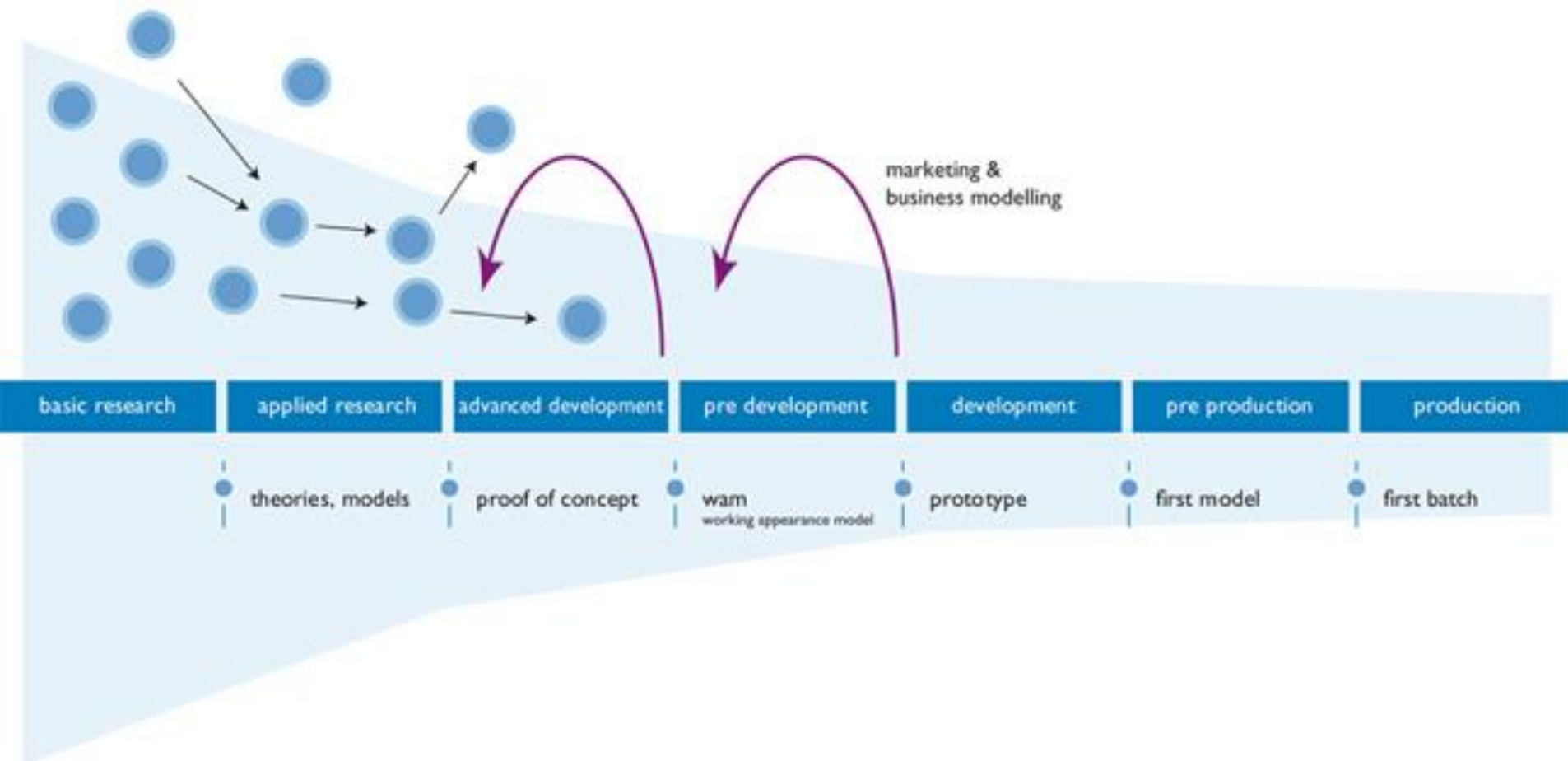
# The generic approach for innovation

Innovation in MsC Thesis is not very different



# Our ambition for a thesis

Theories and models is good, proof of concept is our dream





# Innovation in a thesis

## 1) The problem landscape, the context of the thesis

- It is necessary to know very well the surroundings of the problems associated with the thesis
  - to innovate we need to be in the edge of the knowledge
  - we need to know the state-of-the-art
- We will enter a world of knowledge that is too vast, we will have to know how to narrow the focus to our problem
  - What knowledge do we need to understand, explain and get into our problem?
  - what are the focus of our problem?
  - at this point we are only identifying what the other did, there are a innovation on this phase, but...
  - ...is **essential to identify opportunities of innovation**

# Innovation in a thesis

## 2) The motivation

- What about the problem we want to solve in the thesis?
  - There are opportunities for innovation?
  - What can we do differently?
  - What kind of innovation?
    - new algorithm, new software, new business model...
- What about the objectives and expectations of your stakeholders?
  - The host companies are interested in your innovative ideas?
  - Your supervisor agree and support your innovative thinking?
  - There are some bright future for your innovative ideas?
  - Do you think the thesis review jury will find these new ideas scientifically acceptable?
  - Will these new ideas be the beginning of a new company, founded by you?

Why not...



# Innovation in a thesis

3) The research questions. Unlike objectives, “research questions” have a little of innovation flavor.

- What questions do you hope to have answered at the end of the thesis?
  - Does the Innovation Challenge have a solution?
  - What are the difficulties associated with this innovation?
