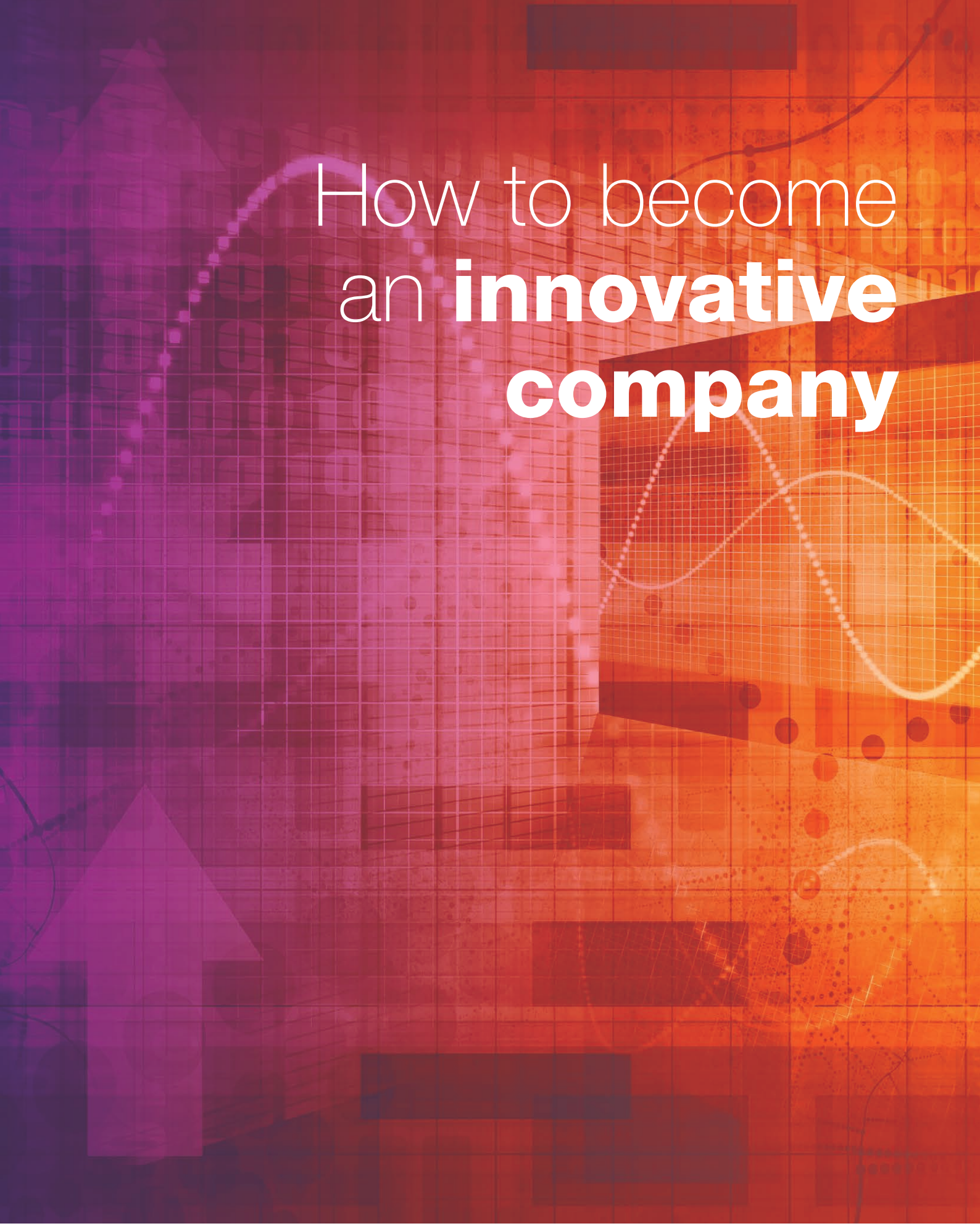
How to become an **innovative company**



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0. Introduction

In today's global and constantly changing market, every day that goes by shows that nothing lasts forever. What worked yesterday will not necessarily work tomorrow. Therefore, one of the great challenges faced by many companies, particularly SMEs, is being able to respond to these constant changes in the market with new solutions that provide value.

Against this background of ever more variables and fewer constants, it is commonly agreed that innovating is essential to guarantee the future of any company. There is no doubt about it. The competitiveness of any company increasingly depends on its capacity to innovate.

This Guide has been produced with a view to helping small and medium-sized companies to enhance their capacity to innovate and thus increase their chances of developing successful innovations in the market. It is specifically intended to provide information and knowledge so that any SME, regardless of what its business is, can build its OWN model for managing innovation. In other words, it proposes foundations and concepts each company should use to build the model that best suits its circumstances.

The Guide features two clearly differentiated parts. Part one defines the aspects that require consideration for a company to become innovative, while Part two proposes a general model for innovation focused on strategy and process. Note that although the Guide does not include specific examples and tools, these do appear on the Guide's associated website.

*This Guide has been produced with the support of the **Enterprise Europe Network (EEN),** of which ACCIÓ is the coordinating member in Catalonia.*

The EEN is a European Commission initiative that was founded in 2008 to help small and medium-sized companies to become more competitive through the development of their innovative capacity and the opening up of new markets. The EEN comprises over 600 organisations that provide support to business (mainly innovation support agencies, Chambers of Commerce, business development bodies and technology centres) in over 50 countries, including the 27 Member States of the European Union and other associate countries. The network provides specific and effective solutions for companies. Its mains services are:

- *To provide companies with information and advice on EU financing and business opportunities, European legislation, and assistance in the transfer of knowledge, technology and innovation.*
- *To encourage innovation in companies as a tool to make them more competitive.*
- *To foster research, development and innovation while encouraging collaboration among companies from different countries.*
- *To organise and disseminate international events that allow companies to find partners for their internationalisation, innovation and R&D projects (business missions and brokerage events).*
- *To assist in the search for partners through a service that publishes offers of and requests for technological or commercial business collaboration.*
- *To encourage the participation of SMEs in European projects.*
- *To organise local and international work sessions and seminars on matters of interest for companies.*

Further information at: www.een.cat and een.ec.europa.eu

Part 1: aspects to be considered to become an innovative company

1. The importance of systematising innovation

Key ideas

- In today's environment, if a company wishes to be competitive, it must be FIRE: flexible, innovative, rapid and efficient.
- The future of any company depends on its capacity for sustained and systematic innovation.
- Collaboration in building one's own ecosystem and understanding the customer/user as a source of innovation are both aspects that must be considered when innovating systematically.
- Systematic innovation yields different benefits in profitability, capabilities and attractiveness, and this eventually leads to greater competitiveness.

We are experiencing one of the most intense periods of change in history (globalisation, technological advances, hyperconnectivity, scarcity of resources, social changes, etc.). Our ability to evolve, to adapt and to improve is therefore crucial to our existence.

Against such a complex, dynamic and constantly changing background, the competitiveness of any company (whether large or small) depends increasingly on its capacity to transform changes (and therefore opportunities), as quickly and efficiently as possible, into new solutions that add value. Today, **if a company wishes to be competitive, it must therefore be FIRE**:

- **Flexible**, to adapt to constant changes in the market.
- **Innovative**, to respond systematically to these changes with new solutions that add value both *to customers/users* and to the company.
- **Rapid**, as it must do so at high speed, at least at the same rate of change as the market (which is now intrinsically very fast).
- **Efficient**, it must do so as productively and profitably as possible.

Solutions

Throughout this Guide, the term "solutions" is used to refer to new products, new services, new processes, new business models and/or new methods of interacting with customers.

Customer/user[1]

Although there are different stakeholders involved in all innovation projects, this Guide refers throughout to two particularly significant profiles. These are customers and users who may sometimes be one and the same yet are not always so:

1 Throughout this Guide, the terms customer and user shall be used without distinction.

> *Customer: the person or company that pays for a product or service. They may sometimes be intermediaries that act as a bridge between a company and the user.*
> *User: this is the person who uses the product or service to satisfy a need or to solve a problem (the most common are consumers and workers themselves).*

There may also be other profiles of interest such as the decision-maker, the buyer, the influencer, etc. It is useful to bear the different profiles in mind and to understand the circumstances of each.

To ensure a company's future competitiveness against this background, **occasional innovation is no longer enough. Companies must have a systematic process with which to adapt swiftly to market changes while generating profitable solutions.**

1.1. Key aspects

Any company that wishes to systematise innovation must be aware that it is a slow and complicated process, as it tends to involve a **change in the organisation's culture and way of working**. Therefore achieving good results essentially requires both a **good network of collaborators** (ecosystem) **and an understanding of what customers/users really want.**

1.1.1. Building one's own ecosystem[2]

There is no longer much point in having a closed innovation model in which the innovation process is limited to the company's own internal knowledge, ideas and skills. Such a model cannot usually be sustained over time. **It is hard for any company to respond to new and increasingly sophisticated challenges on its own**. A more open model is required (open innovation concept[3]).

> It is no longer companies that are competing, but rather ecosystems. Having a good ecosystem enhances capacity to innovate

The concept is simple: "Probably everyone who works for the company is smart, but not all the smart people in the world work for us". Although it is essential to exploit internal resources, there is no point in not making use of resources from outside the organisation (whether from customers, suppliers,

2 Network of agents outside the company that provide or may provide new ideas, new expertise, resources or capabilities in the innovation projects undertaken by the company.
3 Concept developed in 2003 by Professor Henry Chesbrough.

universities, technology centres, research centres, business schools, design schools, investors, the media, public authorities, agents from other sectors or even from the company's own competitors). It is no longer companies that are competing, but rather ecosystems. Having a good ecosystem enhances capacity to innovate. All companies should therefore strive to build one (particularly SMEs because they have fewer available resources and capacities yet are more flexible and swifter to act).

One key factor in building a good ecosystem is **the capacity to collaborate**. Collaboration is based on trust (see points 2.1.9 and 2.2.6). Without trust it is impossible to attain the levels of collaboration necessary to undertake complex and uncertain projects in which problems will inevitably arise.

The success of any fruitful ongoing collaboration **requires all the parties involved to add value** (whether differential knowledge, technological capacity, production capacity, access to distribution channels, knowledge of the customer, positioning on the market, etc.) **and to obtain a benefit in exchange**. If a collaborator does not add any value or receives no benefit, there is no point in their involvement. Identifying an ideal balance between the contributed value and the benefit obtained that satisfies all participants **requires a great deal of generosity from everyone involved**: generosity in understanding the diversity of interests, objectives, capabilities and problems; generosity in keeping an open attitude to resolve points of conflict; and generosity in prioritising the overall benefit of the project and not of the individual, which means being prepared to lose something so that someone else can gain.

The competitiveness of any company depends on the quality of its ecosystem. Setting out alone on a voyage of innovation is no longer an option. One must be accompanied on the journey. The better the companions, the better the results. Each voyage requires different knowledge, skills and resources, which makes knowing how to find/choose the most suitable companions essential.

1.1.2. Considering the customer/user as a source of innovation

It is (potential) customers/users **who determine what sells and what does not** (see point 2.1.6.). Although customers have always been demanding, in today's market[4] where the supply generated exceeds demand, they are even more so; customers can choose from a multitude and broad range of solutions.

> The challenge for companies is therefore to identify a difference valued by a profitable segment of customers

Bear in mind also that the market is highly segmented. For the same problem or need there is a broad range of niches[5] which require different solutions. The more personalised the solution, the better. Levels of expectation are ever higher.

The challenge for companies is therefore to identify a difference valued by a profitable segment of customers. It is a difference, however small, for which they are willing to choose the solution offered by

4 Reference here is to the market in developed countries.

5 Because of globalisation these niches, very fortunately, are usually large enough to be profitable.

the company rather than existing solutions (whether the price is higher or not). It is therefore essential **to understand precisely what criteria customers/users use to determine what brings them value and what does not**. Time and resources must be invested in understanding their problems, concerns, anxieties and real needs. It is no longer enough to take that which customers/users say they have at face value. Study in greater depth is required (see point 6.4.1.2).

This has led many companies to pay **more attention to customers/users, without neglecting technological evolution and the solutions offered by their competitors.**

Technology- or customer-driven approach

There are different methods of innovating, each depending on the approach to innovation. There are essentially 2 approaches:

- **technology-driven or research-driven innovation**
  This approach mainly involves the development of new differential technology, which is better than existing technology, for commercial exploitation.
- **user-driven innovation**
  The main driving force of this approach is an in-depth understanding of the user's motivations, problems and needs so that new solutions can then be developed and exploited.

The technology-driven approach prevailed throughout the twentieth century[6]. It is founded on the premise that a company's competitiveness involves technological leadership, based on sustained investment in R&D. It is important not to fall into the trap of developing technology for technology's sake; it is a means and not the end in itself (technology should be used to respond to society's challenges and to improve people's lives by providing answers to their problems and/or needs).

The user-driven approach is relatively recent[7]. As mentioned above, this approach is gaining increasing acceptance given the pressure for companies to understand the needs of customers properly in order to satisfy their expectations, while differentiating themselves from the huge existing supply and competitors. The novelty of this approach lies not so much in its focus on customer/users, but rather on how their needs are identified (methods that combine different disciplines such as sociology, psychology and anthropology and other areas are being developed).

Both approaches are necessary and very often associated. Companies need to have technological capabilities and to understand their (potential) customers/users in order to offer successful solutions. They are nonetheless increasingly basing their innovations on understanding the reasons behind customer/user behaviour and identifying their problems and their needs, in order to thereafter develop solutions to respond to these. This does not mean that they consider technology any less important; quite the contrary, many new solutions need it (whether new, existing or a combination). Indeed, **technology tends to be a crucial factor in the creation of radical innovations**.

A company can no longer depend solely on the capability of its engineers/researchers to develop new products. **Success involves finding an appropriate balance between the capacity to turn customer/user needs into new solutions, and to exploit and generate the technologies necessary to develop them.**

Do not forget, however, that technology and R&D are still particularly important factors in generating increases in productivity and in creating barriers to entry. Most of humanity's great innovations have, in fact, been based on them. Many resources of the innovation policies of different governments are therefore allocated to encouraging technology-driven innovation.

6 Innovation was, in fact, then solely associated with technological change in products and/or processes.
7 It dates from the nineteen-eighties and the study of the interaction between people and computers.

Competitor- or customer-driven approach

The solutions developed very much depend on how the market is viewed. A competitor-driven approach is not the same as a customer/user-driven approach. The key question is: when innovating, what do you focus on? Do you concentrate more on what the leaders of your market are doing, or on your customers/users' problems and needs?

The 2 perspectives are important. The difference between the two is the starting point. Beginning the process by analysing what the competition is doing and then developing solutions to improve the value perceived by customers/users with respect to solutions already on offer, is not the same as analysing what the customer values and then offering better solutions to those already on the market. The end results will probably be different, because the starting point is different.

This does not mean that one approach is better than the other, but simply that **the end results are not the same.** Both approaches seek to offer a different solution that adds more value. Either one or the other approach will be adopted to suit the strategy or the envisaged results. Both approaches must be combined wisely. **Focusing solely and systematically on just one involves certain risks that require consideration.**

First, focusing solely on a competitor-driven approach involves the risk of dealing with a constant stream of optimisations and incremental innovations that do not generate very differential solutions. This eventually leads to a price war (and a reduction in margins), which is usually won by the party with the greater financial muscle or a better experience curve. Another risk is taking too long to notice the appearance of a new agent who is changing the rules of the game in the business.

On the other hand, a purely customer-driven approach may represent constant and swift development of high-risk projects (with the consequent chances of failure) and not give the market time to assimilate the previous solution and/or to yield a return on investments made in it.

Each company must therefore establish its own combination. Success lies in the balance.

Need seekers vs. Market readers vs. Technology drivers

Using information taken from different annual studies entitled "The Global Innovation 1000" (specifically from 2010 and 2011), strategic consultancy Booz & Company (now Strategy&) identified 3 differentiated strategies that companies implement when developing new solutions and launching on the market:

- *need seekers: they develop new solutions based on in-depth understanding of the user and involvement of (potential) customers/users.*
- *market readers: they develop new solutions based on monitoring their customers/users, competitors and market using a careful, and conservative approach. The resulting solutions tend to be incremental.*
- *technology drivers: they develop new solutions based on the technological and knowledge capabilities they have generated through investment in R&D.*

Together, the results of the studies indicate that none of these three strategies yields much better sustained results over time, although they do suggest that need seekers display a relative advantage (they are 30 percent more likely to report better financial results and, on average, companies that adopt this strategy do seem to have a better chance of out-performing their competitors than with the other two strategies).

The study indicates however that, regardless of the strategy implemented when innovating, success depends on a series of critical factors:

> *Alignment of the innovation strategy with the business strategy (see points 2.1.2 and 5.2)*
> *Ability to establish areas of opportunity based on understanding the needs of customers/users (see point 6.4.2).*
> *Capacity to understand the potential of emerging technologies (see point 5.3.3.1).*
> *Active collaboration with customers/users in testing the validity of concepts during the development process and assurance of good commercialisation (see point 6.4.2).*
> *Creation of an organisational culture that gives backing to innovation (see chapter 3)*

Further information at: www.strategyand.pwc.com/innovation1000

1.2. The benefits of systematic innovation

Innovating systematically not only yields a return for the company[8], but also brings other significant benefits including the acquisition of new expertise and capabilities, and greater attractiveness (which, as shall be seen, eventually yields the company greater return):

- **Better expertise and capabilities**
  When the company innovates, it learns something new. It acquires new expertise and new capabilities that it can exploit and/or use to develop future solutions (new patents, new designs, new functions, new technologies, new processes, etc.). This ongoing learning produces a higher number of skilled professionals with more tools, who will then be in a better position to manage the innovation process and therefore achieve better results. Without new expertise and capabilities, sustained innovation is unlikely.

- **Greater attractiveness**
  If a company is perceived as innovative[9], it will:
  > **Attracting and keeping hold of the best talent.**
  On one hand, the company will attract more and better professionals and, on the other, it will retain the most innovative employees (as this is where they are afforded the conditions necessary to solve their concerns and to develop their capabilities and skills).

Talent and innovation

Innovation is based on talent. It is people who innovate and therefore who determine whether or not the company is successful. Innovating requires inquisitive, skilled people. Having such people generates an atmosphere of trust in which to rise to more complex challenges. If managed properly, this environment will self-propagate on the basis of what was learned in previous projects (regardless of whether they were successful or not). The greater the experience, the more confidence there is to develop more advanced and appealing solutions; and the greater the number of attempts made to develop new solutions, the more the experience gained in the innovation process. This pairing of confidence/experience enables the company to innovate more quickly and efficiently than its competitors.

8 In addition to the profit yielded by the company's exploitation of the new solutions, resources generated by the innovating activity should also be considered (public financing or tax incentives, for example).
9 Claiming to be an innovator is not enough to be perceived as such. It must be backed up by facts. However, even if the company does innovate but is incapable of getting this across to the market, it is unlikely to be seen as innovative.

> **Improving its ecosystem**
More and better agents will want to work/collaborate with the company, which will enable it to find the best collaborators for each innovation project. As mentioned previously, building a good ecosystem requires being able to collaborate, and collaboration is based on trust. Being seen as an innovative company generates greater trust when initiating collaborations and helps to yield better and stronger conditions and longer-lasting relations.

> **Attracting more and better customers**
If customers/users associate the company with innovation, the reputation and positioning of its brand (or brands of its products/services) will improve. Better positioning will yield certain advantages for the company over and above its main competitors:
- The benefits of higher margins, as customers will be willing to pay higher prices.
- Achieving a turnover high enough to pay off the innovation will be faster and easier.
- It will be easier to enter thus far unexplored new markets, as new potential customers/users will have greater confidence (based on the company's previous solutions).

These benefits will eventually substantially increase the chances of obtaining a greater return from the company's innovation projects.

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2. The concept of innovation

Key ideas

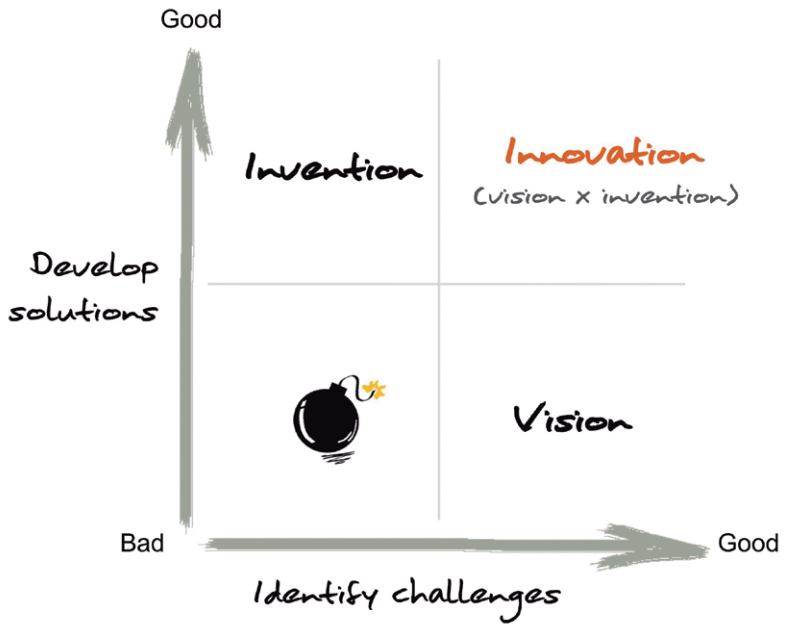
- Innovation consists in transforming challenges into new solutions that add value to the customer/user and to the company.
- Any company wishing to innovate requires everyone in the organisation to have the same understanding of what innovation is. Each company should establish its own definition of innovation.
- Sustained, systematic innovation requires a series of barriers/ obstacles to be overcome.

2.1. Definition of innovation

The capacity to innovate is one of the key factors in the competitiveness of any company.

But what does innovate mean? **There are many different definitions of innovating**. Some are defined below:

Innovate = vision x invention
This process combines the capacity to identify *challenges* (vision) with that of developing new solutions (invention) that add *value both to the customer/user*[10] and to *the company*.



Source: adaptation of Paradis, Z. J., & McGaw, D. (2010). *Naked Innovation*. IIT Institute of Design.

10 It is important to note that customers/users can be internal or external. Depending on whom the target profile of the innovation is (customers, consumers, workers, suppliers, collaborators, etc.), the solution will be addressed more to increasing market share, improving productivity and the effectiveness of internal processes or external relations with agents in the value chain.

Innovate = challenge x value²

It is the process of transforming a *challenge* into a new differential solution that adds value both to the *customer/user* and *to the company*.

Challenges of innovation

The challenges are the basis of any innovation project. They may be the result of four different causes:

> *External opportunity (example: unsatisfied need of a segment of customers)*

> *External threat (example: launch of a new technology by a competitor)*

> *Internal opportunity (example: asset that is not being used to its full capacity and may be exploited to offer new solutions, even on markets different from the one upon which the company currently operates)*

> *Internal threat (example: productivity levels below the sector average)*

Value for the customer/user

Value for the customer/user can be defined as the relation between the benefits the new solution bring him or her with respect to the effort that has to be made to enjoy them.

> *Benefits: it is basically possible to differentiate functional benefits (what functions the solution has), emotional benefits (the feelings prompted by having or using the solution) and social benefits (what having or using the solution says to others about you). Functional benefits tend to be measurable, while emotional and social benefits are more intangible (more associated with concepts such as prestige, identity and experience).*

> *Effort: this refers to aspects associated with money (price and cost associated with use of the solution), accessibility, the time that has to be invested for the solution to be useful, etc.*

Logically, when the benefits outweigh the effort, then value is being created. Remember that perception of the benefits/effort ratio for the same solution may diverge a lot depending on the customer/user's profile. It is therefore important to be very aware of what measurement criteria are being used by the target public.

Value for the company

Value for the company can be defined as the return yielded by the solution, i.e. the ratio between the financial profit generated by the solution and the resources used to develop and/or to commercialise it.

Innovation projects intended to yield short- or long-term[11] return must therefore be differentiated. Short-term projects are usually evaluated on the basis of mainly quantitative criteria (financial criteria have considerable influence for example), while long-term projects feature criteria of a more strategic nature (e.g. ensuring future competitive advantages, entering new emerging markets, strengthening key competencies, acquiring new knowledge, etc.).

Remember that the focus of business innovation should be to generate a sustainable return for the company. This will only occur if the new solutions developed yield an increase in the value perceived by the recipient of the solution. If they do not generate any value for anyone, they will definitely not be profitable.

11 Innovation projects that are not profitable in the short term but are expected to yield a return on investment in the future.

> Each company must define what it understands by innovation

Whatever the situation, these are just some of the many definitions there are of innovation. None of them, in fact, are important. What really matters is the company's own definition. In other words, **each company must define what it understands by innovation, so that everyone in the organisation has the same notion of what it means.**

Some aspects, such as the following, should be taken into account in establishing the definition:

1. Innovation is a process and should therefore be managed as such
2. The process of innovation is completely inseparable from strategy
3. The goal is to provide the market with solutions that add value both to customers and to the company
4. Innovation involves risk
5. Innovation does not just involve the R&D department or technology
6. Innovating (process) ≠ Innovation (result)
7. Innovation ≠ Creativity, Research
8. Innovation types and levels
9. Innovation is a collaborative process
10. The degree of innovation is directly proportional to the capacities for generating, developing and managing innovation projects

2.1.1. Innovation is a process and should therefore be managed as such

The purpose of the innovation process is to generate innovations. As such, **it must be managed and systematised just like any another process within the company.** This requires structure (see point 3.4) and metrics (see point 3.5).

The belief that innovation is "doing different things" or "thinking outside the box" has led to the idea that it cannot be managed. Nothing could be further from the truth. The process of innovation requires orderly management if results are to be obtained. It is just another process in any organisation and as such:

- it must be integrated in the other processes,
- it must be planned, implemented and measured.

> Although innovations are sometimes the result of coincidence or serendipity, they usually arise both from strategy and from the orderly and persistent management of a process

2.1.2. The process of innovation is completely inseparable from strategy

Where one innovates is as important as how it is done. However well-defined and structured the process is, however many resources are devoted to it, and however good an ecosystem there is, etc., failure is (virtually) guaranteed if there is no prior **strategic reflection on where to innovate** (see points 3.5 and 5.3).

Opportunities and threats (challenges) are the sparks that set the process in motion. Their definition will therefore very much influence the results achieved. One of the main demands faced by any company wishing to innovate is therefore that of identifying new challenges with which to grow solutions that can be exploited. **Without challenges no innovation is possible.**

Successful innovation requires being able to identify the right challenges and understanding what the strategic objectives and their implications are.

2.1.3. The goal is to provide the market with solutions that add value both to customers and to the company

The innovation process is intended **to generate innovations** or, in other words, provide the market with new solutions that add value to the customer/user and to the company.

For a solution to become an innovation it must comply with, at least, the 3 following characteristics:

- it must be **desirable** for the customer/user, i.e. solve a problem or satisfy a need.
- it must be **feasible**, i.e. the company must have the expertise and/or capabilities to develop and to implement the proposed solution (if it does not, this expertise and these capabilities can be acquired by collaborating with third parties).
- it should be **profitable**, i.e. yield a return on the investment.

2.1.4. Innovation involves risk

The process of innovation is intended to generate innovations. Innovation can be defined as a solution that:

- represents a **novelty in a specific time and/or context.**
- is successful on the market (it contributes value both to the customer and to the company itself).

As it is a novelty, it inherently involves risk. Whether it is novel for the world, for a specific market or for the company itself[12] shall not be dealt with here. Whichever it is, it will involve a certain level of risk (greater on a world and lesser on a company level).

Depending on the level of risk and, therefore, the novelty of the innovation, **it can be referred to as radical, adjacent or incremental** (see point 2.1.8). In SMEs the most common are incremental.

> Any company wishing to innovate must learn to identify, to evaluate and to manage risk

Innovation therefore involves risks. Success mainly involves being able to manage different types of risks associated with the innovation project (which may, among other things, be of a technical, market, financial, operational, temporal and environmental nature[13]) with a view to establishing a sustained competitive advantage over time. The lower the risk associated with the innovation project, the shorter the competitive advantage tends to last over time.

Any company wishing to innovate must learn to identify, to evaluate and to manage risk. **The most innovative companies are not those that assume higher risks, but rather those that can manage them properly.**

Innovation is definitely risky. Not innovating, however, is even more so (in fact, it sooner or later leads to certain death). **The worst risk of all is not assuming any risks.**

2.1.5. Innovation does not just involve the R&D department or technology

Innovation has traditionally been associated with the R&D departments and with new processes/products based on the application of new technologies. In reality, however, **innovation is neither restricted to a single department nor limited to a specific type** (as shown in point 2.1.8, it can assume many forms).

Innovation as a concept must be expanded and approached from a holistic perspective. This can be done with an approach in which two aspects are considered: internal and external.

Internal aspect

The internal aspect refers to the **business model**[14] (the way the company creates, delivers and captures value). Questioning different elements of the business model can be a source of inspiration with which to discover opportunities and threats not only concerning products and services. Each component of the business model should be viewed as:

- an opportunity to create value through the assumption of new ways of working, different from the traditional methods used in the sector and/or in the company itself.

12 By far most innovations in SMEs represent a novelty for the company
13 For further information, consult point 4.1.2.
14 For further information, see point 5.3.3.1.

- a possible threat[15] in the sense that competitors may make use of an intrinsic weakness to create more value.

That does not mean constantly seeking to innovate with the business model, but rather adopting an integrating approach that takes into account the different blocks in the model. Just as a jigsaw puzzle cannot be completed without placing all the pieces in the right places, **innovating on one specific item will not work unless it is consistent with the other elements in the business model.**

External aspect

External aspect refers to **the customer/user's experience** or, in other words, the entire process a customer/user goes through in order to satisfy a need or to resolve a problem. The sum of all the customer's interactions in enjoying the product/service offered by the company shapes his or her eventual experience.

> ***The importance of experience***
>
> *The success of a product/service largely depends on how the points of interaction or contact between the customer/user and the company are managed. Although the characteristics and functions of the company's offering still matter a lot (this is a necessary factor), the customer/user's experience is becoming increasingly important. This requires a change in business mentality. The focus must be placed on what people do or want to do in order to respond to their drives, needs and problems, and not only on the things they use.*

A company's customers/users interact directly or indirectly with it at different times. Remember that not all points of contact depend directly on the company (for example, an intermediary's actions can very much influence the customer/user's experience, even though it does not fall under the company's control); it is nonetheless crucial to bear them in mind when trying to understand the journey taken by customers/users.

Management of this process again involves new aspects related to different disciplines and areas of expertise, which means that it affects more than one company department. It is essential **to understand the customer/user's experience in its entirety, regardless of the product and the services associated with it.**

This two-faceted holistic, internal (business model) and external (customer/user experience) outlook offers many sources of inspiration for detecting innovation challenges. It involves using expertise and resources from different departments and creating multidisciplinary teams. In other words, looking at what the company does and what the customer/user is experiencing requires different departments to work more collaboratively towards a common goal, thus avoiding the emergence of departments that keep to themselves and rival with one another for the same resources.

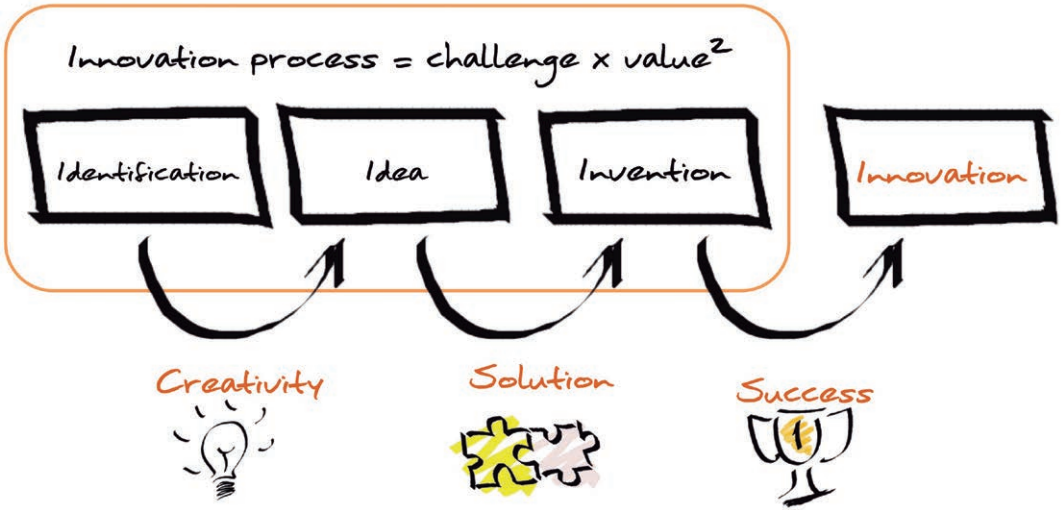
2.1.6. Innovating (process) ≠ Innovation (result)

Innovating does not always generate an innovation. As previously mentioned, the process of innovation starts by identifying a challenge (without challenges, no innovation is possible). On the basis

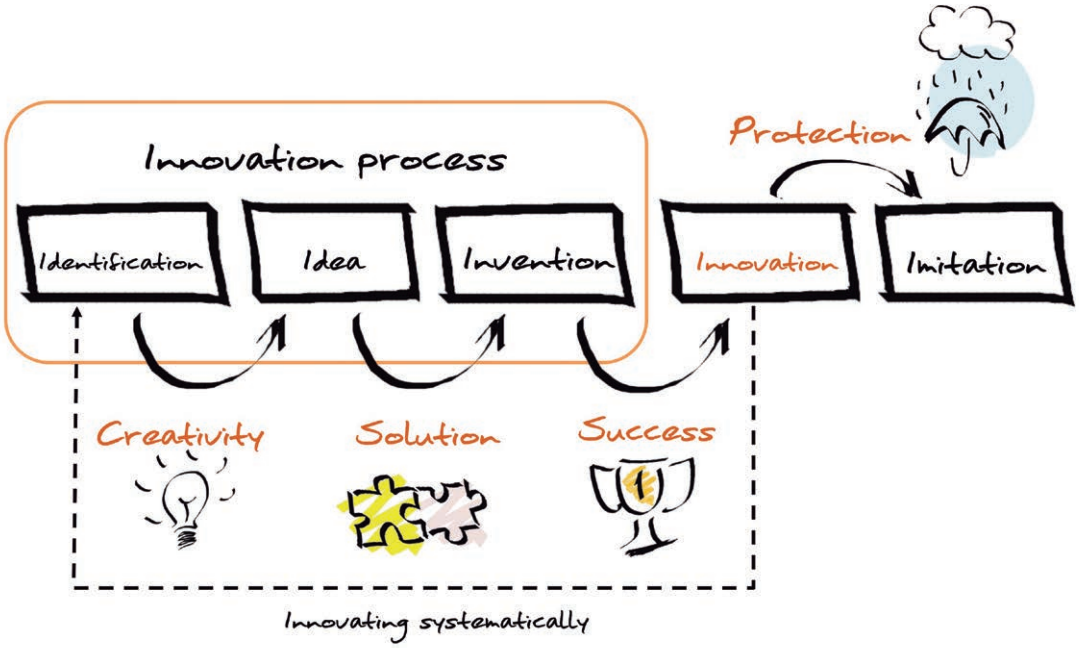
15 Many companies focus their innovation work on a series of specific areas and ignore others that may be important. That gives current or new emerging competitors the chance to innovate in an area that has been neglected.

of the challenges identified (the more the better), ideas are generated by applying creative techniques, the best of which are then selected. The best concepts are then validated and converted into new solutions (be they products, services, processes, etc.) to be exploited on the market.

All companies that make the effort to identify challenges, to generate and select ideas based on these challenges and to turn these ideas into new solutions (which we shall refer to as inventions) are therefore innovating. Coming up with an innovation is, however, something quite different: the invention (proposed solution) **only becomes an innovation if it is successful**. It is therefore customers/users who determine and decide what is and what is not an innovation; hence the importance of understanding what their problems and real needs are.



When a company comes up with an innovation (in other words, a success on the market), competitors usually copy the new solution. **Imitation is one of the rules of the game of innovation** and is therefore referred to in the 5i cycle (identification, idea, invention, innovation and imitation).



Note that the fact the company is being copied is a sign that it is doing things properly (it should worry when competitors no longer do so). Every possible step should nonetheless be taken to make copying as hard as possible. There are basically 2 options:

- **Protection**: either through patents or industrial secrecy.
- **Systematic innovation**: in other words, working on the forthcoming innovations while the company's competitors are copying its current solutions.

2.1.7. Innovation ≠ Creativity, Research

> The innovation process is associated with creativity and research. However, these are not the same thing at all

Creativity can be defined as the allocation of resources to generate **ideas**, while innovation involves using these ideas to make money. One does not become more of an innovator simply by generating more ideas. If they are properly focused (and respond to an identified opportunity or threat), however, they will most likely yield an innovation (if the rest of the process is properly managed). Too often innovation does not fail because of a lack of creativity, but because of a lack of focus and discipline in implementing the process (of which creativity is a part).

Using the same analogy, **research** can meanwhile be defined as money invested in generating **differential scientific knowledge**, while innovating involves using this differential scientific knowledge to make money. One does not become more of an innovator simply by investing more in research (although it is more likely if the research is properly focused). Note that innovating does not necessarily require either investment in research or having an R&D department; however, the more sophisticated the challenge to be solved, the more research becomes necessary.

From a business perspective, there is no point in generating ideas or new knowledge unless they yield some kind of return (either short-or long-term).

2.1.8. Types and levels of innovation

There are different types or levels of innovation, depending on the perspective adopted.

Types of innovation

Defining the possible types of innovation is a complicated and often even unnecessary exercise. It is what a solution resolves and the value it contributes that matter, rather than the category it falls into.

The company should nonetheless be familiar with different types of innovation for the following reasons:

- to ensure **awareness that innovating is possible in areas other than product or process** (the most common)
- to encourage **holistic thinking** and a process of reflection on **new dimensions in which to innovate**
- it may help to **compare the company's innovation strategy** with those of its competitors
- it may help to create a **common language** within the company.

Whatever the situation, innovation involves generating value both for customers/users and for the company. The generation of this value tends to require a combination of more than one dimension. Indeed, **the most successful innovations are not 100% of one type but rather a combination of several.** Indeed, according to a study by Doblin consultants[16], companies that launch new solutions that also incorporate different types of innovation, not only enjoy **better results, but also establish stronger deterrents to being copied**.

Remember, however, that innovating requires focusing on the challenges, without pre-establishing the shape that innovation should take because that would very much constrain the eventual solution.

Some common classifications are described below:

OSLO MANUAL (4 types)
In the Oslo Manual (2005), the OECD[17]defines an innovation as "the implementation of a new or significantly improved product (good or service), or process, or a new organisational method in business practices, workplace organisation or external relations". This manual identifies 4 types of innovation:

> **Product:** introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses.
> **Process:** implementation of a new or significantly improved production or delivery method.
> **Marketing:** implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
> **Organisational:** implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.

DOBLIN (10 types)
Doblin consultants (www.doblin.com) published the book "Ten Types of Innovation: The Discipline of Building Breakthroughs" in which, as its name indicates, 10 types of innovation are identified and classified into 3 major groups.

Source: Doblin – Keeley, L., Walters, H., Pikkel, R., & Quinn, B. (2013).
Ten types of innovation: The discipline of building breakthroughs. John Wiley & Sons.

16 See the book "Ten Types of Innovation: The Discipline of Building Breakthroughs".
17 OECD – Organisation for Economic Cooperation and Development

The further to the left innovation types appear, the more internal and further removed from customers they are; the further to the right, the closer they are to customers.

Group 1: Configuration

Types of innovation focused on internal aspects of the company and on its business system:

> **Profit model**: fresh ways of converting value propositions into cash.
> **Network**: new ways for firms to take advantage of their own capabilities and resources through collaboration with others; i.e. building mutually beneficial strategic alliances with third parties (whether to lever processes, technologies, channels, products and/or brands, or to share risks, investments and benefits in new projects).
> **Structure**: new ways of organising assets (hard, human, and intangible) to create value.
> **Process**: new processes with which the company can become more flexible, rapid and efficient.

Group 2: Offering

Types of innovation focused on the products and/or services offered by the company:

> **Product performance**: new products or substantial updates of existing products that represent an increase in its perceived value (whether through a new design, new characteristics, new functions, etc.).
> **Product system**: new ways of connecting the existing offering to create a robust and scalable system; i.e. seeking new methods of interoperability, modularity and integration among the company's products and services.

Group 3: Experience

Types of innovation focused on company relations with customers:

> **Service**[18]: new services that increase the perceived value of the main offering (some examples are guarantees, customer service, maintenance plans, etc.).
> **Channel**: new ways of bringing products/services to the market while increasing convenience for customers/users.
> **Brand**: new ways of expressing the message and values of the company offering that help to improve customer perception and establish differentiation from that of the competition.
> **Customer engagement**: new ways of interacting with customers to give them a full experience (which will yield engagement with the company and/or product/service).

Note that a combination of different types may be present in the same innovation.

INNOVATION RADAR (12 types)

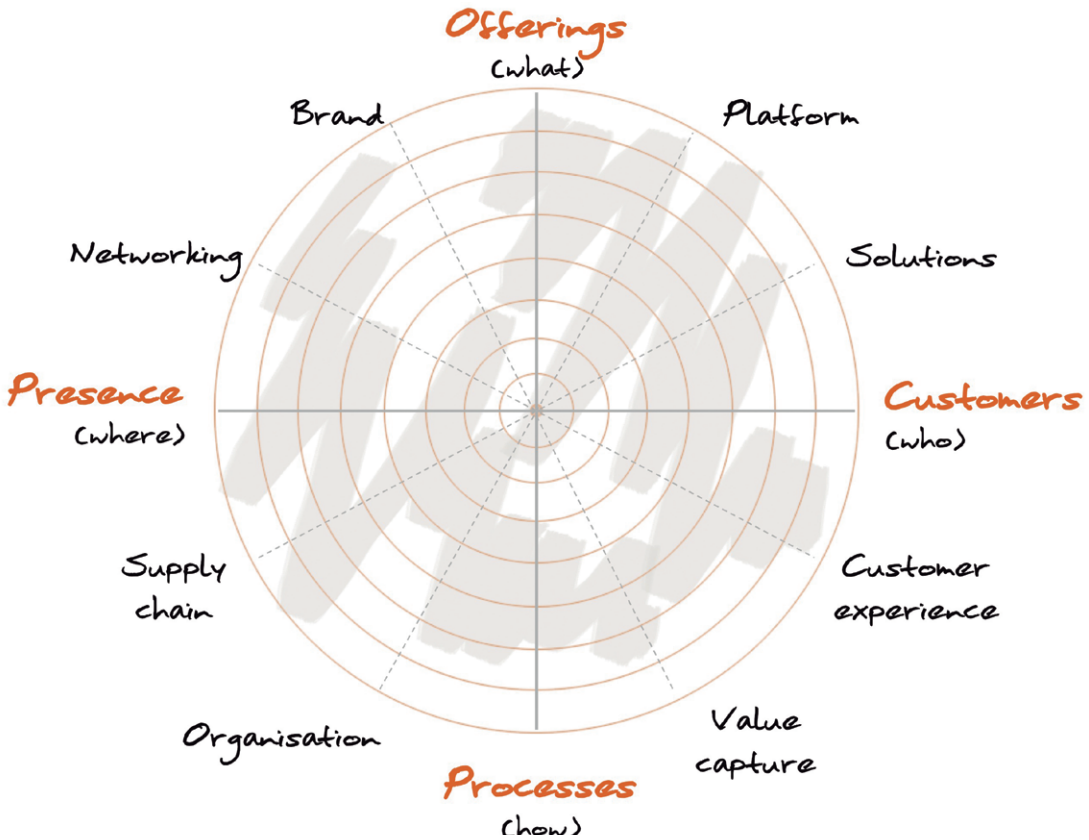
The innovation radar identifies 12 possible types of innovation while considering 4 business dimensions as reference points: the offerings developed by the company, the customers to whom they are addressed, the processes it uses and the points used to ensure presence on the market. The 8 remaining dimensions appear among these 4 points of reference.

> **Offerings**: development of new products and services that are valued by customers.
> **Platform**[19]: new methods, processes, technologies for enhancing the effectiveness/efficiency of the current and future portfolio of products and services (a typical example is modularity, with which new versions of current products can be developed more quickly and cheaply).
> **Solution**: new ways of combining and integrating products, services and information to develop a new integrated and personalised offering that resolves the customer's problems.
> **Customers**: identifying new customer segments (hitherto badly attended) or discovering unsatisfied needs.
> **Customer experience**: new ways of engaging with customers at points of contact.

18 If the company's main offering is a service, it counts as a product innovation. According to Doblin classification, service innovations represent an increase in value on the main offering.

19 Not much attention is paid to this dimension even though the results of its application are considerable

- **Value capture**: redefining the model in which the company earns income, developing new sources of income or discovering new and thus far unexploited sources.
- **Processes**: redesigning operational processes essential for improving efficiency, effectiveness, quality, flexibility or speed, among other things.
- **Organisation**: new ways of organising functions, responsibilities and incentives of business units and of workers.
- **Supply chain**: new ways of optimising the flow of information and collaboration throughout the supply chain.
- **Presence**: creating new distribution channels or using existing channels differently.
- **Networking**: new ways of connecting the company's key activities and resources to generate integrated and intelligent offerings.
- **Brand:** creatively encouraging its brand or extending it to new areas of business.



Source: Sawhney, M., Wolcott, R. C. & Arroniz, I. (2006). *The 12 different ways for companies to innovate*. MIT Sloan Management Review, 47(3) , 28-34.

Own classification

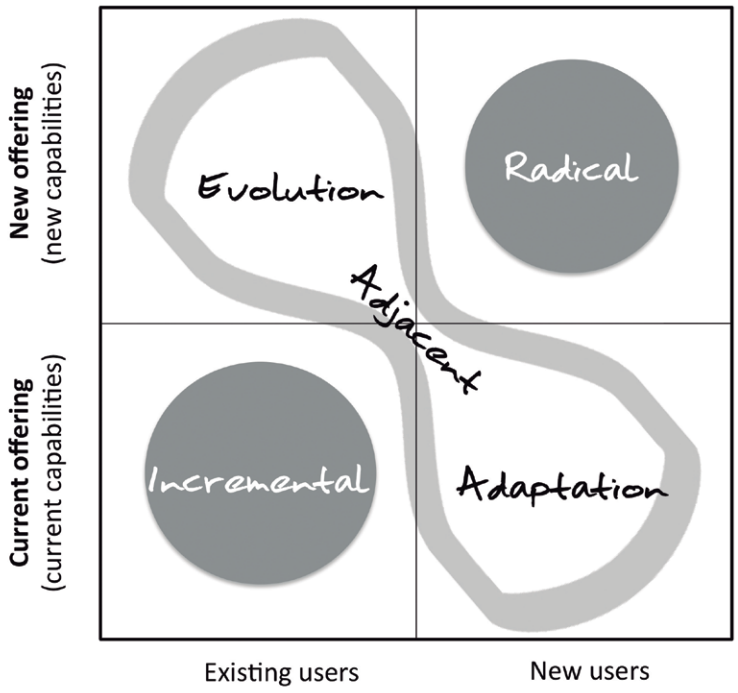
These are just some possible ways of classifying innovations. Many others are also possible. In order to create a common language within the organisation, the company could, in fact, establish its own classification system, either from scratch or using an existing system (adapting the generic model to its particular circumstances).