  - What resources are needed to reach the solution?
  - what is the procedure to reach the solution?
  - how much will your solution and innovation be worth?
  - How much will your solution and Innovation cost?
  - what variants of solutions can we have?
  - What can go wrong with your Innovation?
- It is important to never forget, during your work, these are the questions that you are trying to answer. These questions will help you stay focused

# Innovation in a thesis

4) What will be the innovative approach to use in the thesis

- What you will do differently in the process or methodology of your thesis compared with compared to what others have done before?
  - What is different in the data you use?
  - What is different in the data processing?
  - What is different in the tools you will use?
  - Is a radical different methodology or is an adaptation?
  - why didn't others think of this before?
- You better have a plan B in your pocket
  - When we innovate, it is very likely to go wrong
  - But to move to plan B, I need to know what can go wrong
    - ... not easy to set a plan B at this yearly stage... you will be to busy trying to figure you plan A

# Innovation in a thesis

## 5) What will be the usage of your innovation?

- Check the potential stakeholders, one by one, and try to figure how they could use your innovation
  - Related with your supervisor,
    - at the end you will be able to produce a paper with the result of your work?
    - this work open opportunities for a research career?
  - Related with the host company,
    - there are new services or product triggered by your work?
    - there are improvement in the internal work process, that increase the efficiency of the company?
  - Related with yourself,
    - the ideas you worked on, can be patented?
    - the results of your innovation work can be the basis for a new startup?
    - you will be contacted by a company because of your innovative knowledge?

# Knowledge & Technology Transfer

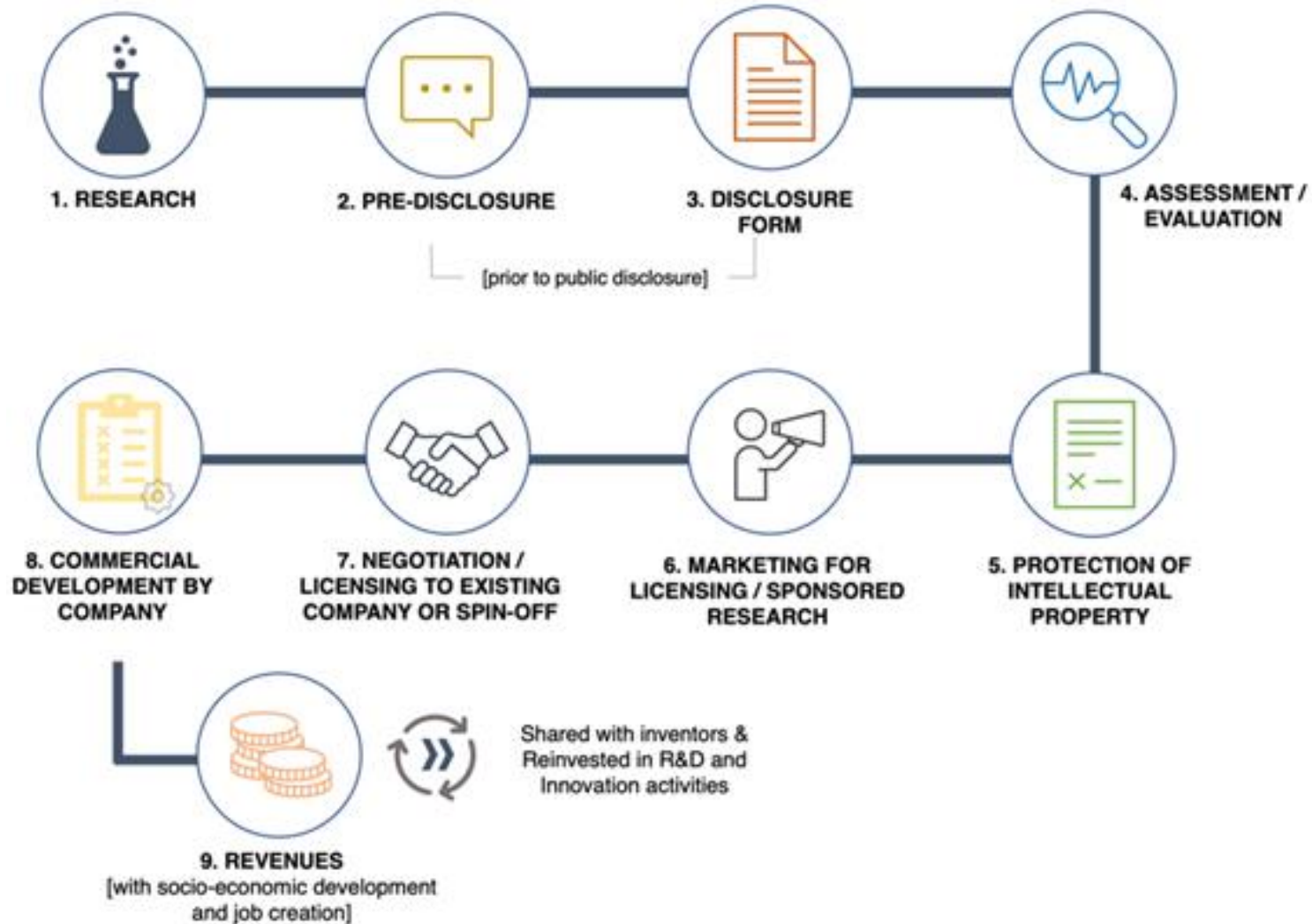
## ■ What is Knowledge Transfer?

- Knowledge Transfer (KT) is a process that allows research results, discoveries, scientific findings, technology, data, software, literary works, know-how and other forms of intellectual property (IP) to **flow between different stakeholders**.

## ■ What is Technology Transfer?

- Technology Transfer (TT) is the process by which new inventions and other innovations stemming from scientific and technological research are turned into **marketable products and services**.
- Technology development can occur through the “**market pull**” approach, which attempts to provide products to the market demands; or via “**technology push**”, when R&D in new technology drives the development of new products.

# What are the typical steps in the Knowledge Transfer process?





# Intellectual Property (IP)

## Intellectual Property Rights (IPR)

- Intellectual Property (IP) refers to creations of the human mind, including all forms of knowledge that we are able to create, such as inventions, literary and artistic works, symbols, names, images, and designs used in commerce
  - IP can thus be considered the knowledge that we create every time we perform research activities
- Intellectual Property Rights (IPR) are the legal titles to which we apply for to get the right of preventing others of using and exploring IP.
  - IPR are the contract that is made between the applicant and society in order to value the investment made by the IP owners in its development.
- Both IP and IPR can be exchanged between organizations leading to improved use of said knowledge and to innovation.
  - By transferring just IP we are not able to prevent others from using it without our authorization. IPR allows us to prove that we own a certain IP asset.