Levels

Just one type of innovation may have innovations with different levels of novelty. In this Guide, **3 levels of innovation shall be differentiated (incremental, adjacent and radical)**[20]**.** These will be determined using **two variables**:

- **Degree of novelty of the segment of the market the company targets**
- **Degree of novelty of the offering** (very closely associated with the company's real capabilities[21])

These 2 variables can be used to generate the following diagram:



Source: adaptation of Jacoby, R., & Rodriguez, D. (2007). *Innovation, growth, and getting to where you want to go*. Design Management Review, 18(1), 10-15.

Incremental innovation, which is the result of making small changes in the company's current offering, appears at the bottom left of the diagram. These innovations are addressed to segments of current customers and are developed using the company's existing capabilities.

Radical innovation, which is the result of developing new differential solutions, appears on the opposite side of the diagram, i.e. in the top right. These innovations are addressed to new segments of customers or to meeting new needs. To develop them, the company will need to incorporate new capabilities. Although radical innovations involve a high level of risk, the potential return is also high.

Adjacent innovation appears in the centre. Adjacent innovation can be an **evolution** of existing offering, i.e. new solutions different to the existing offering for the same segments of customers, or it can be an **adaptation** of existing offering, which here refers to solutions that are very similar to those that already exist but adapted to new segments of customers.

20 Just as with the types, this is simply one possible method of classification. Others are also possible. The company can create its own system.

21 When an organisation opts to offer new solutions, it will need to incorporate new capabilities.

Bear in mind that the different levels of innovation **can be considered either relatively**, i.e. in relation to the company itself, or with reference to the sector, geographical area or world. The same innovation project can therefore be classified as incremental or radical, depending on the framework of reference considered.

Since what matters is not the classification itself, but rather the internal management mechanisms for generating solutions that contribute value, it is a good idea at least to have a classification with regard to the company itself.

2.1.9. Innovation is a collaborative process

Innovation is a collaborative process in which people with different skills come together to find the best possible solution to a specific challenge. It is a team sport open not only to managers and people in the R&D or Marketing departments.

> Innovation involves everyone and cannot depend solely on the talent of just a few

Everyone in the organisation must be and feel involved (from the receptionist to the general manager). Innovation should not depend solely on the talent of just a few people.

To achieve this requires fostering a feeling within the organisation that everyone is valid and can contribute to the process of innovation. This, however, must be backed up with facts and not just words. It must be evident every time an innovation project is managed, developed and implemented.

It should also be understood that, increasingly, internal collaboration is not enough. Even though it is a necessary factor, it is not sufficient. Companies must strive **to change their model of innovation from closed** (in which innovation projects are performed internally) **to open** or, in other words, open up the innovation process to members of their ecosystem.

2.1.10. The degree of innovation is directly proportional to the capacities to generate, develop and manage innovation projects

The unit of flow of the innovation process is the project. How innovative a company is will therefore depend on the capacities it has been able to build through the performance of innovation projects.

The success of any project largely depends on the team that manages it. Different skills and areas of specific expertise will be required to suit the innovation project being undertaken. Choosing the most suitable team to perform it, ideally with diverse and complementary profiles (*multidisciplinary teams*) is therefore crucial.

Multidisciplinary teams

Having a multidisciplinary team that brings together the necessary expertise, capabilities and skills is the best recipe for innovating successfully. It is nevertheless sometimes hard to build a team with the different profiles necessary.

While building the team, a balance should be sought between diversity (the larger the team, the greater the chance of having a range of perspectives) and flexibility (the smaller the team, the more agile and flexible it is), while considering the particulars of the project in question. The selection of the team leader is crucial. He or she should not be chosen on the basis of hierarchy, but rather on an ability to relate to different profiles, to create cohesion and to manage conflicts that may arise because of the diversity.

Members may be fixed and on the team throughout the project or take part on a temporary basis to suit the needs that arise. It is advisable to have a core of fixed members who collaborate with other individuals at specific times; this provides the specific expertise necessary, and the skills and most suitable cognitive profiles at different stages of the project (for example, the abilities necessary to generate ideas are different from those required to analyse information or to implement them).

From an organisational perspective, the members of the innovation team may devote themselves exclusively or partially to a project (dividing their time between their day-to-day routine functions and the tasks involved in the innovation project). The latter situation, albeit sometimes not ideal, will be virtually the only alternative for many SMEs (see point 3.4).

> Innovative culture is the result of a deliberate effort to integrate innovation in the company's DNA

If innovation projects are not performed, good intentions and fine words will not make a company an innovator**. Innovative culture is the result of steadily and systematically implementing and managing the innovation process in the company** (and this requires strong commitment from the management). The level of innovation is established by innovating, i.e. by performing innovation projects.

The result is the development and internalisation of capabilities that allow the company to choose the most suitable process to follow, the structure and metrics with which to undertake innovation projects in the most successful way possible:

- An innovative company implements and manages the innovation process that best suits the challenge to be met. A project that involves incremental innovation is not the same as a radical innovation project. The process to be followed, the method of structure, the people taking part in the project, and the metrics applicable are not the same for both.
- An innovative company considers innovation to be commonplace and ongoing, i.e. the process of innovation has been assimilated in the company.
- An innovative company successfully implements and manages the process of innovation. In other words, it has a higher success rate than its main competitors.

- An innovative company constantly seeks an ideal portfolio of projects (i.e. a balance among incremental, adjacent and radical projects).

These 10 aspects are some of those that the company should take into account when establishing its definition of innovation. Note that although the definition can be inspired by a third party, **each company should itself make an effort to define what it means by innovation** (see point 5.3.1), in order to ensure that everyone in the organisation understands it in the same way.

2.2. Innovation inhibitors

It is commonly agreed that innovation is crucial for the future competitiveness of any company. However, few SMEs innovate on an orderly, planned basis and even fewer generate sustained innovations over time. What are the main reasons for this? Some of the most significant are detailed below:

1. Lack of real commitment to innovation
2. Fear of failure
3. Tendency to optimise
4. Applying the logic of operational management
5. Strong influence of financial criteria
6. Mistrust
7. Poor identification of opportunities and threats (challenges)
8. Choosing the wrong projects
9. Poor communication
10. Poor execution

2.2.1. Lack of real commitment to innovation

Without a committed leader, no innovation is possible. Business owners and general managers should be the first to encourage innovation in the company. Words alone are not enough. Clear, firm facts are required: innovation must be on the company's strategic agenda and requires resources be assigned to it.

If the company leader does not believe firmly that innovating is a strategic process, then innovation is unlikely. Just as with any process, it requires resources to work properly. In other words, innovation is unlikely unless talent, money and time are devoted to it.

Virtually all managers believe that innovating is essential for their company. However, commitment is still scant. Many and diverse reasons are used to justify this lack of real commitment. Whatever they are, they need to be overcome as the company's future depends on it.

> Without a committed leader, no innovation is possible

One of the most commonly cited reasons is that innovating is expensive. Its cost can vary, depending on the company's capacities and the challenge that needs to be solved (the greater the relative degree of difficulty and

risk, the greater the investment required). However, **not innovating is extremely expensive as no investment in innovation will eventually mean the company does not have the resources necessary to operate.**

2.2.2. Fear of failure

As mentioned previously, innovation involves risk. Risk goes hand in hand with failure. Most people are afraid of failure. This fear means that many managers do not dare to perform innovation projects (as they require the investment of habitually scarce resources to perform projects with an uncertain return).

It is necessary to assimilate the idea that **failure is part of the rules of the game in the innovation process.** Mistakes must be perceived and accepted as a toll that must be paid in order to achieve the desired solution. An attempt should therefore be made to ensure that **error is as fast and as cheap as possible**. Failing when the solution is already being commercialised is not the same as failing when it is still in the conceptualisation phase.

Minimising this fear of failure essentially requires a process in which **possible problems are identified as early as possible** (the earlier they are detected, the greater the capacity to react and the lower the cost involved in solving them). If error is seen to be fairly cheap, there will be less aversion to failure and therefore the company's potential for innovating will be higher.

2.2.3. Tendency to optimise

The innovation process is very often underestimated, particularly when the company is achieving its targets. People tend not to stray from their comfort zone. This is even truer if things are going well (why should one assume unnecessary risks?).

The natural tendency of companies is **to concentrate on improving what they already know how to do or are currently doing by focusing on optimisation** (with an evolutionary logic of a reduction in costs, standardisation, ongoing improvement, generation of economies of scale, etc.). This is totally reasonable although not very smart all the time. Remember that the markets, technologies and/or solutions that are profitable today will probably not be so in the future. If all effort and resources are devoted to optimisation, there will be no room for innovation.

It is not very intelligent either to invest in developing new solutions when they are already currently obsolete. Results tend not to be positive because it is already too late.

Hence, the only way of not falling into the trap of being excellent at a business that was once successful yet now obsolete is by establishing a **balance between optimisation and innovation.** Managing this balance is very complicated, but against the current backdrop of constant change has become a requirement for any company to be competitive. Its future depends on knowing how to combine optimisation of existing solutions with the creation of new solutions.

2.2.4. Applying the logic of operational management

Innovating is a process that requires dynamics, dimensions and capabilities different from those involved in processes associated with running the business. Managing the present is not the same as managing the future.

Two types of management should coexist within any company: first, **operational management**, which seeks to run the business and use the current resources as efficiently as possible with a view to

increasing current profitability; and second, **innovation management,** which seeks to explore new opportunities to generate return in the future. Both types of management are important and necessary for the company to be competitive. The former earns money today and the latter defines how it will be earned in the future (note that innovation management requires an investment of resources and thus requires a minimum level of operational management).

> Managing the present is not the same as managing the future

One of the reasons for a lack of innovation in a company is the **tendency to apply the same dynamics, capacities, rules and hierarchies to innovation management as those used in operational management**. Innovating involves an iterative process (as opposed to a linear process), a flexible structure (as opposed to too many rules), a multidisciplinary team (as opposed to specialised functional departments) and an environment tolerant to risk that encourages the creation of new and different solutions (as opposed to an environment that seeks perfection and standardisation).

2.2.5. Strong influence of financial criteria

The demands of the environment require companies to obtain immediate results. This urgency prompts managers **to prioritise projects with a sure short-term profit.** This creates a great dilemma when innovating, as innovation does not necessarily guarantee profit (innovating involves risk and uncertainty).

It is therefore logical that such a focus on short-term results should lead to the prioritisation of optimisation and/or incremental innovation projects. Focusing solely on optimisation projects that ensure minimum profit may be efficient in the short term, but is not so in the long term. As mentioned previously, not investing in innovation is lethal for any company.

When evaluating the advisability of investing in an innovation project, financial criteria linked to profit (ROI-, NPV- or IRR-type) are still very important. The implication of this is very clear: **incremental innovation is prioritised over and above radical innovation**.

Radical innovations generally generate a new market and therefore predicting results is very complicated and risky. They also require long recovery periods. This is exactly the opposite for incremental innovations. With such evaluations in which financial criteria are an influential consideration, it is therefore clear which innovation type will come out on top. It is thus not surprising that most innovations are of an incremental type. As substantially improving something already familiar is not the same as inventing something new, **not all cases should be evaluated from a financial perspective.**

A second implication of evaluation from a financial perspective is the risk of not responding properly to the appearance of a competitor on the market (whether a new agent or an existing competitor) that is offering a new solution totally different to those hitherto available[22] and one that may render current solutions obsolete. This situation tends to cause an internal dilemma about whether to invest in a new

22 The article from the Harvard Business Review "Innovation Killers: How Financial Tools Destroy Your Capacity To Do New Things" by Clayton Christensen, Stephen P. Kaufman and Willy C. Shih, is recommended.

solution from scratch or to improve the existing one[23]. Too often, the latter option is chosen, as it is more profitable from a "financial point of view". In such situations, there is a great risk of prioritising financial over and above strategic criteria. Reflection is thus required to determine whether the competitor's new solution will render your current one obsolete. Do not forget that much financial income is based on an estimate of the **usable lifetime** of investments made and not on their **competitive lifetime.**

> Sooner or later the company's offering will be swallowed up. It is better for the company to do so itself than to leave it to its competitors

Prioritising usable rather than competitive lifetime means that often companies do not launch new solutions because they are afraid of eating up part of their current offering. This, however, may involve a risk of leaving the door open for other companies to launch them. Sooner or later the company's offering will be swallowed up. It is better for the company to do so itself than to leave it to its competitors.

2.2.6. Mistrust

Innovation requires trust. If a business process does not yield the expected results, the result is mistrust in the process. The innovation process is no exception. If the initial results of innovation are not good, there is often a tendency to belittle it and to concentrate on improving operational management. **Without trust, no innovation is possible.**

A very common error is to start innovating with a view to coming up with a great innovation. The more sophisticated the challenge to be met, the greater the risk and, therefore, the greater the chance of failure (this tends to be higher in companies with little experience in the process). It is thus advisable to start by performing incremental-type innovations with which to build confidence. This confidence will allow for the performance of more radical innovations in the future. **Experience dispels mistrust**.

Leaders and managers must meanwhile strive to build an environment in which error is permissible. Not being afraid of making mistakes gives teams the confidence necessary to propose and try out new things. **Without confidence, there is no risk and without risk, there is no innovation.**

In addition, as mentioned previously, the innovation process is intrinsically collaborative, both internally and externally. Innovating requires a combination of different capabilities, skills and disciplines. Depending on the innovation challenge the company is facing, they may either all be found within the company or some might have to be sought outside. Whatever the case, innovation necessarily requires collaboration. There is no point in innovating alone. The creation of value currently requires collaboration among multiple agents. **Without trust, no collaboration is possible.**

23 Remember that to develop and to commercialise the existing offering, the company has made an investment that it wishes to recover with a return (the recovery period is, in fact, usually calculated on the basis of an estimate of its usable lifetime).

From an **internal perspective**, collaboration among different company departments must be encouraged. This requires, among other things, good communication. Given the different realities and objectives of each department, silos tend to be established unless appropriate action is taken. An effort must be made to minimise bureaucracy and increase coordination. Managers, engineers, designers, administrators, financial experts, market researchers, production experts, sales representatives, customer service personnel, etc. are all required when innovating. Working in multidisciplinary teams is crucial. The challenge to be met will determine the composition of the team.

From an **external perspective**, it is necessary to use the skills and assets of others properly to encourage one's own (see point 1.1.1). Being able to find points of contact, to exploit synergies, to share expertise, skills, processes, channels, etc. are and will be determining factors in the competitiveness of any company. Such collaboration, however, is not simple. The main obstacle, once again, is mistrust. We are afraid of sharing, of being copied, of being cheated, etc. Overcoming this fear requires a lot of dialogue to get to know the other party and encouragement for collaboration on a small-scale, as well as a large dose of generosity.

Mistrust is a clear innovation inhibitor. Without sufficient trust, it is unlikely that risks will be assumed and/or that collaboration will arise. **To innovate, trust must be constantly encouraged both internally and externally.**

2.2.7. Poor identification of opportunities and threats (challenges)

Without challenges, no innovation is possible. Innovating requires the capacities to identify opportunities/threats and to use them to "invent" value propositions. Opportunities and threats are the source of innovation.

Companies too often focus so much on their day-to-day routine that when a window of opportunity opens up in front of them, they are incapable of noticing it. From time to time it is important to escape from the "prison" of day-to-day routine in order to see new horizons. This may involve different actions. Ranging from encouraging interaction among different stakeholders of the ecosystem (customers, suppliers, competitors, technology centres, etc.), to performing a regular exercise of reflection from a perspective of where the business stands or wishes to compete.

Logically, this exercise of reflection requires more resources. It does, however, increase the chances of identifying new opportunities (see point 5.3.3). It is helpful to start with internal analysis and thereafter to identify market trends, what competitors are doing and wish to do, the status of technological evolution and, most of all, what customers want (see point 1.1.2). **This reflection must occur at a set frequency established by the company** (at least once a year is advisable).

Remember that not devoting any resources to identifying opportunities and threats is akin to having a slow clock. If the company always arrives late, the cost could be very high.

2.2.8. Choosing the wrong projects

The success of innovation projects depends on the way they are selected. If they are not chosen correctly, the company will not obtain the desired results, however well projects are managed and implemented.

Peter Drucker stated: **"there is nothing as useless as doing efficiently that which should not be done at all"**. He could not have been clearer. There is no better investment: devoting just a few resources, however few, to selection as this at least means the necessary projects are undertaken.

Performing an unnecessary project means wasting a lot of money (invested in projects that should never have started). In other words, **before making sure you are doing things properly, make sure you are doing the right thing.**

There are 2 key levels in the selection process:

- the portfolio of projects and;
- individual projects

The portfolio of projects

Resources are not limitless and so the company must therefore choose projects in which to invest. Making this choice requires a comprehensive overview [24] in order to establish a portfolio of projects that combines diversity and focus: diversity with a view to diversifying risk and increasing the chances of success; focus for building strong, differentiated and sustainable competitive advantages (which is only possible among projects that are connected in some way).

To establish the project portfolio, it is necessary to consider the innovation projects currently underway and new projects that have emerged from the definition of the innovation vectors (see point 5.3.4). It is at this point that the portfolio of innovation projects is selected, with consideration for the company's strategic criteria and available capacity.

Individual projects

Despite having chosen from the portfolio of projects, before investing a lot of resources in implementing and commercialising a specific project, it is highly advisable to make the effort to define a minimally validated solution. This, in other words, means discovering the most suitable solution based on information and knowledge taken from internal analysis (capabilities and skills), the context (sector, competitors, trends and technologies) and the customers/users associated with the challenge of the project in question. Although this exercise does not guarantee success, it does reduce the chance of failure as it limits some levels of uncertainty.

The pressure and constant change of the market creates a feeling of urgency to launch new products and services quickly. This explains the tendency to define solutions fast, so they can be implemented and commercialised as soon as possible. For improvements to an existing product or even an incremental innovation, although being in a rush is not recommendable, haste will perhaps have no detrimental impact. With adjacent or radical innovation, however, hurrying is a virtual guarantee of failure.

This is one of the reasons why within the proposed model, the Discovery stage is considered crucially important (see chapter 6). This is a stage in which an attempt is made to respond to questions and to validate assumptions with a view to defining a solution with some guarantee of success. At this point it is still possible to end/stop[25] the project without having incurred high costs and investment. Just because a project has been selected from the portfolio does not mean that it will end up on the market (when a project is considered not to contribute value, it must be discontinued or brought to an end as soon as possible; this will release resources for the development of other projects that do add value).

24 Management based on the portfolio of projects is not intended to determine the best individual projects for development, but rather the best combination of projects. In other words, it seeks to develop those projects that, when combined, add greatest value to the company.

25 A project is brought to an end/stop when the proposed solution is deemed not to fulfil the minimums established regarding the four dimensions: value for customers, technical viability, profitability and alignment with company strategy and capacities. An effort must be made as soon as possible to determine whether or not it does so. The sooner the project is brought to an end/stop, the fewer resources will have been invested.

2.2.9. Poor communication

Knowing how to communicate is crucial for the innovation process. A very significant innovation inhibitor is poor internal and external communication of the result of the process.

Internally, not communicating the results of the innovation process, whether good or bad, to the team kills their motivation and confidence. Leaders and managers must strive **to communicate both successes and failures**. Logically successes are not communicated in the same way as failures. For a success, one of the main objectives of communication should be to boost the confidence of teams in managing the process and to avoid complacency with a view to maintaining effort in the future. For failures, on the other hand, communication must be oriented more to reflecting on the mistakes made and to reinforcing the team's confidence in its abilities.

Externally, the result of the process will largely depend on how the value of the solution to the customer is communicated. If, after identifying opportunities, generating and selecting ideas based on these opportunities and turning these ideas into a new solution, the company is unable to properly communicate the value to its customers, all the effort made will be largely in vain. **Communicating is equally as important as innovating.**

2.2.10. Poor execution

The eventual result ultimately depends on the execution. Execution requires an investment of resources (including human and economic).

Always remember that innovations must generate a return –or results– for the company. Obtaining these results is linked to how the process and the innovation projects are implemented.

Whether execution is good or bad depends on many factors. Those we consider most important are listed below:

- **Team**: people are the key. The success of the innovation process or project will depend on the team in charge of managing it. It is therefore essential to create the right environment for its members to feel comfortable and motivated to assume risks and leave their comfort zone. Investing in people means investing in innovation.
- **Innovation strategy**: it is essential to know the areas in which the company wishes to innovate and to identify the objectives to be pursued.
- **Innovation process**: the company must have its own process with which to identify challenges and transform them into new solutions that add value both to the customer/user and to the company. This process must be flexible enough to adapt to the different challenges established and open enough to encourage collaboration with other stakeholders when the project so requires.
- **Innovation budget**: all companies, insofar as they are able, should allocate a budget for implementing their innovation strategy (both for developing innovation projects and for acquiring the necessary capabilities).
- **Indicators**: objective metrics with which to evaluate, to monitor and to improve the innovation process and projects are necessary. This is the only way of knowing whether or not they are being executed properly and whether the forecasted results are being achieved.

These are some of the obstacles a company must overcome if it wishes to become an innovative company.

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3. Factors required to become an innovative company

Key ideas

- The great challenge for companies is not to innovate occasionally, but rather to do so on a sustained and systematic basis.
- An innovative company is one that systematises innovation and makes it an intrinsic part of its DNA and its culture.
- To establish an innovating culture, certain behaviours must be generated and these depend on people and on the environment in which they interact.
- Building an environment that fosters and encourages innovation involves a combination of the following elements: leadership, strategy, process, organisational structure, metrics, motivation and incentives and work spaces.

Innovative companies are those that have made innovation one of their characteristic features. This is manifested not only in the number of successful new solutions they launch, but also in **their culture** or, in other words, in the way people in the organisation think and act and in the nature of the work environment.

Unlike companies that innovate occasionally, innovative companies systematise innovation and make it something intrinsic in their DNA and in their culture. **Innovation becomes one of their distinguishing traits** and the mechanism with which to create value and to become more competitive.

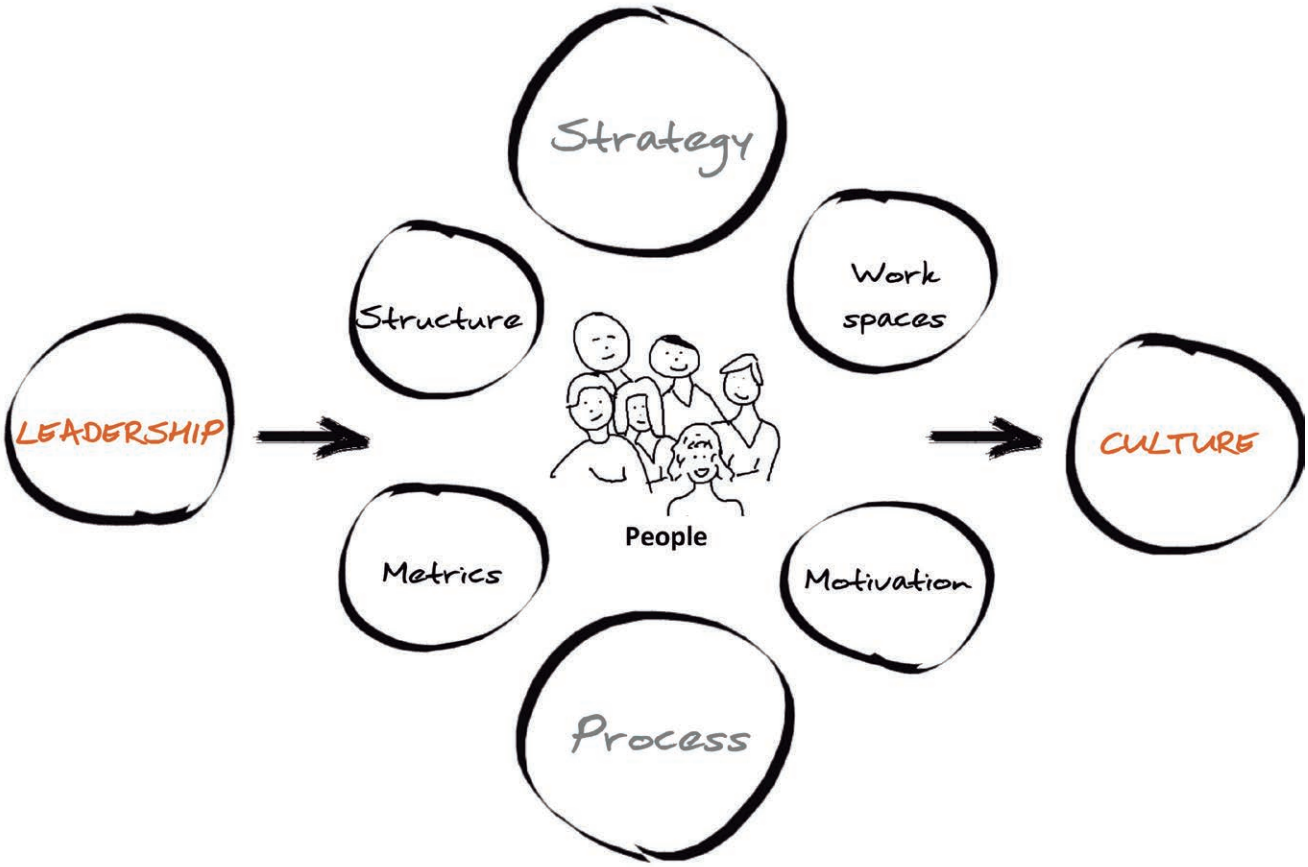
Becoming an innovative company, however, is not at all easy. Remember that most companies are oriented more to working efficiently than to innovating. It is therefore necessary to establish the right conditions for effectively and harmoniously combining operational management (efficiently exploiting the present in order to increase current profitability) and innovative management (exploring new opportunities in order to generate future profitability). Having the right people and creating an environment to encourage and support the behaviour necessary to innovate successfully and on a sustainable basis are thus crucial.