# What are the different instruments of Intellectual Property protection?

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

# "Inventor" vs. "Author"

- An **Inventor** is someone who had actively and intellectually contributed to produce an invention;
  - To determine **Inventorship** there are two main requirements:
    - (i) the conception of the idea
    - (ii) the reduction of the idea into practice.
- An **Author** is someone that created a piece of writing or other literary/artistic work.
  - To determine **authorship** you select every natural person that contributed to the scientific publication either by writing it or reviewing it.

# What is a patent?

- A patent is a **time-limited and territorial IPR** which provides the patent owner(s) exclusive rights on the patented technical invention. It allows the owner to prevent others from using the invention for commercial purposes for a period of **20 years**.
- Patents can be used to **protect products, processes, or use of a product** that provide a new way of doing something, or that offers a new technical solution to a problem.
- Patents are sometimes considered as a **social contract between the applicant and society**.
- A patent should **describe the technical problem** to be solved, **how the invention solves it**, and **how this offered solution differs from the known prior art**.
- The patent owner may give **permission to, or license, other parties** to use the invention on mutually agreed terms. The owner may also **sell the right** to the invention to someone else, who will then become the new owner of the patent.
- Once a **patent expires**, the protection ends, and an invention enters the **public domain**; that is, anyone can exploit the invention without infringing the patent (*e.g.* generic drugs).

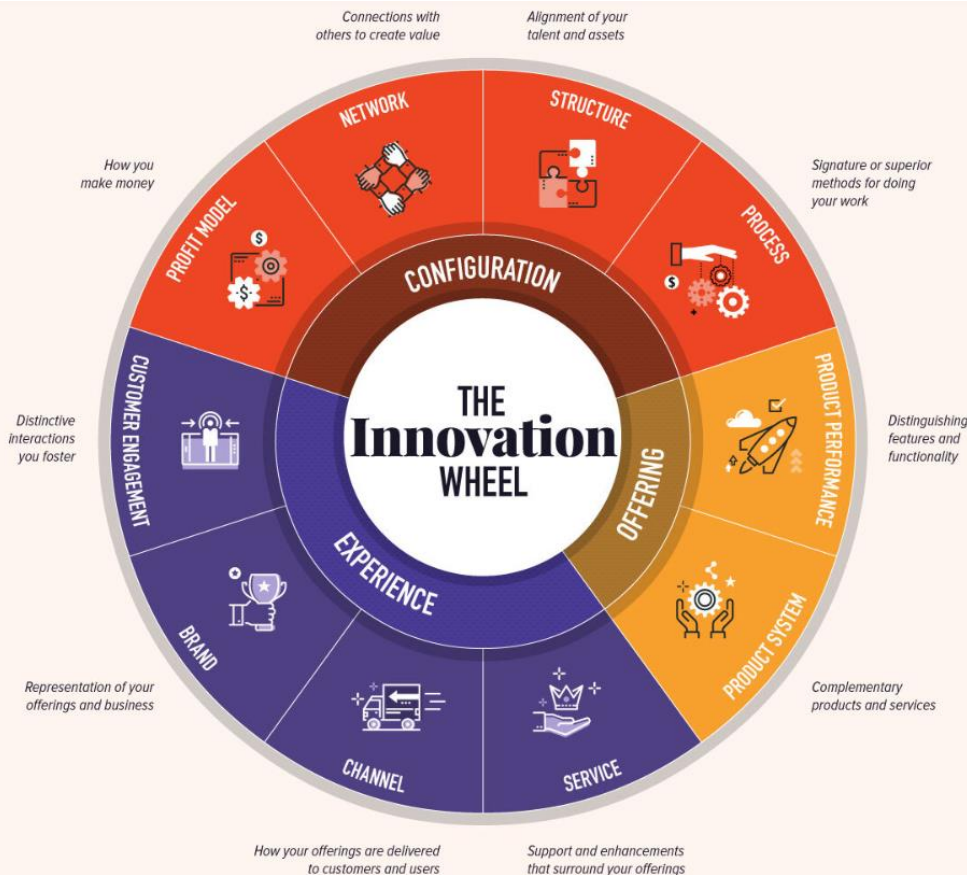
# What is a utility model?