Innovative company (innovative culture)
=
Innovative people x Innovative environment

Innovating requires talent and people. Any organisation that wishes to become an innovator should therefore strive to give its personnel the most suitable tools, skills and models of thinking in each circumstance:

- Tools: collection of techniques and methodologies necessary to identify opportunities, to generate ideas and to implement them (for example: creativity, ethnographic, prototyping, etc. techniques).
- Skills: series of skills with which different profiles can make the most of their expertise and capabilities in order to achieve their objectives (for example: leadership, teamwork, effective communication, time management, etc.).
- Models of thinking (mentality, logic): series of derived attitudes and behaviours that ensure the tools and skills are effective (for example: tolerance of uncertainty, developing curiosity, questioning dominant logic, etc.).

Talent on its own, however, is not enough to generate systematic innovation. The company must establish the conditions necessary to encourage it. In other words, as well as prompting the development of certain skills among their staff, **companies should also offer them an environment that encourages and supports innovation**. Establishing such an environment entails a good combination of the following seven elements: **leadership, strategy, process, organisational structure, metrics, motivation and incentives and work spaces.**



Each company must find the most suitable combination

Each company should establish its own recipe to become an innovator and find the right combination in each case. Although they are not all equally as significant, they all deserve consideration, as acting on them all will have a multiplying effect.

Despite the fact all the elements are important, this Guide emphasises two: **strategy** (see chapter 5) and **innovation process** (see chapters 6 and 7), as these are considered:

- To form the backbone of the process to systematise innovation.
- To be levers that help end cognitive inertia through action; i.e. an innovative culture is established by "doing" innovation.

Remember, however, that without the driving force of leadership it would be impossible to overcome the barriers and obstacles preventing the company from generating a truly innovative culture.

3.1. Leadership: the driving force

Leadership is the driving force of innovation. To become an innovative company the management has to believe that innovation is a strategic process and act accordingly by assigning the necessary people and resources to it.

> Without leadership, it is not possible to become an innovative company

Some managers think that results will appear simply by showing an interest in innovation, by including the term in corporate communication and by delegating its management to people with neither power nor authority. Nothing could be further from the truth.

Leaders who wish to make innovation something real, should lead internal change by example and assume a series of roles to suit the situation:

- **Driving force**
  Innovation involves change. The fundamental role of a leader is very often precisely to drive change and break with the status quo. He or she should therefore guide and awaken a desire for change, foster it through specific acts and champion and legitimise innovation. This role is particularly important when starting to build an innovative culture.

- **Sponsor**
  Innovation gives rise to a series of internal barriers. The leader must give explicit support to innovation projects to remove these obstacles and allocate the projects the resources and effort required. This support is crucial when providing people skills and creating the right environment in which to innovate.

- **Mentor**
  Innovation involves risk. Instead of assuming the passive role of deciding whether or not a proposal is of interest, innovating leaders help the innovation team to reflect on the strengths and weaknesses of the concept, raising questions that may open up new avenues in the face of uncertainty. This role is particularly important when faced with uncertainty that involves greater risk.

- **Connector**
  Innovation requires collaboration. As the leader will have a more strategic outlook and a larger network of relations, he or she can identify synergies among the projects underway within the organisation or in other companies.

- **Decision-maker**
  Innovation involves sacrifice. Among other things, the leader will have to decide to which areas of opportunity resources are assigned or not assigned, which portfolio of projects to develop, which projects to stop and which to continue. The company's future competitiveness will depend on these decisions and sacrifices.

To perform these roles properly, **the leader must experience the entire innovation process first-hand and must be involved in it,** even if only on an occasional and partial basis. To lead innovation successfully in the company, a percentage of his or her time should be spent with the innovation teams. By doing so, the leader is also sending a strong message about the importance of innovation in the organisation.

3.2. Innovation strategy

An innovation strategy aligned with the company strategy is a key factor in becoming an innovative company. This will largely determine the innovation projects upon which the company should focus and, therefore, its future competitiveness.

Given its importance, a specific chapter has been devoted to innovation strategy (see chapter 5).

3.3. Innovation process

The performance of any innovation project requires a process. Not having a structured process tends to mean non-achievement of the objectives set out. That does not mean, however, that the same process should always be followed for all projects. Undertaking a project with emerging technology for which the existence of a real market is unknown is not the same as performing a project based on company capabilities and expertise addressed to a mature and familiar market.

Given its importance, 2 specific chapters have been devoted to innovation process (see chapters 6 and 7).

3.4. Organisational structure

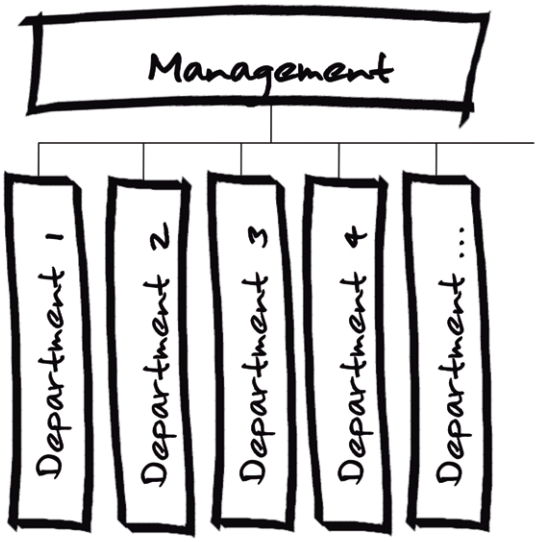
Organisational structure refers to how the people in charge of implementing and monitoring the management of innovation in the company are organised. Organisational structure can take various forms depending on the size of the company, its innovation policy (centralised or decentralised), the innovation strategy and objectives, its focus (research-driven or user-driven) or its organisational nature, among other things. Each company should generate its own structure.

Ideally it should **involve the entire organisation**, even though this is not always possible or feasible. Even if everyone takes part in innovation in some way or another, some people will nevertheless by more involved and have greater responsibility. Different levels of responsibility can be identified in accordance with the level of innovation management in the company:

- The **innovation committee,** which takes strategic decisions regarding company innovation. This committee should represent as many company perspectives as possible to ensure innovation is approached from a broad perspective.

- **Innovation leaders**, who are in charge of the day-to-day routine of managing innovation in the company. They undertake the daily tasks of innovation and provide liaison between the innovation committee (or, in its absence, the management committee) and the other workers in the company. Innovation leaders must ensure that innovation is always present in the company and prevent day-to-day routine tasks from edging it out of the spotlight.
- **Innovation teams**, who are in charge of implementing the innovation projects. These teams should be formed by people from different departments with the proper training to perform the tasks entailed in an innovation project (remember that innovation requires skills and tools that are different from those involved in managing day-to-day routine). Note that the team leader (or also the project leader) need not be the best specialist, but rather the most suitable person for coordinating a team of specialists with a view to achieving established objectives.

Determining the best structure for managing innovation (innovation management) involves consideration of how the company is organised to manage its day-to-day routine business (operational management). Most companies are organised according to functional departments, with a structure highly focused on running day-to-day business yet not very suited to managing change and, therefore, innovation.



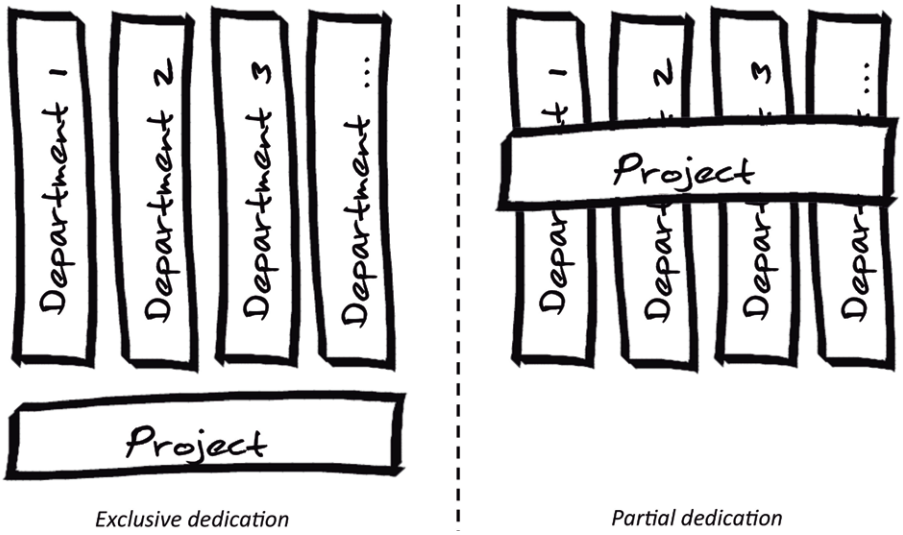
Structure by functional departments

Given this starting point, innovation in the company can be structured in many ways. Although there are a lot of intermediate situations, the most common organisational structure in SMEs is organisation **by projects** or **the creation of an innovation department**. Both have their advantages and their drawbacks. Responsibilities, tasks and roles must nonetheless be defined in each case.

- **Organisation by projects**
  This involves assigning a team to manage an innovation project. Although dedication may be full-time (through the creation of an autonomous team), in SMEs it tends to be part-time; in other words, the people on the team in charge of the innovation project continue to perform the day-to-day routine tasks of the organisation. This means that team members must report to two different heads: to the project manager and to the head of department.

  Such a structure has the following features:

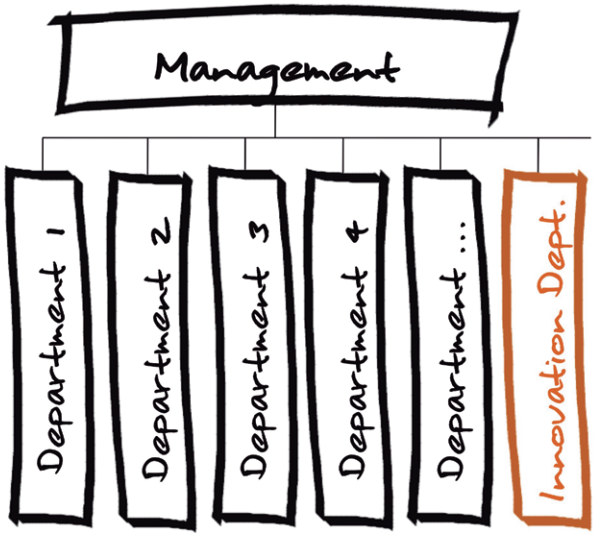
> For day-to-day routine and the innovation project to run well, very good communication and constant coordination among heads are particularly important.
> In many SMEs, the head of department has more power than the project leader. This means that if there is no explicit support from management for the latter, unforeseen circumstances that arise day-to-day tend to take priority over the innovation project.



Exclusive dedication *Partial dedication*

- **Creation of an innovation department**

  Everyone involved in innovation is assigned to a single department. The main advantage of this option is having a specialist team fully devoted to innovation. As time goes by, however, if it is not managed properly, there is a risk of developing solutions that are not aligned with company strategy, which will lead to its eventual isolation in the company (with the entailed risks). Hence the importance of having an innovation strategy (see chapter 5). This option, moreover, may not make use of all the talent there is in the company.



Creation of the Innovation Department

Whatever option is chosen, the process and results of innovation should be shared on a minimal basis throughout the organisation. This is the best way of ensuring that innovation is consolidated and sustained over time.

3.5. Metrics

If a process is to be managed properly, it must be possible to measure it. To control and improve the innovation management system it is essential to establish indicators to measure the innovation process. These provide information with which to make corrective decisions to reduce differences between objectives and reality.

The process itself, the investments and the results obtained must be measured and monitored. A system of measurement, control and improvement provides **objective values** with which to measure the evolution of the innovation management system and to detect areas for improvement. The innovation indicators should be able to answer mainly the following questions:

- Are the necessary resources being provided?
- Are the right processes available?
- Are the processes being implemented properly?
- Are the expected results being obtained with respect to the effort put in?

Any indicator must be relevant and relatively simple to measure. Depending on the phase of the innovation process four types of indicators can be distinguished:

INPUT INDICATORS: these measure the effort and dedication made by the company to encourage the innovation process.
Some examples:
> Number of people involved in innovation projects.
> Time invested by management in innovation activities.
> Percentage of budget allocated to innovation over total budget.
> Percentage of investment in innovation over turnover.
> Number of ideas generated in a year.

PROCESS INDICATORS: these measure variables in actions being performed in the innovation process.
Some examples:
> Number of ideas that have given rise to new concepts.
> Percentage of concepts that become products/services.
> Average time from choosing a challenge to the market launch of a solution.
> Deviation in time of projects (as a percentage).
> Deviation in budget of projects (as a percentage).
> Average evaluation of internal/external collaborations.

OUTPUT INDICATORS: include the results of the innovation process, without consideration for the financial return for the organisation.
Some examples:
> Number of new products introduced each year resulting from innovation projects (not solely improvements to the existing product portfolio).
> Number of protective measures from results completed successfully (patents, for example).
> Percentage of fulfilment of innovation objectives.

> Percentage of projects started that do not reach the market.
> Degree of customer satisfaction with new solutions launched on the market.

RESULTS INDICATORS: these measure the financial impact to evaluate the success of the company's innovation activities.
Some examples:
> Percentage of current sales from products introduced in the last 3 years over total sales.
> Number of process innovations performed in a year that have led to savings in costs or in time.
> Return on investment (ROI) from the ideas implemented.

Remember that even with a well-defined system of measurement, some outputs or results from projects are hard to measure. Bear in mind, also, that **each organisation is different and should choose the metrics that suits it best.**

3.6. Motivation and incentives

People should be motivated and encouraged to contribute their talent and place it at the service of innovation. People usually respond to the stimuli generated by the environment in which they work. Positive reinforcement (rewarding desirable behaviour) thus yields very good results.

Although different things motivate different individuals, they can generally be differentiated along the following lines:

- **Public acknowledgment** of successes in innovation projects.
- Design of a **remuneration system** that rewards the achievement of innovations.
- Implementation of a **comprehensive and flexible incentives system**, that includes not only monetary rewards, but also others to suit the motivation profile of each area.
- **Not penalising honest mistakes**.
- **Giving time** to develop new ideas.

These elements can be established through different practices including mentoring and coaching, prizes, career development plans, the option of choosing the projects one wishes to take part in and economic incentives. **When establishing incentives programmes, it is important to link them somehow to objectives and metrics.**

Each business culture, sector and, above all, person responds to stimuli differently. What works in one company may not necessarily do so in another with apparently similar characteristics.

3.7. Work spaces (physical and virtual)

Physical work environments encourage innovation and creativity and influence people's behaviour a great deal. This is not solely a matter of aesthetics. **Work spaces play an essential role in the creation and communication of aspects associated with innovative culture.**

The office or workspace must provide employees with the chance both **to concentrate on their work and to mix, interact and collaborate** with their colleagues. These areas should be designed with a view to what states of mind the company wishes to encourage (inspiration, reflection, collaboration, concentration, relaxation, etc.).

Companies that offer greater choice with regard to where and when to work have a more innovative image and are more likely to boost creativity and productivity. This involves having different spaces in offices, tools for working anywhere and internal policies that promote such practices. Information and communication technologies have thus provided a very broad range of options.

The use of virtual environments and of information and communication technologies particularly encourages collaboration and learning, as they allow for sharing and managing a large amount of knowledge, optimising processes and more efficient management of innovation projects. Implementing them very often involves dealing with general unawareness, resistance to change and a lack of understanding of the benefits that they can bring to people's day-to-day routines. To overcome these problems, the involvement of management is important for successful implementation.

Having the right environment is necessary to encourage positive relationships among people in the organisation through the development of an appropriate emotional climate in which to achieve results. Although this does not mean that good ideas cannot be devised and developed in environments that are not positive, a culture of innovation is unlikely to emerge.

3.8. Innovative culture: the result

Achieving a truly innovative culture is the result of encouraging different factors, which have been dealt with in this chapter. **Note that culture does not change overnight**. Change is a complex process in which a great deal of effort is required and in which **results appear slowly and gradually**. Some are more visible than others and tend to be associated with the following factors:

- Feeling of challenge and involvement
- Autonomy
- Time for innovation
- Curiosity
- Fun and humour
- Debate and reflection
- Confidence, openness and assuredness
- Capacity to assume risks and to experiment
- Capacity to implement and to obtain results

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Conclusions

It is commonly agreed that innovation is essential for the competitiveness of any company (whether large or small). As the term is used indiscriminately, there may, however, be some doubt as to what innovation means. Regardless of the many different definitions of the concept (two are proposed in this Guide), what really matters is the company's own definition.

Any company wishing to innovate requires everyone in the organisation to have the same understanding of what innovation is. When establishing this definition, the following aspects should be considered:

- It is a process and should be managed as such.
- It is completely inseparable from strategy.
- The goal is to provide the market with solutions that add value both to customers and to the company.
- It involves risk.
- It involves not just the R&D department or technology.
- Innovating (process) does not always yield an innovation (result).
- It should not be confused with creativity and/or research.
- There are different types and levels of innovation.
- It is a collaborative process.
- The unit of flow of the process is the project.

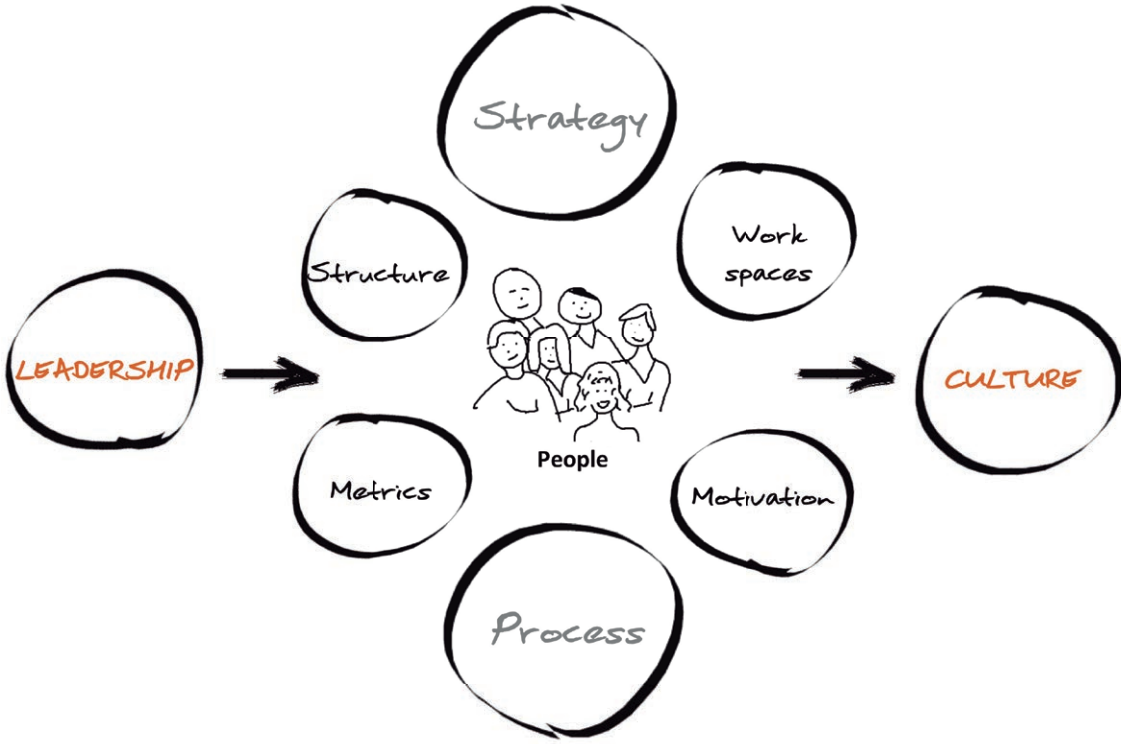
Bear in mind, however, that in today's complex and dynamic environment, the future of any company depends on its capacity to innovate. The great challenge faced by companies is not therefore to innovate occasionally (most companies do, otherwise they would no longer exist), but rather to do so on a sustained and systematic basis, as this is the best way to guarantee the company's future competitiveness. Innovation must become one of the characteristic traits of its culture.

Becoming an innovative company, however, is not at all easy. Remember that most companies are oriented to managing familiar processes rather than uncertain projects. The company must overcome many obstacles, which notably include:

- Not assigning enough resources to the innovation process.
- Fear of failure or doing things wrongly.
- Concentrating on improving what the company already knows how to do (tendency to optimise).
- Applying to innovation management the same dynamics, skills, rules and hierarchies as used in operational management.
- Giving heavy bias to financial criteria and thus prioritising projects that yield immediate return (short-term).
- Not establishing an environment that fosters the confidence to assume risks and to collaborate.

- Not identifying the innovation challenges properly (opportunities and threats).
- Selecting the projects to be performed incorrectly.
- Inadequate communication of the results, both internally and externally.
- Not implementing the innovation process and/or projects properly.

To do so entails having the right people and environment. An investment needs to be made in providing people with the necessary skills and tools, and in offering them an environment that fosters and supports innovation. This requires strong leadership that considers innovation to be a strategic process.



Each company should find the most appropriate combination of people-environment so that it may establish its innovating culture and its own innovation model.

Part two of this Guide proposes a generic model that is of use to any type of company and focused on two of the factors necessary to become an innovative company: the innovation strategy and process. The former determines the innovation projects upon which the company should focus, and the latter on how to go about them.

Part 2: proposed model

4. RxDxI Model: Reflect x Discover x Implement

Key ideas

- A model that consists of three main stages is proposed. The first is related to strategy (Reflection stage), while the remaining two are associated with the process (Discovery and Implementation stages).
- The innovation strategy should be defined before the start of the process.
- The innovation process can be undertaken using either linear and/or iterative methods.
- The project to be undertaken will determine (depending on the risks and uncertainty involved) the most suitable innovation process.
- Although there is no single process valid for all innovation projects, a combined model (iterative and linear) is proposed.
- Although the model can be closed, it is advisable to open it up (open innovation).

The journey from identifying a challenge and launching a solution in response to it is long and tortuous. Some companies, particularly SMEs, make this journey without any formal process, which makes it even more difficult to attain the desired result (which prompts many to think that “innovation is something for big business”).

Generating innovations requires a method to identify challenges and to transform them into new solutions that add value both to the customer/user and to the company. To help SMEs develop their capacity to innovate, we therefore propose a generic model may be used by all kinds of businesses, regardless of size and sector (although in some cases some adaptations may be necessary to respond to specific requirements and concrete situations).

This Guide mainly focuses on how to define the innovation strategy (Reflection stage) and on the first stage in the innovation process (Discovery stage)

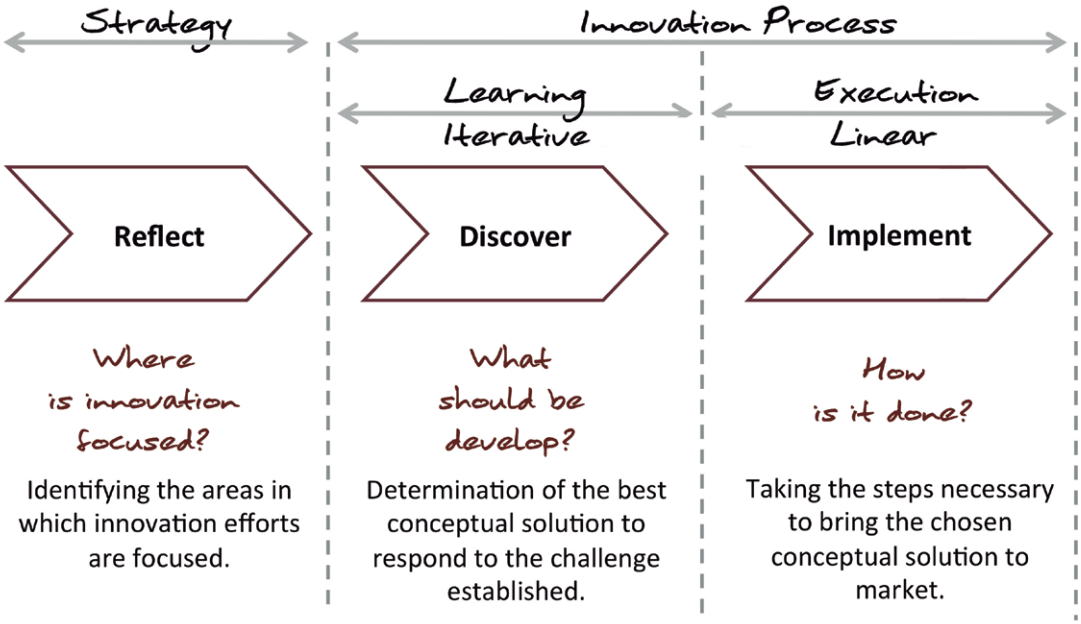
The proposed model focuses on 2 of the 8 factors necessary to become an innovative company (see chapter 3): **the strategy** and **the process of innovation**. These two factors involve three major stages, the first of which deals with strategy and the second and third with process:

Innovation Strategy – general in any company

- **Reflection**: the aim is to define innovation strategy by identifying potential innovation challenges.

Innovation Process – specific[26] for each project

- **Discovery**: this ranges from exploring the challenge (based on an opportunity identified in the Reflection stage) to defining a possible conceptual solution.
- **Implementation**: this includes all activities involved in making the conceptual solution defined in the previous stage tangible and sending it to market (from the detail of the design and operational process of the solution to its launch).



Source: adaptation of Edwards, D. (2012). I*nnovation Adventures Beyond the Core.* Research-Technology Management, 55(6), 33-41.

Although there is a chapter on the Implementation stage, **this Guide mainly focuses on how to define the innovation strategy (Reflection stage) and on the first stage in the innovation process (Discovery stage)**, for the following reasons:

- There is a tendency to implement new ideas without having an innovation strategy. Such a strategy is crucial for focusing effort and creating sustainable competitive advantages.
- There is a tendency to pass directly to implementation without either having understood the challenge in-depth or considering other alternatives. This involves a series of risks that could jeopardise the success of the project (see point 4.1.2.2.).

26 Performing an incremental innovation project is not the same as a radical innovation project. Likewise, developing a new product is not the same as developing a new service.

- Implementation is very specific and depends on the project to be undertaken. Upon knowing what they have to do, most companies, moreover, can access the knowledge necessary to set about the project.

The stage in which the new solution is exploited (used or commercialised) lies outside the scope of this Guide as it is considered part of the company's operational management (its day-to-day routine operations). Throughout this stage it is nevertheless important to carry on learning and accumulating knowledge in order to innovate continuously. Throughout the innovation process, it is also necessary to bear in mind the operational model to be used.

Exploitation stage: Use vs. Commercialisation

Logically, a solution addressed to improving the company's internal processes is not the same as one intended for sale on the market. Although both seek to increase profitability, the former is focused on improving efficiency (by means of reducing costs or increasing productivity) while the latter is addressed to raising income (by means of increasing sales or price).

While developing a solution to be exploited internally (use), the following aspects should be considered:

> *Synergies of the new solution with the company's current processes and products/services.*

> *It should fit in with the company's way of working.*

> *Internal skills should be available to ensure it works and is maintained well.*

As regards commercial exploitation (which includes operations, marketing, sales, aftersales service, etc.), it is important to choose the commercialisation model well, as this will determine the profit obtained from it. There are basically 3 possible models:

> *Integration: every aspect oriented to commercialisation is managed, controlled and implemented. This requires good skills in operations, marketing and sales, plus cooperation among company departments.*

> *Collaboration: aspects associated with commercialisation are managed and controlled even if not all of them are implemented. It involves collaboration with other companies in some of the commercialisation of the solution (whether in operations, marketing or sales).*

> *Transfer: a third party commercialises the solution either through sale or license for the operating rights.*

The choice of one model or another affects factors such as profitability, risk, speed, etc. Each model has advantages and disadvantages. It is therefore extremely important to choose the one that can best balance the capabilities of the company, the resources available and the expected return.

4.1. Explanation of the model

4.1.1. The innovation strategy (Reflection stage)

> Defining the innovation strategy is crucial in becoming an innovative company

Before choosing which innovation projects to invest in, the company must reflect on the challenges upon which it should focus (the innovation strategy must be defined). Although there are companies that achieve innovations without an innovation strategy, such a strategy is nonetheless necessary for companies that aim to become innovators.

Innovative company vs. company that innovates

Being an innovative company is not the same as being a company that innovates. The former involves continuous and systematic innovation over time and the incorporation of an identity defined by innovation in the company's organisational culture (see chapter 3). The latter, in contrast, may encourage innovation projects but only does so occasionally and intermittently at the most and will therefore require an innovation process but not necessarily an innovation strategy. In other words, all companies aiming to innovate need an innovation process; an innovation strategy, which is recommendable for all companies, is, however, essential for those aiming to become innovators.

The purpose of the Reflection stage is precisely to develop an innovation strategy (obviously aligned with company strategy). This means establishing a series of elements that should help to clarify, among other things, aspects associated with the reasons for starting the process, the expected goals, the areas in which the company wishes to innovate and the resources it is willing to assign.

Not having this innovation strategy can generate the following situations:

- Innovation becomes a matter of chance.
- Attempts to innovate in all areas and ultimately innovating in none.
- Innovating in non-essential areas.
- Building a portfolio of innovation projects that have no connection at all with one another, thus preventing possible synergies.
- Investing in innovation projects not aligned with the strategic objectives of the company.
- Assigning too many resources to non-essential projects and having to sacrifice other more significant projects.

The success of the projects undertaken (and therefore the profitability of efforts and resources assigned to them) **can depend on a correct selection/prioritisation of the innovation challenges.** Having a defined innovation strategy is therefore crucial.

Once the innovation strategy has been established and communicated, the different innovation projects can be initiated. This is the starting point for the project management, which comprises the Discovery and Implementation stages of the proposed model.

4.1.2. The innovation process (Discovery and Implementation stages)

The Discovery and Implementation stages are essential for innovation to occur. Their influence nonetheless varies in accordance with the innovation project to be performed. Undertaking a project with emerging technology for which the existence of a real market is unknown is not the same as carrying out a project based on company capabilities and expertise addressed to a mature and familiar market.

In other words, **the way in which the different stages are managed depends on the degree of novelty and the risk** (performing an incremental innovation project is different from performing a radical innovation project).

4.1.2.1. The risks involved in the project determine the most suitable process

As already mentioned, innovation involves risk (see point 2.1.4). The risks associated with an innovation project largely determine what process is best suited to improving their management while minimising their impact.

In other words, **the most suitable process for reducing the associated risks should be sought for each project.** This will help to maximise results while minimising the resources used.

There are many types of risk. Risks may be associated either with the result of the innovation process, i.e. the resulting solution, or with the innovation process itself. The most common types of risks are listed below:

- **Market risk**: risk associated with whether the solution will be accepted by customers or users (i.e. whether it will provide a timely answer to their needs and whether it will be well-positioned with respect to the existing competition).
- **Technical risk**: risk associated with whether the solution is technically feasible and whether it will work as envisaged. In technological projects it is known as technological risk. This risk is always present to a lesser or greater extent in all innovation projects.
- **Operating risk**: risk associated with properly managing the company's capabilities and resources in developing, producing and commercialising the solution.
- **Financial risk**: this type of risk includes two differentiated parts. One is related to the result and the other to the process:
  - > Risk associated with whether the solution will fulfil the expected sales and benefits, thus generating sufficient value to be considered a good investment.
  - > Risk associated with whether the process of developing the solution can be undertaken within the assigned budget.
- **Schedule risk**[27]: risk associated with whether the company is capable of developing, producing and commercialising the solution on time (arising from the possible consequences of not launching the product or service within the established time period[28]).

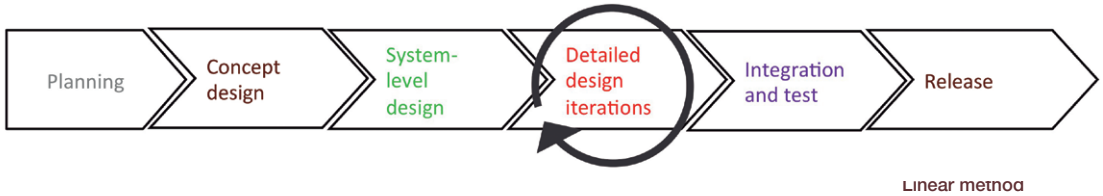
27 The main difference between the operating and the schedule risk is that the former refers to the capacity to perform the project and the latter adds a time restriction.

28 The time in which a new product or service should be launched in order to increase the chances of success is also known as a window of opportunity.

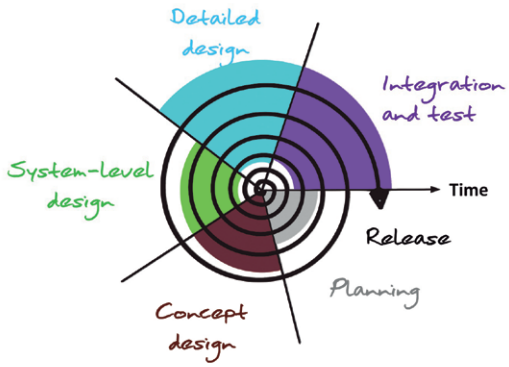
- **Environmental risk**: risk associated with factors external to the company that may condition the solution's success (legislative changes, natural disasters, etc.)

To manage and reduce these risks, the innovation project may involve three types of methods:

- **Linear method**: based on reviews between phases of the project.
- **Iterative method**: based on iterations with a view to reducing uncertainty levels
- **Combined method**: a combination of both.



Linear method



Source: Unger, D. W., & Eppinger, S. D. (2009). *Comparing product development processes and managing risk. International Journal of Product Development*, 8(4), 382-402.

4.1.2.2. Linear methods vs. iterative methods

In most companies that apply formal innovation methods, notwithstanding some differences, the methods are arranged in a linear process. In other words, they include stages and gate decision points (method known as the Stage & Gate model[29]). Specific evaluations are made at each gate decision point to determine whether the project should be taken to the following stage (and to establish how many resources are required) or abandoned.

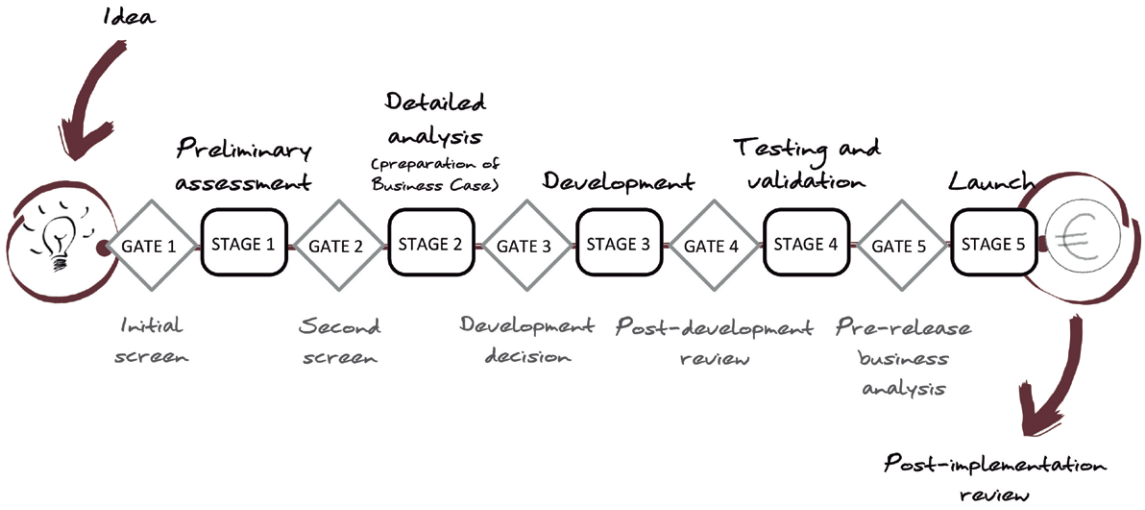
These methodologies are based on the logic that right at the start there are many ideas/proposals. As the model progresses, these are evaluated in terms of criteria for determining which should be continued and which should be stopped. At the end, therefore, not many ideas/proposals have become solutions that reach the market.

These linear methods are appropriate in situations with low levels of uncertainty, particularly in the two indicated below:

29 Model developed by R.G. Cooper.

- In all incremental innovation projects.
- In innovation projects for which the solution in question has already been determined as desirable, feasible and profitable.

For projects with higher levels of uncertainty, however, they are not appropriate in the initial stages. This is because they feature some conceptual limitations which may not guarantee that the innovation process generates the best possible solution. The main types are described below:



Source: Cooper, R. G. (2008). *Perspective: The Stage-Gate® Idea-to-Launch Process—Update, What's New, and NexGen Systems**. Journal of Product Innovation Management, 25(3), 213-232.

- **Falling in love with an idea.**
  Initiating the innovation process directly from an idea may involve the risk of falling in love with it, turning the process into the best way of implementing the idea, and no longer exploring other options that may lead to better solutions. Rather than falling in love with ideas, at the start of the process it is therefore advisable to fall in love with challenges. An idea is good if it rises to a particular challenge.
- **Discarding ground-breaking ideas.**
  The filtering criteria used are too often based on what is familiar to the company. This means ground-breaking ideas are abandoned and the concepts closest to the company's current reality are prioritised.
- **Making too early a commitment to a specific solution** (not necessarily the best one).
  Together, the linearity of the process and pressure to speed up time-to-market means the company too often commits itself to a specific solution, even if uncertainty levels are very high and many of the assumptions the solution is based on have not been validated. Such premature commitment can very much undermine the project's chances of success.
- **Launching a solution that may be new but does not solve any real problem.**
  Ideas must be generated or designed to respond to a problem or need. The innovation process must therefore begin by identifying the innovation challenges (which are mainly poorly resolved customer/user problems and needs).

- **Delaying the onset of problems.**
  Linear methodologies too often put off the emergence of problems to the later stages of the process, when any change involves high costs.

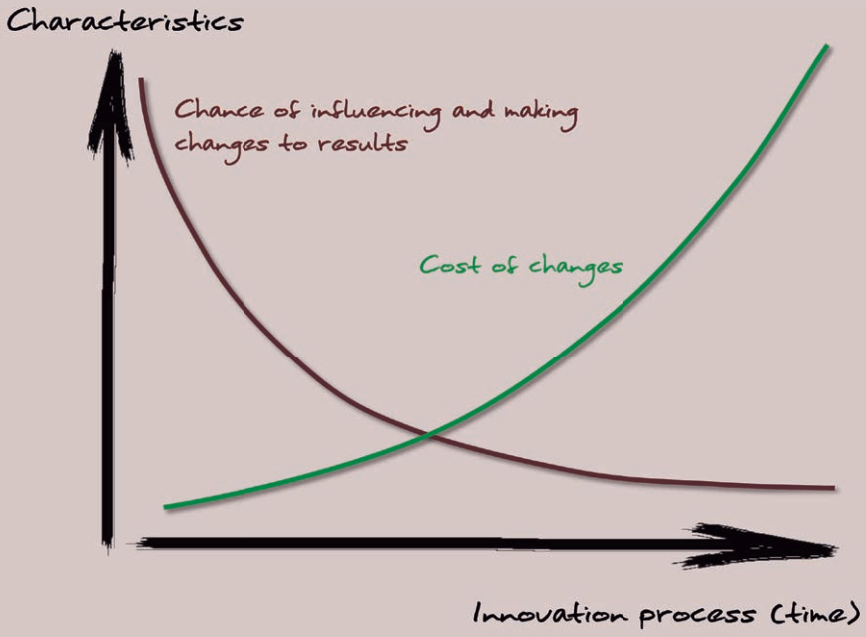
Characteristics of the initial stages of the innovation process

Some of the characteristics of the early stages of innovation projects should be kept in mind:

> *There are high levels of uncertainty in the front-end of innovation process.*

> *It is easier to influence the eventual result, as large investments have not yet been made and sunk costs are not an obstacle.*

> *It is easier to make changes, since the cost of resolving any unforeseen problems that emerge increases exponentially as the process advances. The more advanced the process is, the more committed the company will be to a solution. Each change may involve a chain of modifications. It is therefore important to find ways of identifying problems and solving them as soon as possible. If this is done too late, more human and financial resources will have to be assigned at any cost to save the project.*



Source: Herstatt, C., & Verworn, B. (2001). *The"fuzzy front end" of innovation* (No. 4). Working Papers/Technologie-und Innovationsmanagement, Technische Universität Hamburg-Harburg.

In the early stages, when there is greater uncertainty and risk, it is generally best to use an iterative method. Iterations should allow for the greatest number of possible situations to be validated before starting the process of implementing the solution (the stage with the highest concentration of costs).

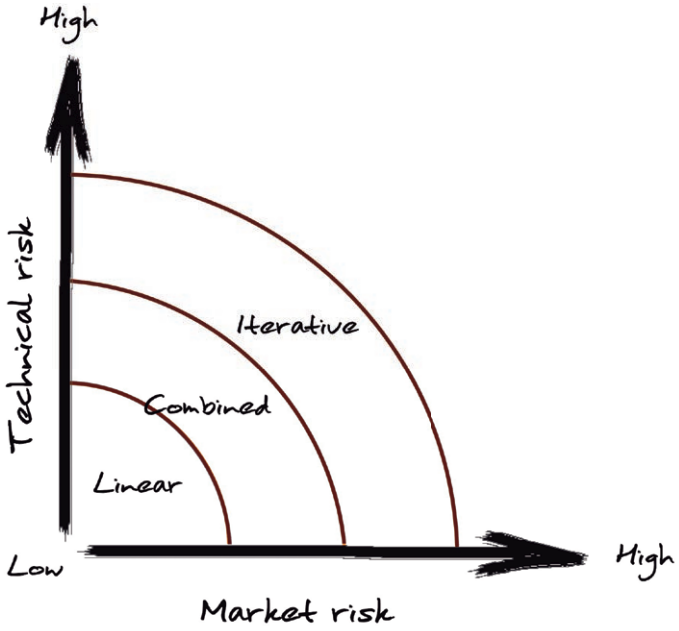
Although **iterative methods** may consist of the same phases as linear methods, they nonetheless **prompt the gradual evolution of ideas, making it possible to pass through the same phase on more than one occasion (iterations)**, depending on what activities are necessary to reduce uncertainty at any given time.

In the early stages of the innovation process, the greater the level of uncertainty and risk involved in the project, the more necessary it is, therefore, to use an iterative method (rather than a linear method). Once the concept has been defined, however, a linear method should be used.

4.1.2.3. Choosing the most suitable method

There is no universal recipe for all innovation projects. The most appropriate method should thus be chosen to suit the context or, in other words, the uncertainties associated with each project. **Use of just one method for all innovation projects is, in fact, not advisable.**

More and more companies are therefore defining different methods of innovation and choose the method best suited to each project in accordance with its level of uncertainty and risk. For example, a company could define three methods of innovation in response to technical and market uncertainty with a greater level of risk:



Source: adaptation of MacCormack, A., Crandall, W., Henderson, P., & Toft, P. (2012).
Do you need a new product-development strategy? Aligning process with context. Research-Technology Management, 55(1), 34-43.

- An iterative method for projects classified as start-ups (high uncertainty).
- A combined method for businesses in growth phase (average uncertainty).
- A linear method for mature markets (low uncertainty).

Whatever the case, **each project should be managed using the method that best suits it.** The activities undertaken to obtain the information and/or knowledge required, either through iterations (iterative) or stages and gate decision points (linear), will depend on the different uncertainties associated with the innovation project.

There is no universal recipe applicable to all innovation projects

When choosing the most suitable method for each project, it is advisable to:

a) Identify the uncertainties

Elements that are unknown and key to the success of the project must be identified. To do so, it may be helpful to use a set of questions that require the innovation team to reflect on the major unknowns and to plan the activities to be undertaken at any given time with a view to obtaining the information and knowledge required.

> Who is the customer?

> Are their problems/their needs known?

> Would he or she be prepared to pay for a solution?

> How large is the market?

> At what rate is this market growing?

> How is the company positioned compared to the competitors?

> Are there any alternative solutions?

> Is it technically feasible?

> How developed are the necessary technologies?

> Does the company have access to these technologies?

This exercise must be done on an ongoing basis as the key unknowns may vary as the project advances.

b) Classify and prioritise

Once identified, the uncertainties are then classified and prioritised.

Uncertainties can be classified into the following categories:

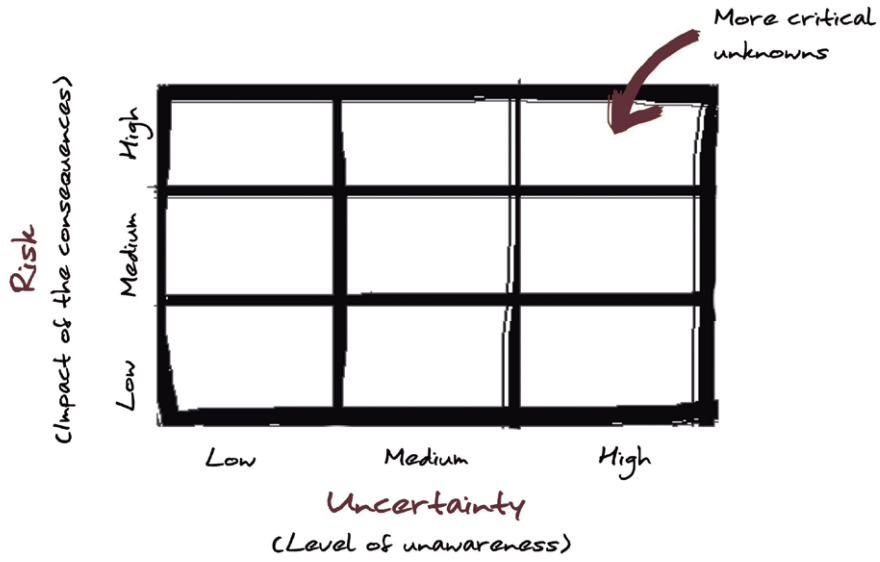
> Market and customers (is it desirable?)