- Similar to patents, utility models **protect new technical inventions** through granting a limited exclusive right to prevent others from commercially exploiting the protected inventions without consents of the right holders (often 6 to 10 years from the filling date – **10 years in Portugal**). They are sometimes referred to as “short-term patents” or “utility innovations”.
- In general, utility models are considered **particularly suited for protecting inventions that make small improvements** to, and adaptations of, existing products or that have a short commercial life. Utility model systems are often used by local inventors.
- In practice, protection for utility models is often sought for **innovations of a rather incremental character which may not meet the patentability criteria**, as the requirements for acquiring utility models are typically less stringent than for patents.



# Innovation and Entrepreneurship

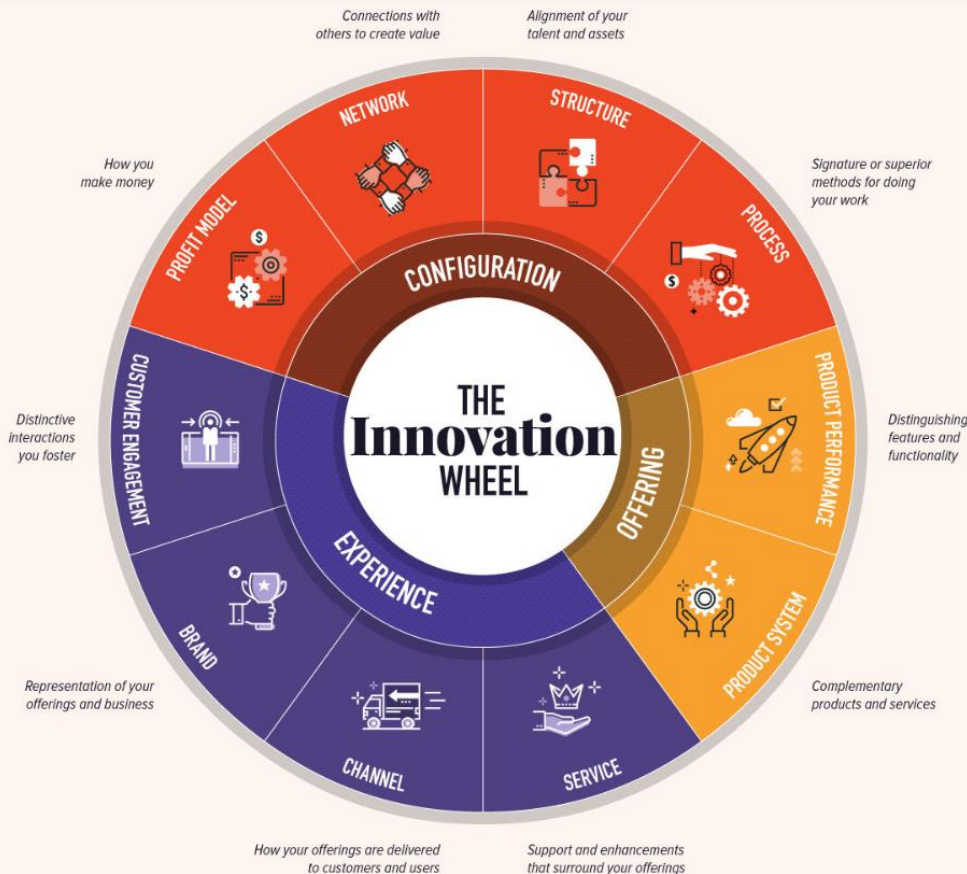
In the world of entrepreneurship there is a somewhat different idea about innovation