> Operational viability

> Technological viability

> Financial return

While prioritising, bear in mind both the level of unawareness of the uncertainty and the impact it may have on the project.



Source: adaptation of Edwards, D. (2012). *Innovation Adventures Beyond the Core.* Research-Technology Management, 55(6), 33-41.

c) Select the most suitable method of innovation and the activities it involves.

Once this has been done, a decision should be made about whether to adopt an iterative process or a more linear process, and the different activities for generating the information sought should be planned (for example, if the company is oriented to a familiar market and simply aims to make some incremental improvements, linear methods may be used from the outset, whereas in cases where segments of customers are new or where the aim is to satisfy new needs, then it would be more advisable to start the process with iterative methods).

4.1.2.4. Proposed method: combined

Bearing in mind the advantages and drawbacks of the linear and iterative methods, a **combined method is proposed to manage the innovation process: iterative in the Discovery stage and linear in the Implementation stage**. Although there is no universal method suitable for all innovation projects, this model is proposed because:

- It is flexible enough to adapt to the specific needs of each situation, and allows greater or lesser significance to be awarded to each stage.
- The Discovery stage tends to involve higher levels of uncertainty than the Implementation stage, which is far more formal and structured.
- It underlines the importance of the Discovery stage, which is crucial to the success of innovation projects and does not usually receive sufficient attention.

Discovery stage

At this stage, the best possible solution is defined while the level of uncertainty is reduced as much as possible. This involves the generation of the knowledge necessary to respond to the main questions and to help in making decisions that yield the best solution.

This stage should entail coming up with as many drawbacks as possible related to the development of the new solution, prior to assuming the higher investments of the Implementation stage. As mentioned previously, at this point there is still sufficient flexibility to make amendments at a low cost.

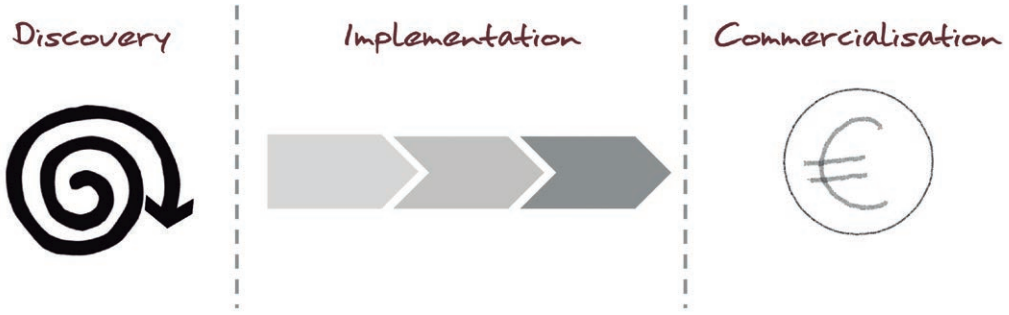
In projects involving many unknowns, particularly when this uncertainty is related to the value proposition and the customer segments, this stage will be mainly iterative and considered very significant; while in cases with fewer unknowns in which what counts is time-to-market and control, the use of linear methods would be more recommendable.

Implementation Stage

Once the solution has been defined, it is better to use a linear method (involving stages and gate decision points) to implement it.

In this stage, the focus is on **ensuring that the solution will work as planned and on controlling the budget to do so.** Greater stiffness and control, which are present in linear methods, are therefore advisable.

Although the proposed model may be suitable for many innovation projects, each company, as mentioned previously, should design its own innovation processes bearing in mind its own specific characteristics and the background of uncertainty associated with the project.



4.2. Opening up the model (Open innovation)

As stated previously, there is not much point in having a closed innovation model (see point 1.1.1). **The proposed model should not be restricted to the company's own internal expertise, ideas and skills but should be opened up to external stakeholders**: not all ideas and new knowledge need to come from within the company, nor all the good initiatives that arise from within the company need to be developed and/or commercialised by the company itself.

This commitment to opening up the process, which has been called *open innovation*[30], can involve different practices: customer-inputs, crowdsourcing, online communities, open-source projects, acquisition or sale of patents, integration of suppliers, alliances for developing or commercialising projects.

In applying this concept to the company's innovation process it is helpful to understand the different options it has to offer and to link them to the needs of each stage in the innovation process of the project (Discovery and Implementation).

The company may therefore have to consider using external sources if any of the following symptoms appear during the different stages of the innovation process:

30 Concept developed by Professor Henry Chesbrough.

Discovery stage

Symptoms:

- The company does not usually encounter new areas of opportunity that could lead to new differential solutions.
- Ideas come from a reduced number of employees.
- Ideas tend to be very similar.
- Most proposals are incremental.
- New ideas neither inspire customers nor arouse employees' passion.
- Ideas tend to be related to the company's core offering (product/service) and not to other elements of the business model.

External sources that can be used:

- Sessions with experts to generate insights.
- Inventors' communities.
- Crowdsourcing (see point 6.3.2.1.2.).
- Lead users (see point 6.3.2.1.2).
- Users' communities.
- Co-creation with customers/users (see point 6.3.2.1.2).
- Acquiring patents.
- Entrepreneurs.

Implementation Stage

Symptoms:

- Many innovations are abandoned.
- New solutions do not yield competitive advantages.
- The company's day-to-day routine allows neither time nor resources for implementing new solutions.
- Implementation takes on a lesser significance and there is no clear accountability to guide innovations to market.
- The launch is usually delayed or increases in cost.

External sources that can be used:

- Integration of suppliers.
- Collaborating with technology centres or universities.
- Joint ventures with other organisations.
- Acquiring start-ups.
- Creation of spinoffs.
- Sale of patents.

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5 Reflect
(Innovation strategy)

5. Reflect (Innovation strategy)

Key ideas

- The innovation strategy must be inseparable from the company's general strategy.
- Defining the innovation strategy is crucial in guiding innovation efforts.
- Identification of the innovation challenges requires internal and external analysis.
- The innovation challenges identified provide the basis for establishing the strategic areas of innovation (innovation vectors) and the portfolio of projects to be undertaken.

5.1. Introduction

> Having an innovation strategy is crucial to innovate on a sustained basis over time

Although a clear, well-coordinated innovation strategy is essential to obtain good results, there are still many companies that do not have one. A study published in 2011[31] by consultants Booz&Company (currently Strategy&), emphasised that **having an innovation strategy aligned with business strategy is crucial to innovate on a sustained basis over time and to achieve better financial results.**

Before innovating, it is essential to have a **clear notion of how innovation will help to increase the company's competitive advantage.** One typical mistake is to want to innovate in everything and to end up not innovating at all. An innovation strategy (inseparable from the company strategy) must therefore be defined. It is not a matter of innovating for innovation's sake, but rather of helping to meet specific objectives.

The Reflection stage, in particular, should lead the formulation of an innovation strategy with which to:

- Focus innovation efforts
- Establish the direction to be taken
- Define the rules of the game.

31 See study "The Global Innovation 1000: Why culture is Key" published by consultants Booz & Company (currently Strategy&) in 2011.

In other words, the areas that lie outside the innovation interest of the company must be clearly determined. This will not only avoid wasting resources but also prevent frustration, a sense of confusion and an eventually portfolio of unsuitable innovation projects (i.e. projects lacking synergy with one another that may even not have anything to do with what the company needs).

Before starting any innovation project, it is therefore a very good idea to reflect on what the innovation strategy should be.

Whenever possible, this process of reflection should be shared with as many members of the organisation possible in order to:

- Obtain a broader and more realistic view of the different perspectives there are in the company.
- Encourage people to feel personally involved in the process, which will help to minimise resistance and fears.

5.2. Alignment with business strategy

Good results from innovation efforts largely depend on having an innovation strategy that is aligned with company strategy. Designing the innovation strategy therefore requires an awareness of a series of elements of the company's global strategy.

There appear below some aspects of company strategy that must be taken into account when formulating an innovation strategy to ensure that both are aligned. These elements can be summed up as five specific aspects, each of which refers to a specific issue:

- Strategic areas: where will the company be active?
- Vehicles: what methods will be used to reach them?
- Differentiators: how will the company be competitive on the market?
- Staging: how fast will the company move and what sequence will its movements follow?
- Economic logic: how will the company obtain its return?

Strategic areas:

One of the essential decisions is the areas in which the company should be active. It would be similar to ask: what business does the company want to be in? The answer should be neither vague nor general. It must be as precise and specific as possible on product categories, services, market segments, geographical areas, etc. and define what it will offer in each area. Some market segments, for example, might be considered core and others of secondary importance. Such priorities have implications and so care must be taken when establishing them.

Vehicles

After identifying the areas in which the company is to be active, the resources that will be used to reach them must be defined, regardless of whether they involve products, services, market segments or geographical areas. In other words, the company must establish whether it will act organically by developing internally or engage in joint ventures, franchises, licenses, or acquisitions, or any other combination of these.

Differentiators

The strategy should also indicate the dimensions to be prioritised in order to contribute value to customers/users, while differentiating the company from the competition. These differentiators will

be associated with a series of capabilities that will have to be developed internally or acquired from third parties. Failure to establish the priority differentiators clearly usually means the company is viewed by its customers either as just another supplier or even irrelevant.

Regardless of the differentiators used (image, customisation, price, design, robustness, service or any other), it is necessary to decide which to promote and what form they will take, while the reasons leading to this choice must be understood.

Note here that for the company to achieve a competitive advantage, it need not position itself at the end of any differentiating dimension. A good combination of differentiators can very often lead to a very solid competitive advantage.

Staging

Staging determines what initiatives are to be developed initially and at what speed. This decision may be forced on the company as a result of the resources available, the competition or the identification of a fleeting opportunity.

Economic logic

In any strategy it is crucial to know how profits will be obtained. This logic affects both income and costs. At this point very careful attention should be paid to the reasons why customers want to acquire the company's solutions, what price they are willing to pay, the cost structure, the associated business model, etc.

Source: Hambrick, D. C., & Fredrickson, J. W. (2001). *Are you sure you have a strategy?* The Academy of Management Executive, 15(4), 48-59.

All this information will guide the company throughout the process of reflection on designing the innovation strategy.

5.3. Process of reflection for formulating an innovation strategy

To formulate a clear, coherent innovation strategy addressed to business objectives, it is very useful:

- To establish the importance of innovation and define it in the company.
- To define the guidelines and objectives of innovation.
- To seek information to identify innovation challenges.
- To define the innovation vectors and the portfolio of innovation projects.

Note carefully that although these points of reflection are described sequentially, they can generally be developed on a parallel basis.

5.3.1. Establishing the importance of innovation and defining it in the company

Importance of innovation for the company

When a company initiates or strengthens its commitment to innovation, what it is doing is none other than generating change (to which, as we are all aware, there is resistance). **The organisation must therefore first clearly establish the reason for wanting to innovate.** In other words, it must identify the triggers for launching its adventure into innovation and for creating the need in the organisation to innovate.

Building a common language and communicating properly the reasons for the company's commitment to innovation are essential. The members of the organisation should be persuaded that this change is favourable, both for them and for the organisation.

There may be different reasons for innovating: responding to a changing environment (which may be because of changes in customer preferences, in technology, or in the emergence of new regulations), not falling into the trap of commoditisation, or growing or creating competitive advantages. Whatever the reasons, they should be made explicit.

When performing this exercise in reflection, a dialogue should be established with the intervention of the greatest number of people possible (democratisation of the process).

Internal definition of innovation

One of the most common problems in managing innovation in the company is that everyone has a very different idea about what it means to innovate. This can create misunderstandings and confusion. It is therefore essential to establish a common language with regard to what innovation is and what it is not for each individual company.

We therefore recommend taking time **to develop an internal definition of innovation**, which should be individualised, clear, specific and shared by the entire organisation.

This internal definition may be inspired by any of the general definitions there are about the concept of innovation and aspects dealt with in point 2.1 of this Guide. It must, however, be adapted to the reality of the company and of the industry in which it is competing. For example, a local food company and an insurance industry multinational are unlikely to use the same definition of innovation.

> It is essential to establish a common language about what innovation is and what it is not for each individual company

Arriving at a shared definition of innovation is one of the fundamental bases upon which to establish an innovative culture in the organisation. The aim is ultimately to establish a lingua franca[32], i.e. a language systematically used to communicate by people who do not share a common mother tongue. Without this common language for innovation it will be harder to manage it successfully within the company.

The benefits of having an internal definition of innovation are:

- It guides the organisation towards a common innovation objective.
- It helps different departments or business units to align their innovation efforts.
- It gives substance to internal dialogue on innovation.
- It helps to generate and select ideas.
- It helps innovation teams to know where to focus their efforts.
- It brings objectivity and guidelines to innovation.

5.3.2. Defining the guidelines and objectives of innovation

The innovation guidelines and objectives provide the bases for defining a company innovation strategy. Depending on how they are defined, they will moreover, determine the types and levels of innovation upon which the company focuses (see point 2.1.8).

Innovation guidelines

These are a set of **principles that help to communicate the requirements that must be met by innovation projects** in order to merit consideration and to receive support from the company. **They act as constraints** and therefore define the area in which the company innovates: if an innovation project breaches any of these guidelines, it should not be undertaken. The company may therefore focus its efforts while avoiding frustration and the misuse of resources.

Although these guidelines are of a general nature (they affect all the company's innovation projects), as shall be discussed later (see point 6.4.1.1), this does not mean that each project cannot also have its own specific criteria.

Remember that the guidelines defined will influence the types and levels of innovation in the company. It is therefore very important to consider which guidelines are the best for the company, on the basis of company strategy.

For example, incremental innovations will be prioritised if one of the guidelines is NPV or a specific, short-term return (see point 2.2.5). This may mean that even if the portfolio of innovation projects

32 All disciplines, innovation included, have their lingua francas.

complies with the innovation guidelines, it does not fulfil the medium- or long-term sales prospects and therefore the strategic objectives set out are not achieved.

Some examples of innovation guidelines applicable to innovation projects:

- Giving the company a competitive advantage.
- Increasing brand value.
- Reaching the market in less than 24 months.
- Reaching break-even point within three years.
- Making sure the project is aligned with business strategy.

Note that the innovation guidelines are not mutually exclusive and several may be followed at once. However, the more there are, the more restricted the area for innovation.

Innovation objectives

Innovation objectives must support the company's strategic objectives. They refer to the series of goals that an organisation intends to achieve through its efforts to innovate.

Note that innovation guidelines should not be confused with innovation objectives. The guidelines are minimum requirements that must be met by the innovation projects to which the company is willing to allocate resources, while **the objectives represent the results the company wishes to achieve.**

> Innovation objectives must be linked to metrics and incentives

Examples of innovation objectives:

- Creating a culture of innovation in which all company employees make innovation part of their day-to-day work.
- Launch of services complementary to existing products that will account for 10% of total turnover within two years.
- Generation of savings of 12% on the cost structure.
- An increase of 15% to 30% of the workers involved in innovation projects.
- An increase of 20% to 35% of the profits yielded from the products launched in the last three years.
- An increase in the value that new products contribute to customers.

Preferably quantitative objectives

Innovation objectives, as is evident, can be qualitative or quantitative. It is nevertheless advisable to find the most suitable mechanism to convert qualitative objectives into quantitative objectives, even if only subjectively. In the last example: "increasing the value that new products contribute to customers", the value contributed by a product can be measured by subjective evaluation by customers of its initial prototype. If it scores less than the customer's desired minimum value (if, for example, on a scale from 1-5, it scores 3.5 compared to the desired 4), the product does not meet the target set and corrective action should therefore be taken before it is developed.

Note that **the innovation objectives should be linked to innovation metrics** (see point 3.5) **and incentives** (see point 3.6). Although this may seem common sense, it is still common to encounter situations where this is not the case, thus making them mere declarations of intent rather than the elements that guide innovation efforts.

It is also crucially important to make sure that both the objectives and other aspects of the innovation strategy are **properly communicated to all members of the organisation**.

Objectives can be linked to different time horizons. Short-, medium- or long-term objectives can be established. They should, however, be complementary so short-term successes help to achieve longer-term targets.

In business management objectives are commonly defined according to SMART criteria:

- Specific
- Measurable
- Achievable
- Realistic
- Timely

While SMART criteria may be useful in many areas of management, caution is required when applying them to innovation. Remember that innovation, particularly radical innovation, is uncertain. It is therefore difficult to establish highly specific and measurable goals. If a company does not consider this point, it may eventually generate only incremental innovations.

If a company wishes to have a balanced portfolio of projects that includes incremental, adjacent and radical innovations, the methods used to establish objectives are crucial. Applying traditional business logic to establish objectives could kill off some riskier types of innovation. A solution can be found in the use of different objectives for different levels of innovation.

Repeated application of SMART criteria may prioritise incremental and suffocate radical innovations:

SMART criteria	*Incremental innovation*	*Radical innovation*
Specific	*Specific objectives help to focus on and be aware of the desired results.*	*Specific objectives constrain effort in innovation and prevent the appearance of dominant logic.*
Measurable	*Easily measurable objectives help to identify diversions from established objectives.*	*The need to fulfil objectives with measurable standards makes more ambitious innovation difficult, as it is difficult to measure something that neither exists nor is known.*
Achievable	*The objectives must lie within what is familiar. This increases the chances of achieving them.*	*If the objectives have to be achievable, projects that are more radical and uncertain, will receive no support from the organisation.*
Realistic	*Objectives must be realistic and suit the specific circumstances of the company. Objectives that are not realistic should not be considered.*	*Radical innovation is based precisely on challenging the dominant logic represented by the company's current circumstances.*
Timely	*Pressure exerted by deadlines encourages action, decision-making and the fulfilment of objectives.*	*Pressure exerted by deadlines means safer and simpler paths are taken, and does not factor in either unforeseen circumstances or exploration.*

5.3.3. Seeking information to identify innovation challenges

Without challenges, no innovation is possible (see point 2.2.7). As mentioned previously, challenges in innovation can be either internal or external opportunities or threats. Both internal and external analyses are therefore advisable.

5.3.3.1. Internal analysis

Identifying innovation challenges requires reflection regarding:

- The kind of business the company is in and the kind of business in which it wishes to be in the future[33].
- What technologies and technological capabilities the company currently has and what it will need.

From a business perspective

A very interesting exercise is to define and evaluate the current business model. The Business Model Canvas (see figure) is a tool that can help to do this. First, the current business model should be determined. Once consensus has been reached on how to represent it, it should be evaluated. This will help to determine the situation desired for the future.

33 Note that the way the company defines or redefines the business it is in and/or wishes to be in may determine new dimensions in which to compete. This definition may have very deep implications. For example, for an automobile manufacturer, establishing that it is and/or wishes to be in the automobile business is not the same as in the driving, the luxury, the engineering, the ego, etc. business. Depending on the definition, some future innovation projects will be prioritised over others.

Business model

A business model describes how the company creates, delivers and captures value. Although it can be represented using different tools, the main ones are variations in a single concept, which should help to answer the following questions:

> Who are the customers?

> What does the company offer them?

> How?

- *How is value created? (activities, resources and alliances)*
- *How is this value delivered? (channels)*

> How much value is captured? (costs and income)

One of the business model templates to have gained most popularity in recent years is the Business Model Canvas, proposed by Alexander Osterwalder[34]. Its simplicity and visual display makes it useful for describing, designing and improving any team business model.

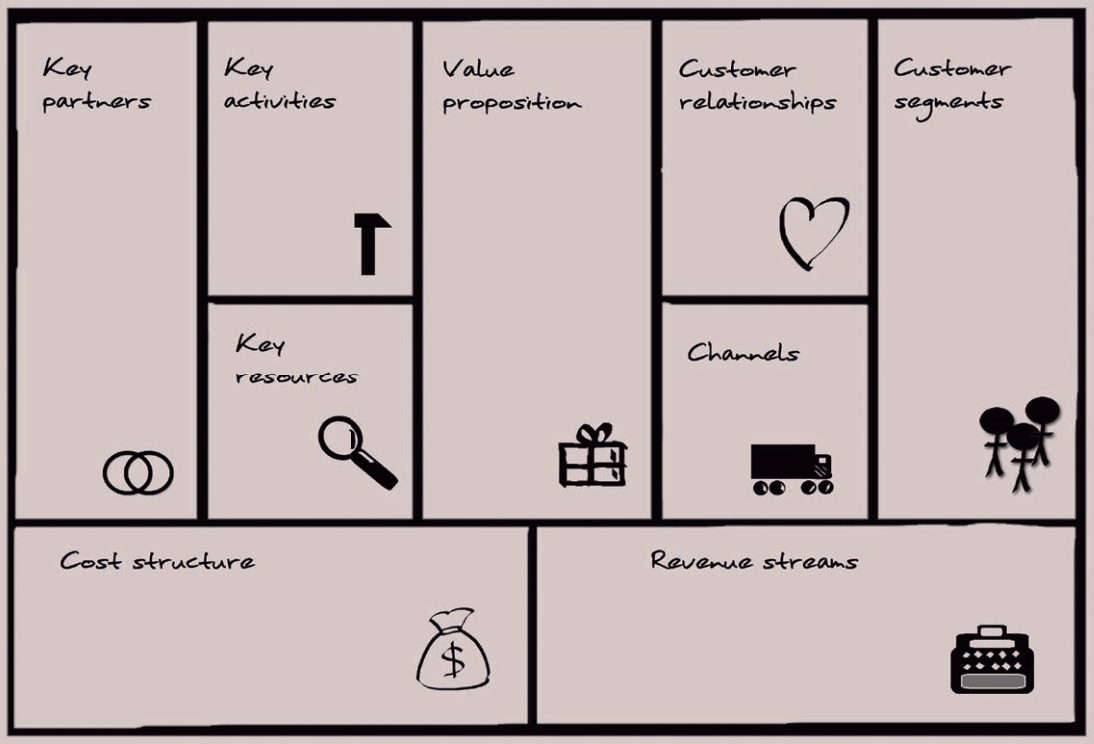
This tool divides a business model into 9 basic blocks that answer the four main questions of a business: who?, what?, how? and how much?

1. ***Customer segments***
   This defines the different groups of people or organisations the company is addressed to. Customers are grouped into different segments according to their needs, problems, behaviours or other attributes deemed relevant. They are the key to any business model. No company can survive without customers.
2. ***Value proposition***
   This defines the set of products and services or combinations thereof that create value for each customer segment. These products and services should solve problems or meet the needs of the segments of customers they are addressed to.

   The value proposition is the reason why a customer chooses one company rather than another. A company should therefore have some characteristic or attribute that differentiates it from the competition (accessibility, flexibility, personalisation, performance, convenience, design, brand, price, etc.).
3. ***Channels***
   These represent the different ways a company uses to communicate and to reach its clients. They are the points of contact with the customer and, therefore, represent an important item in their experience (interaction in the processes of information, evaluation, purchase, delivery and after-sales service).
4. ***Customer relationships***
   This identifies the types of relationships a company establishes with different customer segments. Companies should clarify the types of relations they wish to establish with each segment. These may range from personal assistance and self-service to automated services (they therefore influence the customer's experience). The purpose of these relations is to win customers and to establish their loyalty.
5. ***Key resources***
   These are the assets most important to the company in implementing its business model. Different types of resources are required, depending on the type of business model. These are generally human, physical, intellectual and financial. They may be the company's own resources, hired or acquired from key allies.

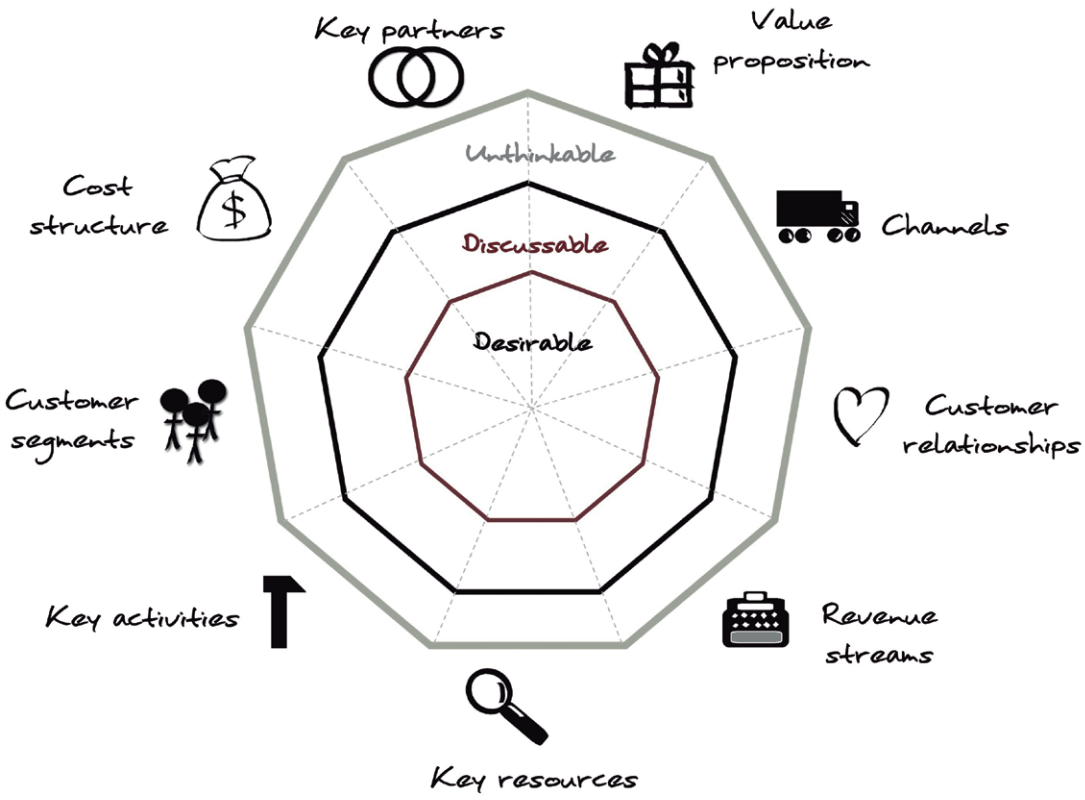
34 Concept developed in his book "Business Model Generation" (2010).

6. ***Key activities***
   These are the main skills and activities a company must develop and undertake to implement its business model. The key activities may be different, depending on the type of company and business (e.g. research, design, manufacture, distribution, marketing, sales management, sales, etc.).
7. ***Key partners***
   This block identifies the network of allies, partners and key suppliers required for a business model to work. There can be several reasons for establishing partnerships (e.g.: to reduce risks, to optimise or to acquire resources and activities). 4 types of partnerships are defined: strategic alliances, joint ventures, collaboration among competitors, relations among suppliers and customers.
8. ***Cost structure***
   This establishes the main costs a company must incur to implement its business model. They are calculated once the resources, activities and key partnerships have been defined.
9. ***Revenue streams***
   These represent the ways in which a company generates streams of income from different customer segments. It defines both the sources of this revenue (sales, renting, commissions, licences, usage fees, subscription fees, advertising, etc.) and the pricing mechanism used (fixed prices, auction, volume-based, cannel-based, etc.).

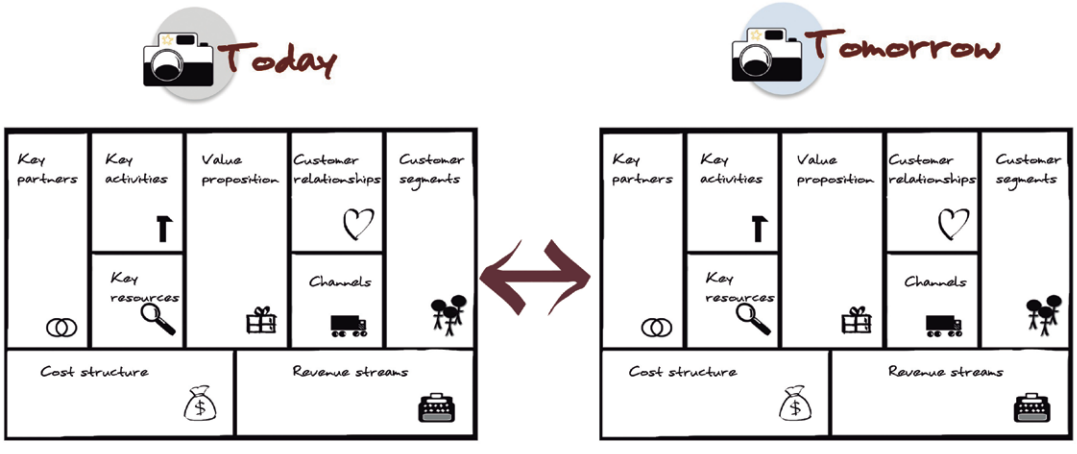


Source: Osterwalder, A., Pigneur, Y. et al. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers.* Wiley.

Once the business model has been defined and tested, different initiatives can be identified for each block and classified as desirable, questionable or unthinkable. The ultimate goal is to generate the business model for use in the future, while establishing the measures that lead to it.



Another complementary exercise is to compare the current business model with the business model targeted for the future. This comparison will generate challenges that the company must meet if it is to achieve the desired situation. Some of these challenges will be potential innovation projects to be developed.



Current business model

Future business model

From a technological perspective

Technology is a key element for the competitiveness of any company and must therefore be considered when defining the innovation strategy. A diagnosis of technology is highly recommendable.

A diagnosis of technology informs the company of the position it occupies at a given moment and enables it to define possible paths to take with regard to technology. It is therefore a vital and necessary component in defining company strategy, as it establishes the bases for future decisions and actions. Diagnosis of technology basically helps to:

- Identify the company's technological potential (by determining its technological strengths and weaknesses).
- Define which technologies and technological capabilities are necessary to remain competitive.

Diagnosis of technology

Diagnosis of technology is mainly intended to identify, categorise and evaluate the company's technologies and technological capabilities. It should yield an evaluation of the company's technological expertise, identify shortfalls and help to foresee the technologies significant for it to be competitive in the future. Note that diagnosis of technology, in our opinion, should contemplate not only technologies and technological capabilities already used by the company, but also technologies that are not in use (that exist or are still being developed) that may have a great impact on its future.

Diagnosis of technology is an iterative process that involves the following stages:

a. *Inventorying: identifying technologies and technological capabilities available in the company (whether used or not) and evaluating the level of expertise.*
b. *Classification: classifying technologies and technological capabilities to determine those that may be relevant to the company's present and future competitiveness.*
c. *Evaluation: evaluating the company's technological potential and needs/opportunities in order to maintain/increase its competitiveness.*

One of the results of diagnosis of technology is the identification of technological opportunities and/or needs (technological challenges), on the basis of which the company will be required to take a whole series of decisions regarding what technologies it needs to explore, acquire, protect and exploit, and the most appropriate way of doing so in each case:

- determining the technologies for which a Technology Monitoring process must be established.
- determining which technologies to acquire from within the company or externally, and the most suitable technology acquisition model in each case.
- determining which technologies to protect and the type of protection to apply.
- determining which technologies to exploit (internally and externally) and how to do this (entirely by the company itself, on a collaborative basis or by a third party).

5.3.3.2. External analysis

The environment in which the company competes abounds with opportunities and threats. The most important should be identified. To do so, an attempt, albeit difficult, should be made **not to limit the search to areas that are familiar to the company** on account of its previous experience, as this involves the risk of identifying only challenges aimed at improving the efficiency of current business.

Dominant logic tends to limit the capacity to identify new opportunities

Focusing exclusively on a familiar area in which the company has a greater ability to master a complex environment, involves a risk of neglecting important information that lies outside the company's cognitive framework. Dominant logic or, in other words, a company or industry's habitual way of thinking, tends to limit its ability to identify new high-potential opportunities, even if they are right before one's eyes.

One of the major challenges is therefore to redefine the area in which information is sought in order to allow the company to identify opportunities and threats outside its current cognitive framework. This involves **combining a search for information and inspiration in those areas in which the company currently operates (current logic) with an exploration of new areas**, and even questioning aspects that have up to now been considered untouchable.

It is therefore advisable:

- To learn to look in unfamiliar places.
- Not to ignore or to reinterpret information (and thus diminish its importance) that falls outside the current cognitive framework.
- To build new networks in order to establish new cognitive frameworks. To do this, new partners, until now unconsidered, should be sought.

The results of these efforts tend to be fresh combinations of different elements. This is precisely what many entrepreneurs do: they identify unsatisfied segments of the market or technologies used below their potential and create new combinations to satisfy needs or make use of opportunities.

A key question that any organisation wishing to innovate has to answer is therefore how to find opportunities and threats in different areas. The usual approach is to analyse the environment using traditional tools such as PESTEL, value chain analysis, Porter's 5 Forces, etc. Once this analysis has been done, a plan is drawn up to implement the strategy established in the reflection phase.

Although these tools are usually appropriate in familiar, stable environments, they might not be the best-suited to exploring new areas of opportunities, as they are based on predictive logic and on analytical strategies and consider the following assumptions to be valid:

- All processes and their results are known in advance (based on previous experience).
- The information from previous processes may be used to explore new opportunities.
- Variations in previous forecasts will be small and may be adjusted using corrective measures throughout the process.

Given that innovation projects are complex, uncertain, and full of "known unknowns" and "unknown unknowns", analytical models alone should not be the bases for action. **As a company tries to expand the areas in which it looks for opportunities, the tools and techniques used become more experimental and less analytical.**

Some practices for seeking inspiration to identify new challenges, both in exploring new cognitive frameworks and in making use of existing cognitive frameworks, are very briefly mentioned below:

- Identifying and prioritising trends: social, demographic or technological changes tend to generate opportunities for innovation.
- Identifying orthodoxies: orthodoxies are beliefs about how to be successful in an industry. These are the rules that govern competition, which may also act as obstacles to finding new ways of competing.
- Exploring multiple futures: imagining different future scenarios.
- Team of explorers: creating a team of people in charge of identifying new opportunities.
- Working with active users: users with more extreme or special needs, known as lead users, can be a source of inspiration for finding new opportunities.
- Deep-dive techniques: using ethnographical techniques to understand customer behaviours and what they want, instead of asking them what they do and what they want.
- Experimenting and learning: taking action very early and learning first-hand using low-resolution prototyping quickly and frequently, instead of spending too much time on planning.
- Ideas contests: encouraging the active participation of all members from the organisation and/or from outside by staging contests for ideas or areas of opportunity.
- Mobilising external agents: organising workshops with people from outside the company such as suppliers, customers and experts.
- Connecting sectors: developing mechanisms to adapt elements from other sectors to the industry in which the company operates.
- Workshops for generating opportunities: using creative techniques to identify new opportunities for growth.
- Intrapreneurship: allowing people who are interested in specific projects to devote some of their time to performing them and establishing whether they are suitable for inclusion in the portfolio of innovation projects.
- Diversity: establishing policies of hiring new employees based on principles of maximum diversity, with a view to having different perspectives within the company.
- Open innovation: incorporating open innovation strategies in the opportunity identification phase.
- Importing innovation: Importing innovations launched by small businesses in markets that are geographically distant from those in which the company operates. To do so it is important to establish competitive intelligence mechanisms.
- Using social networks: creating online communities of people who share interests related to the different areas that the company wishes to explore.

When these new challenges have been identified, the method of presenting them should be standardised and the consistency and exactitude of the available information reviewed. Bear in mind that this information is sometimes scant and not very reliable.

The greater the number of challenges identified, the more chance the company has of defining a good innovation strategy.

5.3.4. Defining the innovation vectors and the portfolio of innovation projects

Of the different aspects in the reflection process intended to establish an innovation strategy, one of the most important is **defining where the company is to innovate**. To do so, **the innovation vectors should be prioritised in order to establish the portfolio of projects to be undertaken.**

> Strategy involves taking decisions, which also means making sacrifices

Innovation vectors

Once the challenges have been identified, a decision must be made as to which ones to tackle. Clearly they cannot all be dealt with. Strategy involves taking decisions, which also means making sacrifices.

Do not forget that **innovation requires a high degree of focus.** Sustainable competitive advantages do not usually arise by making use of a lot of unconnected opportunities. Quite the contrary; they arise from focusing in some specific areas. Achieving this focus requires coherence, consistency and specialisation.

Instead of focusing on a wide range of unrelated innovation challenges, **the organisation should focus on a specific number of major issues, which shall be referred to as innovation vectors**. An innovation vector comprises different related challenges. These vectors are the basis for generating a diverse yet focused portfolio of innovation projects.

The aim therefore is to **combine diversity and focus**. Companies need diversity to increase their chances of success (diversifying risk); however innovation effort should meanwhile be cumulative with a view to building strong, sustainable and defensible competitive advantages, while establishing differentiation on the market. This is easier to achieve when the different projects are connected.

The capabilities and resources available should be maximised, while the risk of their fragmentation and dispersion should be avoided. This is only possible by restricting the areas of innovation. Care should also be taken not to fall to the other extreme, i.e. to focus on one specific area upon which the company stakes all its cards. It is therefore a matter of finding a balance between these two extremes. Three or four innovation vectors with which to guide innovation efforts should be chosen, while providing some degree of diversification.

The below steps should be followed to determine which innovation vectors the company should choose:

a. Grouping together in vectors once the challenges have been identified
   This involves compiling all the challenges identified in the previous phase and grouping them together by general theme; i.e. establishing affinities between the challenges. The resulting different groups shall be referred to as innovation vectors. Each innovation vector will thus comprise a series of challenges. These challenges are potential innovation projects.

Criteria for grouping challenges in innovation vectors

Some criteria that may help in grouping challenges identified together in innovation vectors are:

> *By customer segments: segments of potential customers upon which the company will focus.*

> *By customer needs and problems: needs and problems for which an answer is required.*

> *By technologies: technologies for intended use.*

> *By products/services: the product lines or services the company intends to develop in the coming years.*

> *By capabilities and resources: the capabilities the company intends to use to establish competitive advantages.*

> *By geographical area: geographical markets to be promoted. It will be necessary to evaluate the adaptations necessary to compete on these markets.*

> *By revenue model: new ways of generating income, e.g. by changing from a transaction model to a subscription model that generates recurring revenue.*

b. Prioritising innovation vectors:
Since resources are limited, the company must evaluate these vectors and choose the most attractive. This process should involve the evaluation of a series of criteria related to:

- Business attractiveness. This involves evaluating certain characteristics for each vector such as the size and growth of markets, the intensity of the competition, average margins or the potential for developing new solutions.
- Business strengths. This involves assessing whether the company's capabilities and strengths can be used in different innovation vectors.

Criteria for prioritising different innovation vectors

Some criteria that can help in prioritising innovation vectors are:

> Business attractiveness:

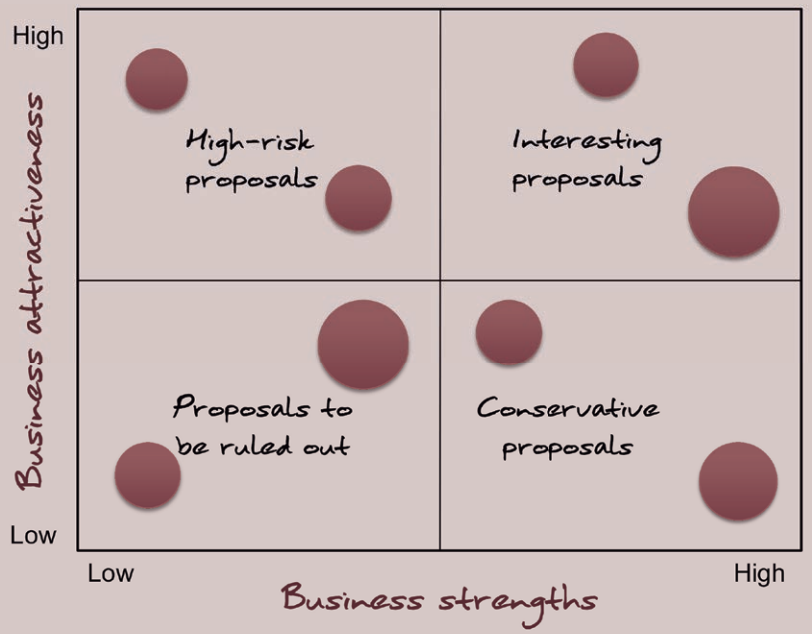
- *Market*
  - *Market size.*
  - *Growth rate of the market.*
  - *Intensity of competition and strength of competitors.*
  - *Current margins on this market.*
- *Technology*
  - *Rate of technological change on the market.*
  - *Technological elasticity: where is this technology located on the S curve*

> Business strengths:

- *Capabilities*
  - *Level of development of current capabilities for innovating in this vector.*

- *Option of incorporating the necessary capabilities if they are unavailable.*
- *Degree of compatibility of the current production processes and the processes necessary to be successful in this new area.*

- *Marketing*
  - *Option of using current sales and/or distribution channels in this area.*
  - *Option of using existing relationships in this new area.*
  - *Option of taking advantage of the current brand placement and image in this new area.*
- *Competitive advantage*
  - *Will the new offering be differentiated from current competitors?*
  - *Will the new offering answer better the needs of customers to whom it is addressed?*



Source: adaptation of Cooper, R. G., & Edgett, S. J. (2010). *Developing a product innovation and technology strategy for your business*. Research-Technology Management, 53(3), 33-40.

The innovation guidelines and objectives defined previously should be considered when carefully performing this exercise in prioritising. If an innovation vector does not follow one of the guidelines or does not comply with the innovation objectives, it is considered initially as inappropriate. The term "initially" is used because different circumstances could apply:

- If the vector is not only inappropriate, but also unappealing, the best thing to do is set it aside and save it in a database so that it can be recovered if circumstances change in the future.
- If the vector is inappropriate yet has a high potential, the elements of the strategy that do not fulfil this vector should either be reviewed, or it should be developed outside the formal process until enough information has been gathered to make a final decision. In other words, flexibility is required when a vector is considered interesting, even if it falls outside the innovation area that the company has defined as desirable.

Innovation vectors point to what the company wishes to become in the coming years. They establish a link between the present and the future. They help to create a sense of direction and of shared purpose among the team members. They focus effort and direct all the company's energy towards building the future it wants.

Example of innovation vectors

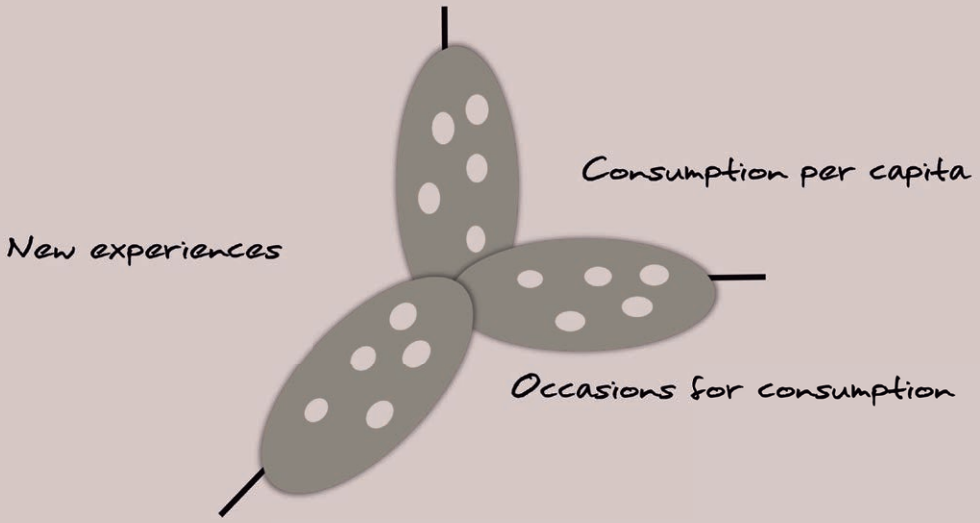
Let us take a look at the example of a food company that decides to establish vectors to guide its innovation work.

As can be observed, the company wishes to focus on:

> *Increasing consumption per capita of its products.*

> *Creating new occasions for consumption, i.e. if its products are only consumed for breakfast, seeking news consumption times.*

> *Creating new point-of-sale experiences so that people identify more with its brand.*



Source: Morales, M., León, A. (2013). *Adiós a los mitos de la innovación*. Innovare.

Once the innovation vectors have been chosen[35], the company must prioritise the challenges for each. The prioritisation criteria depend on the vector type: a vector focused on reducing operational costs is not the same as one addressed to developing new products. The short- and long-term innovation objectives established should nonetheless be taken into account in all circumstances.

The resources and capabilities involved in developing each challenge should be estimated. This estimation should not be performed globally for the project but rather in stages, which are determined by the achievement of specific milestones (such as the generation of new information, learning, validation of assumptions, development, etc.). An incremental-type challenge is not the same as a radical challenge.

This prioritisation and evaluation of challenges will help in the process of assigning resources while the portfolio of innovation projects is being prepared.

35 New challenges may be incorporated in the selected vectors at any time.

Vector X

Criteria (0-10)	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Total
Weight	3	2	4	5	
Challenge A	3	9	3	7	74
Challenge B	6	1	4	5	61
Challenge C	8	4	9	2	78
Challenge N	...	...	...	...	...

Prioritisation of the challenges of a vector

Portfolio of innovation projects

The challenges involved in the selected innovation vectors represent potential projects for inclusion in the current portfolio of innovation projects[36]. Remember that at this point the new projects are still not being managed; once the ideal combination of projects has been defined and resources have initially been assigned to each, the individual management of each project begins (Discovery and Implementation stages).

Portfolio of projects

The portfolio of innovation projects comprises all the innovation projects that the company is performing or wishes to perform. The portfolio of projects is dynamic and its composition changes over time (either because of the completion of projects, incorporation of new projects, changes in existing projects or discontinuance of those that contribute no value).

Note that management based on the project portfolio does not necessarily determine the best individual projects to be performed, but rather the best combination of projects. In other words, it seeks to develop those projects that, when combined, bring the company greatest value.

Companies should seek a balance among projects with different levels of innovation (incremental, adjacent and radical) while meeting short-term sales targets without endangering future growth. The following factors should be considered when determining the importance of the different levels of innovation in the portfolio of projects:

- Industry: a company associated with mobile technology is not the same as a mass consumer food company. Technology is a much more changeable sector and should therefore feature a higher percentage of radical innovation projects than in the food sector.

36 If the company already has a portfolio of innovation projects.

- Competitive position of the company in its sector: a company that has traditionally lagged behind in launching new solutions on the market may wish to take on higher levels of risk than it has in the past in order to gain a position of greater leadership. A company that has recently launched more ambitious innovations may, on the other hand, opt to reduce its level of risk and focus on exploiting current solutions.
- Current stage of company development: there are clear differences between the circumstances of a start-up and those of a well-established company. Emerging companies have more incentive to take on higher levels of risk, as they can assume competitive positions that endanger already-established companies.

The real test at this point is to choose the challenges that are to become projects, with consideration for aspects related to strategy and available resources:

- Strategy: seeking the best combination of projects (current and future) to meet the innovation objectives established according to the different deadlines.
- Available resources: capacity available to undertake new innovation projects, with consideration, mainly, for the innovation budget and employee hours available.

In defining the project portfolio it is important to have a global outlook. It is therefore a good idea:

- To create different alternative portfolios[37] that fulfil the innovation objectives, bearing in mind the resources necessary for each and the resources available to the company.
- To choose the portfolio that represents the best possible alternative, with consideration for the different conditioning factors and objectives to be achieved.

The ideal portfolio would be one that:

- Guarantees the achievement of short- and long-term objectives.
- Maintain a balance among the different levels of innovation.
- Ensures the presence of projects from the different vectors selected.