| #   | Innovation Type     | Description   |
|-----|---------------------|---|
| 1.  | Profit Model        | How you make money                                      |
| 2.  | Network             | Connections with others to create value                 |
| 3.  | Structure           | Alignment of your talent and assets                     |
| 4.  | Process             | Signature of superior methods for doing your work       |
| 5.  | Product Performance | Distinguishing features and functionality               |
| 6.  | Product System      | Complementary products and services                     |
| 7.  | Service             | Support and enhancements that surround your offerings   |
| 8.  | Channel             | How your offerings are delivered to customers and users |
| 9.  | Brand               | Representation of your offerings and business           |
| 10. | Customer Engagement | Distinctive interactions you foster                     |

# Innovation and Entrepreneurship

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## CONFIGURATION



### PROFIT MODEL

The **New York Times** pivoted from its traditional ad-driven media model to digital user subscriptions.

**The New York Times**



### STRUCTURE

Google's "20% rule", which allowed employees to work on side projects, led to the creation of Gmail and Google News.

**Google**



### NETWORK

**Henry Ford** was one of the first industrialists to control his entire supply chain, a strategy later called vertical integration.



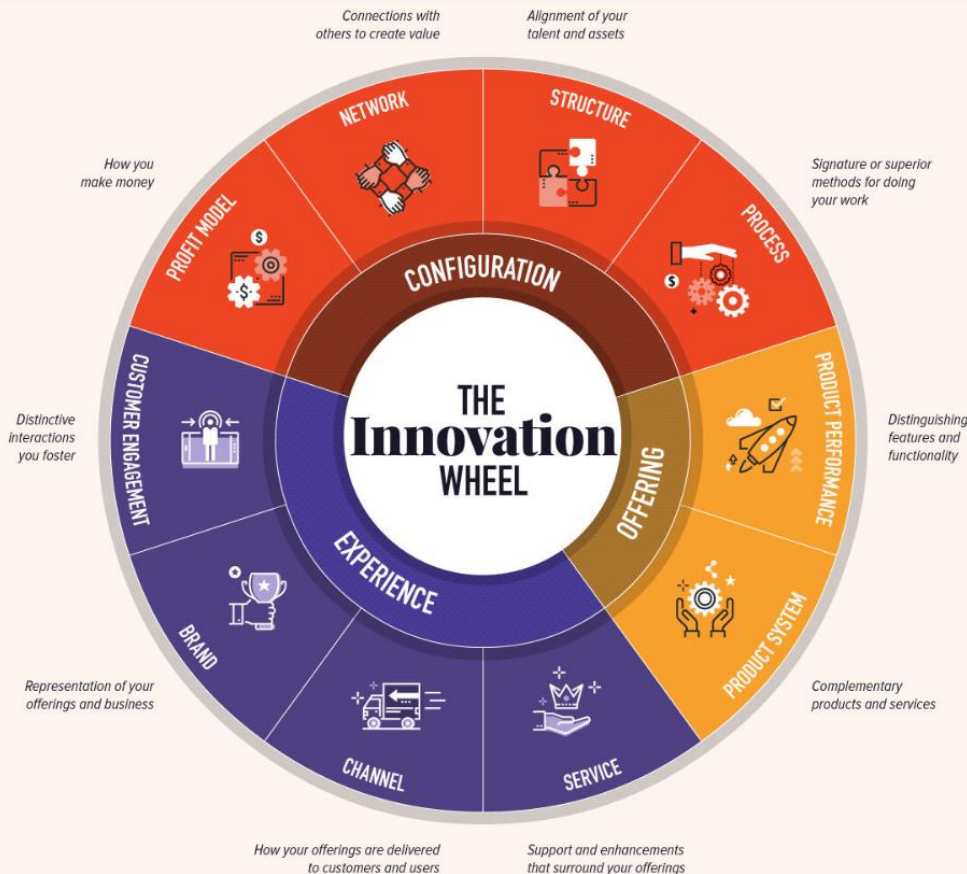
### PROCESS

**McDonald's** franchisees were encouraged to develop and launch their own new food items, leading to wins such as the Egg McMuffin.



# Innovation and Entrepreneurship

In the world of entrepreneurship there is a somewhat different idea about innovation



## OFFERING



### PRODUCT PERFORMANCE

**Spotify** created a seamless music streaming product that lapped competitors in terms of speed, responsiveness, and user experience.



### PRODUCT SYSTEM

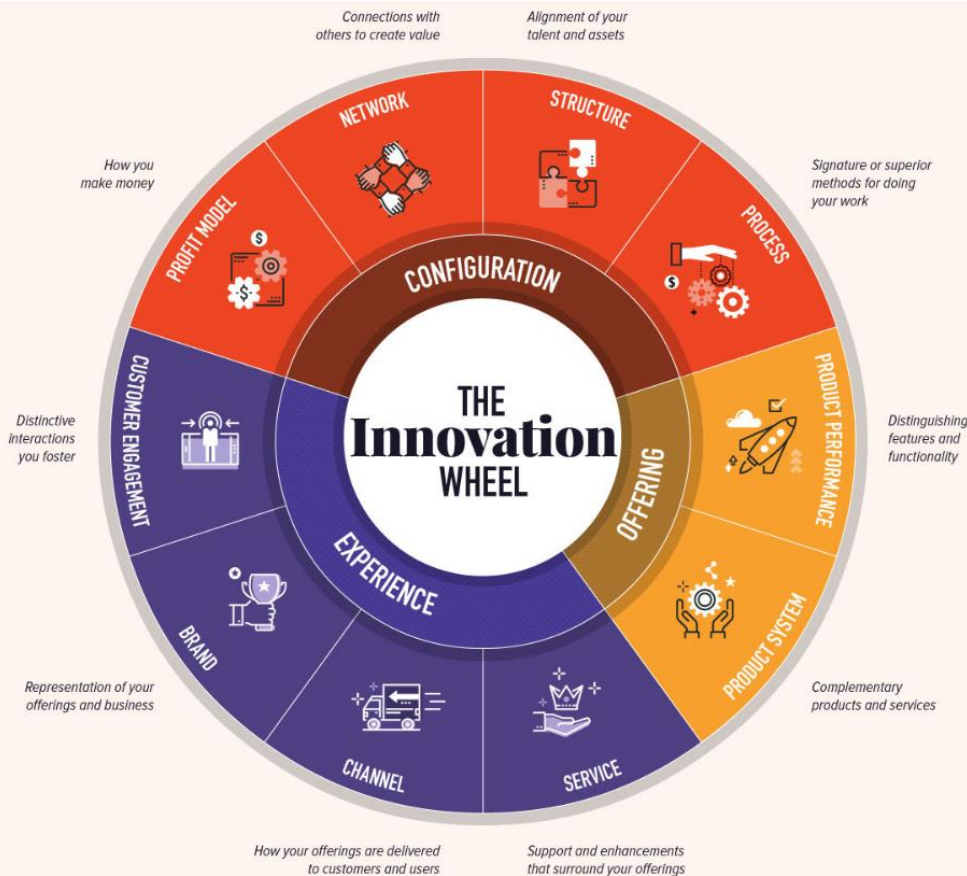
**Apple** has built an extensive ecosystem of products that work together, creating additional value for users.





# Innovation and Entrepreneurship

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## EXPERIENCE

### SERVICE

**Amazon Prime** comes with free expedited shipping, which can have products come as fast as within 2 hours in some metro areas.



### BRAND

**Patagonia's** brand activism and links to environmental causes gives it a unique position in the outdoor apparel market.



### CHANNEL

**Nespresso** locks in customers with its Nespresso Club, as well as through ongoing sales of single-use coffee pods.



### CUSTOMER ENGAGEMENT

**Mercedes** has launched an augmented reality owner's manual that replaces its bulky predecessor while also highlighting driver and car data.



Mercedes-Benz





**THANKS**  
**Please, do me a favor.**  
**Innovate, change the world**  
**and make it better.**