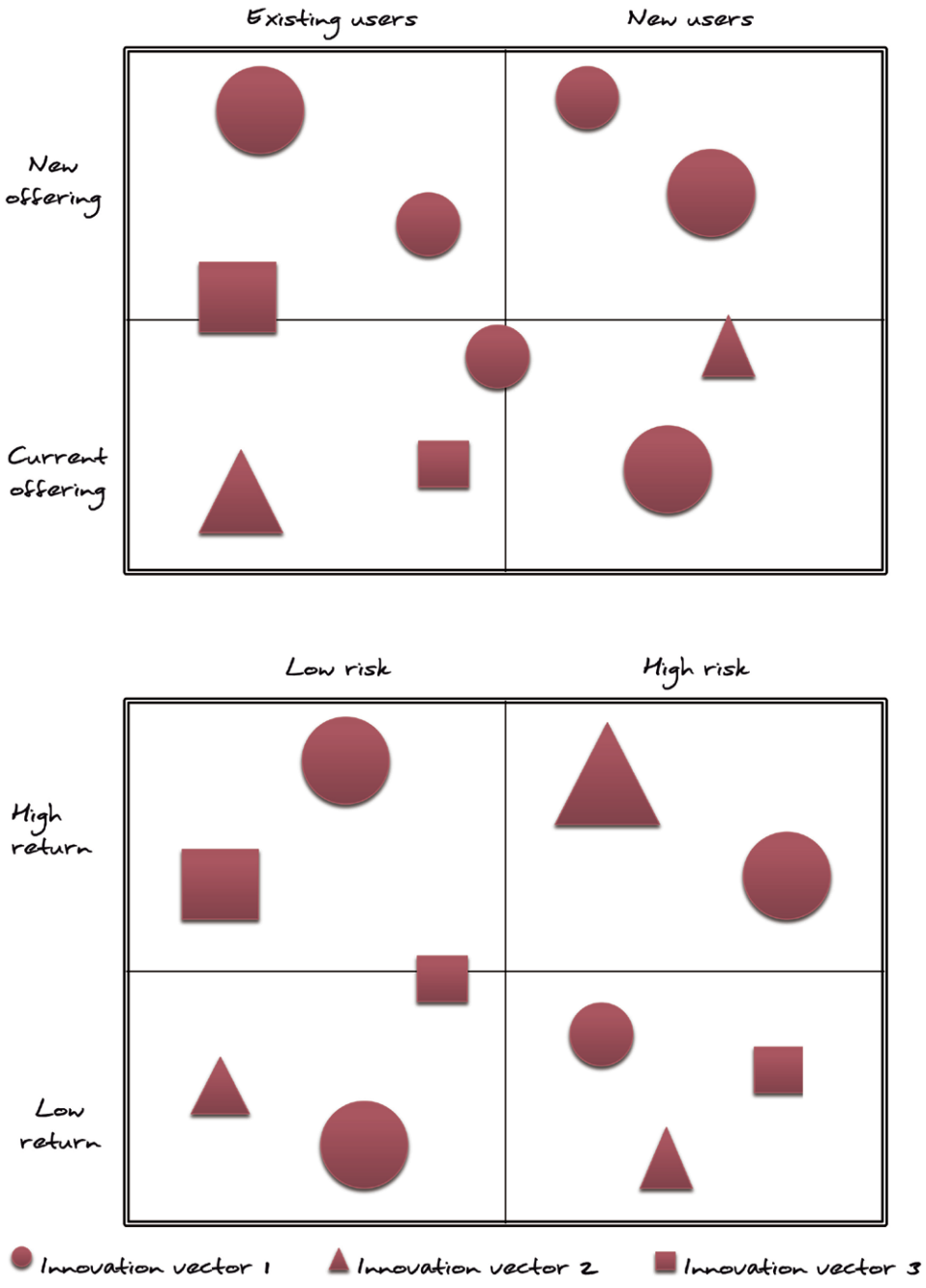
It is important **not to fall into the trap of investing all resources in incremental projects,** as this might endanger the company's future competitiveness.

> The portfolio of project should reflect where the company is heading

Identifying the most suitable combination of projects usually involves a visual representation of all the projects in portfolio. Different variables such as difficulty, risk, resources assigned, potential envisaged return, the vector to which they belong, the offering's degree of novelty, targeted segments of customers, etc. may be used to represent them graphically.

37 In which both new projects and those already in progress should be considered.

For example:



Note: in this example, the size of the figures symbolises the resources assigned to each project.

The final step before moving on to the Discovery stage is to plan the schedule for performing the innovation projects. It is necessary to bear in mind at all times the number of innovation projects that are being performed at the same time and the stage each project is in. The resources necessary at any given time (including money, people and time devoted) can thus be determined.

Regardless of all this planning, a flexible attitude is essential as unforeseen circumstances may require changes in projects as they progress.

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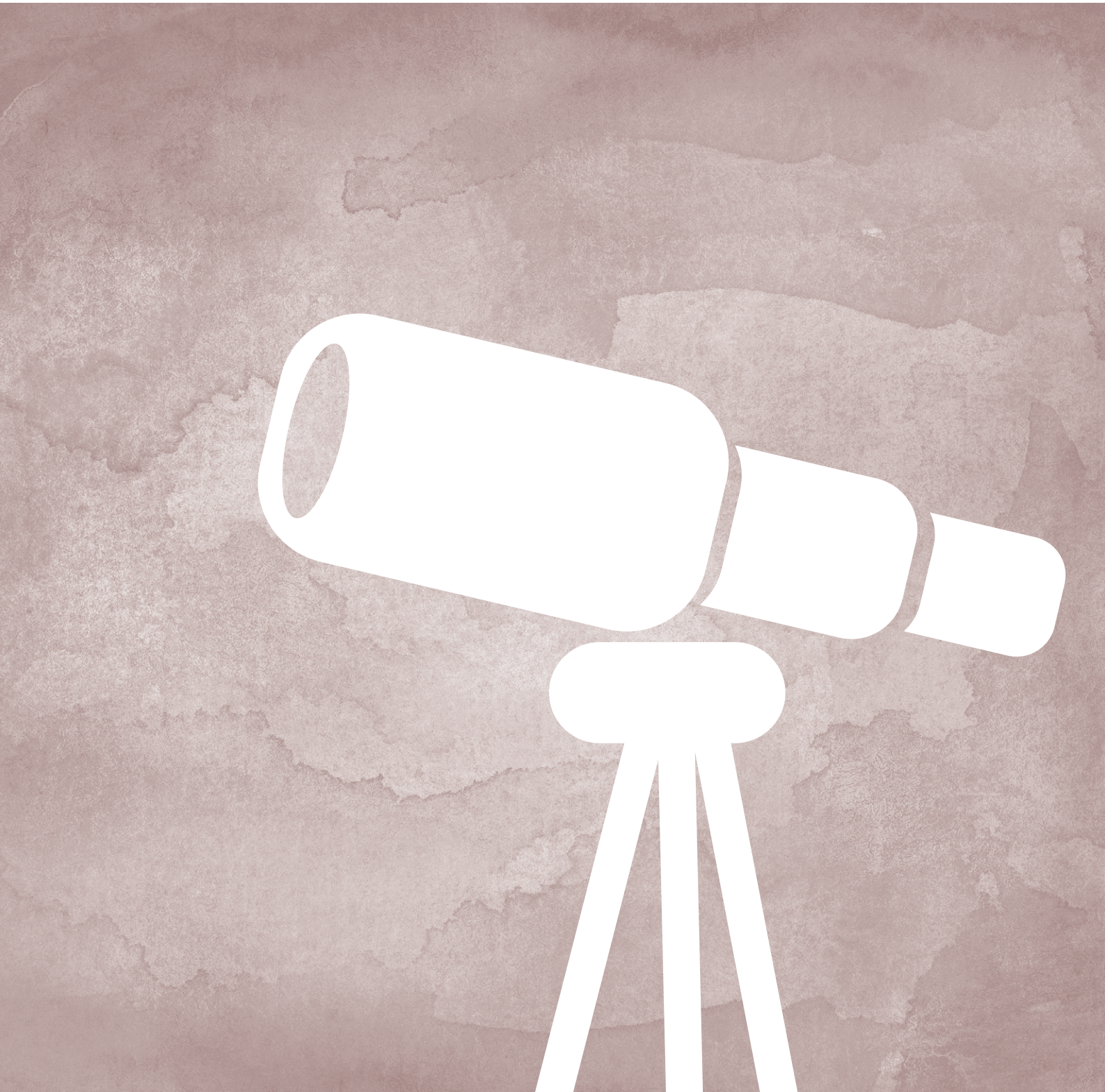
6 Discover
(Innovation process)



6. Discover (Innovation process)

Key ideas

- The main objectives of the Discovery stage are to understand the challenge of the project and to find the best solution to it.
- 4 states are identified in this stage: define the challenge; observe, listen and learn; ideate and filter; transform and test.
- The Discovery stage is based on 4 principles: user-centred design; prototyping and experimenting; repetition and flexibility; a multidisciplinary team.
- This stage should yield a conceptual definition of the solution, i.e. it should establish what is to be developed.

6.1. Introduction

Upon completion of the Reflection stage, one of the innovation challenges is selected from the project portfolio and the project proper is started

This stage is intended **to reduce levels of uncertainty and risk associated with the project through the generation of new knowledge and information, with a view to defining a conceptual solution that is desirable for customers, viable from an operational and/or technological perspective and profitable for the company.** To do so, focus is placed on:

- **Understanding the challenge**
  Before devising a specific solution, the nature of the challenge to be met must be properly understood. It is essential to understand the different areas of influence or sub-challenges, and the context and different stakeholders involved, each of whom may, at the same time, have different needs.
- **Defining the solution**
  Defining a solution that is desirable, feasible and profitable, and inseparable from the company's strategy and capabilities.
- **Legitimising the solution**
  Having a method that legitimises the solution, protects it against personal interests, and ensures the internal support necessary for it to be undertaken. Legitimisation of solutions will prevent:

> Potentially good ideas from being ignored or rejected, with the resulting loss of opportunities for the company.
> Bad ideas from being developed just because they have support from people with power within the organisation.

The Discovery stage is inspired by Design Thinking (and by Lean Startup) and therefore based on a **series of principles** that characterise this methodology:

- User-centred design.
- Building of prototypes and performance of experiments.
- Iterative and flexible.
- A diverse, multidisciplinary team.

The Discovery stage is crucial for a large number of challenges (regardless of the company type)

Although Design Thinking tends to be associated with B2C companies, the method proposed for the Discovery stage is in fact suitable for any company that wishes to respond to challenges that have some of the following features:

> *The challenge concerns a situation that affects people and the depth of knowledge about these people can be explored.*
> *Although there is some awareness of the challenge, there may be different points of view and aspects that are not completely clear.*
> *The level of unawareness and, therefore, of uncertainty regarding different elements is relatively high.*
> *The situation is complex or, in other words, there are considerable variables that may determine the project's success or failure.*
> *Much of the information necessary is unavailable or does not exist.*
> *A high dose of creativity is required to understand and to solve the challenge.*

User-centred design

The needs of customers/users, their values and their desires constrain the innovation process; without customers/users there is no business. Before starting to generate solutions, it is helpful **to try to understand the world from the user's perspective**. This will create greater willingness to generate a new product, service or business concept desirable to him or her.

This is one of the most difficult aspects of the innovation process. There is a tendency to move on directly to finding the solution, without previous in-depth understanding from a customer's perspective of what the problem really is. Attaining this level of understanding requires discipline, some structure and tools; elements provided by the method.

The innovation process should not start with an idea, but rather a challenge focused on the user. This is normally a badly resolved problem, a need not met satisfactorily or even an undetected latent need.

Building of prototypes and performance of experiments

The building of prototypes and performance of experiments allows for the generation of new knowledge with which to validate key assumptions and, therefore, reduce risks before launching the solution on the market[38].

The areas of opportunity detected are expressed as prototypes, which are reviewed by customers and users. The information obtained is analysed and determines the nature of the decisions taken. The process involves building prototypes quickly and cheaply, testing them and improving them iteratively.

> The building and testing of prototypes allows for risks to be reduced

It is not surprising many design tools are used throughout this stage. The tools used by designers are intrinsically intended to help articulate needs and shape solutions. These tools are also combined with others from the fields of engineering and business management.

Iterative and flexible

Although process often conjures up an image of a linear sequence of activities, **there are alternations and iterations in this stage**. In defining the solution, it is very important to be flexible in order to adapt to the needs of each project.

The decisions taken should not be imposed by the method, but based on reaching milestones associated with aspects of the project, such as the degree of knowledge obtained on a specific subject or validation of assumptions crucial to the success of the eventual solution.

> The number of iterations that occur in a project largely depends on the project's level of risk and uncertainty, on the scope and on its budget

In some cases several iterations will be required while in others, albeit desirable, this will not be possible because of different constraints.

Diverse and multidisciplinary team

Innovation must be considered a holistic discipline. It is therefore useful to have a multidisciplinary team that can bring **different areas of expertise and different perspectives to respond to the**

38 It is therefore important to create situations in which both customers and the context are as real as possible.

same problem. The intersection of these viewpoints and disciplines yields concepts with a greater chance of offering differentiated value, and of being technically viable, profitable and aligned with company strategy.

Innovation teams should include **members from different departments and hierarchical levels.** There is thus more chance that the solution will be based on a broad perspective that can break down the departmental barriers existing in many companies (it is necessary to overcome the traditional notion that the R&D team has to innovate using acquired technical expertise upon the instructions of the marketing department).

6.2. Description of the different states

The Discovery stage comprises four[39] different states. Although they are presented sequentially, they rarely occur as such. There is movement through the different states until all the aspects considered crucial have been validated. Bear in mind the iterative nature of this stage, which makes it commonplace to work in the different states in parallel and to move through them according to the requirements of the project.

State 1: define the challenge (see point 6.3.1)
This state involves the generation of a clear definition of the challenge and the different dimensions contained therein and their implications. It is essential **to understand the situation that requires a response**, to separate causes from symptoms, and to seek non-obvious relations among different aspects.

State 2: observe, listen and learn (see point 6.3.2)
This state involves the **generation of knowledge about users or customers and the background to the challenge**. Background refers mainly to the sector, competitors, trends and technologies that may be associated somehow to the challenge to be met. All this knowledge is then used to identify insights.

State 3: ideate and filter (see point 6.4.1)
This state involves the **generation of alternative responses to the challenge**, bearing in mind either acquired or previously existing knowledge. These ideas can also pass through a series of filters so they may be compared against the criteria established for the solution to meet. The state comprises two opposing forces: first, the generation and subsequent refinement of ideas and, second, the filters used to select the most promising ideas. It interacts constantly with the state of “Transform and test”, as they are both involved in exploring the solution.

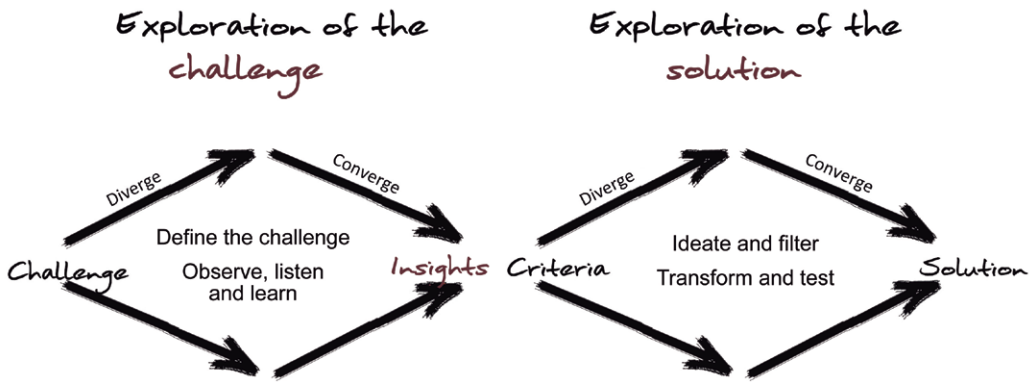
State 4: transform and test (see point 6.4.2)
This state involves constructing and testing prototypes **to validate the assumptions upon which the different concepts considered for development have been based**. Once the initial prototypes have been built, feedback should be sought from customers and other profiles associated with the eventual solution, including distributors, manufacturers and suppliers. The members of the innovation team use the feedback obtained to reach conclusions and act accordingly (it is sometimes necessary to go back to the information search state and sometimes to the ideation state in order to find solutions to specific aspects or, it may even be necessary to redefine the original challenge).

39 We prefer the term “states” to “stages”.

> The Discovery stage ends by choosing the solution to be implemented

The Discovery stage ends by choosing the solution to be implemented, for which a series of key assumptions will have been validated, and the expertise acquired used to build prototypes and establish a business case (see point 6.5).

When this milestone has been reached, the next step is the implementation phase and the subsequent launch on the market of the result obtained.



6.3. Exploration of the area of the challenge

Remember that the challenge to be met should ideally be the result of an exercise in strategic analysis (see chapter 5).

The area for exploration of the challenge includes the states “Define the challenge” and “Observe, listen and learn”. **The purpose of this process is to obtain insights.**

6.3.1. State 1: define the challenge

The success of the project thus essentially depends on a thorough definition of the challenge faced by the innovation team**. Innovation is in fact nothing other than a practical solution to a problem, and a new and unconventional solution**. The more knowledge there is about a specific problem and its implications, the greater the chances of generating value with a new solution. Having a process that helps to generate a common language among the different people involved and prompts an understanding of the magnitude of the challenge and its different derived challenges is therefore crucial.

A five-step process is therefore proposed:

1. Formulating the challenge
2. Clarifying the challenge
3. Identifying the benefits and the beneficiaries
4. Analysing alternatives
5. Writing up the challenge

These five steps should provide a clear, precise definition of the challenge. As progress is made and new expertise is acquired, the team may decide that the initial challenge was poorly defined and should therefore be reformulated.

The five steps to be followed are detailed below (note that the questions featured in each step are general and can be adapted to the specific circumstances of each situation).

6.3.1.1. Formulating the challenge

The challenge should be defined in question form:

how might we improve/do/resolve/solve/etc.?

This will help to make it seem like a challenge and to align the different profiles involved in the process:

- it boosts team bonding as all members are working to achieve the same objective.
- it focuses effort, which encourages creativity.

Care must be taken in this stage not to be too abstract or too concrete. Although this step may seem very simple, it may nonetheless be necessary to spend some time choosing the right words. This may determine the direction taken by the innovation process and, therefore, its eventual result.

6.3.1.2. Clarifying the challenge

The aim is **to understand the challenge in its entirety and all the different aspects involved in it**. It is thus important to set the challenge in context, to understand its different implications and the different areas related to it. This involves considering as many points of view as possible and being capable of breaking down the challenge into sub-challenges or domains, which will help to determine whether focus should be on them all or on just a few. It may be helpful to ask the following questions:

- What is the basic need? What problem needs to be resolved?
- Can the challenge be broken down into sub-challenges? What are the different aspects related to the challenge?

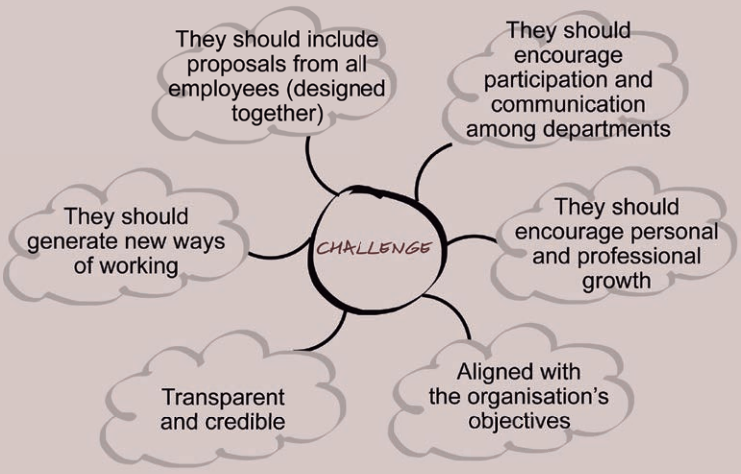
Mind map for breaking down a challenge

A good tool for breaking down a challenge into sub-challenges is a mind map, in which the core challenge and the different areas of influence are represented.

The mind map involves:

> *generating alternatives on an individual basis*
> *interpreting the alternatives in a team*
> *grouping them together by similar theme*
> *prioritising (optional)*
> *building the mind map itself*

Challenge: what should internal initiatives intended to encourage involvement, creativity and intrapreneurship be like?



6.3.1.3. Identifying benefits and beneficiaries[40]

An attempt should be made at this point **to understand the different profiles involved and the benefits** that each of them could expect to obtain from the new solution, and to determine the benefits for the company if it were capable of meeting the challenge.

A series of standard questions should therefore be answered:

- For whom is it a problem? Who is our main target? Other profiles involved?
- Why is it important to resolve this challenge? What benefits can be brought to the market/customer/user? What benefits do we obtain as a company?
- What results can we expect to obtain?

6.3.1.4. Analysing alternatives[41]

This involves **identifying and analysing different attempts made in the past to resolve the challenge**. It is therefore necessary to evaluate solutions that the company has marketed previously, and the solutions of competitors and other companies that, despite not being competitors, offer solutions to the same problem.

> ***Example***
>
> *If a restaurant, for example, intends to develop a solution to increase its revenue, it can simply focus on its sector or can adopt a broader approach and consider its business not as a restaurant but as an entertainment business (it will therefore also have to focus on other kinds of recreational alternatives such as cinemas, theatre, guided visits, concerts, etc.).*

Three types of company should be considered:

- Competitors.
- Alternatives: these are companies or solutions that do not offer exactly the same product or service, but do respond to the same need.
- Mirror companies: these companies offer very similar solutions to those the company wishes to develop, but do not compete on the same market, either because they target different segments of customers, or because they operate in distant geographical zones.

The questions to be answered could be as follows:

- What has been done to date to solve the challenge? What solutions are there?
- Why have other solutions been successful/failed?
- Why is it still a problem? What aspects still have to be resolved satisfactorily?
- Are there analogies that we could learn from? (companies in other sectors that have faced similar challenges.)

40 Although there may be some of these aspects in the reflection phase, they are only general. The investigation now is much more specific and profound.

41 See above.

6.3.1.5. Writing up the challenge

Once all the questions from the previous steps have been answered, the next step is **to set down the most significant points in a single document**. Under no circumstances should this take up more than one or two pages.

This document should establish a common language, not only among team members, but also with other stakeholders who may be occasionally involved in the process. When writing about the different aspects of the challenge, this reduces the chances of diverging perceptions of it.

Compiling the main reflections requires consensus and will therefore involve an interesting exercise of debate and reflection. Simple and concise language must be used. This helps understanding of the text by people who are not experts in the matter, such as customers or users who may be involved in the process at some time.

Before moving on to the next state, it is helpful to establish both what knowledge there is of the different aspects involved in the challenge and the most urgent areas of research. As new knowledge is acquired, it must be explained.

The following questions may help to organise the answers:

- **What do we know?**
- **What do we need to know?**
- **How can we find the information we need?**
- **What have we learned?**

6.3.2. State 2: observe, listen and learn

This state involves **understanding the target customers or users of the innovation and the context in which it must be designed and commercialised**. If this has not been done already, it is also helpful to undertake internal analysis to assess how the company stands with regard to the challenge it is working on.

Although many of these aspects, which may be very useful, were studied in the reflection phase, this study was of a general nature, as it was intended to identify challenges. Analysis now is much more specific and aimed at **yielding the inspiration to resolve a specific challenge.**

This state can be divided into 2 sub-states:

- **observe and listen**: investigation on the context and customers/users.
- **learn**: gathering of insights from information accrued in the investigation performed.

6.3.2.1. Observing and listening: context and customer/user

6.3.2.1.1. Analysis of the context

The context means **the environment in which the new solution must compete**. Analysis is now required of the external aspects related to the innovation project.

The following external elements should be studied: sector, competitors, trends, and technologies.

Sector

An in-depth understanding of the sector is required, from the perspective of the challenge in question, by identifying the different stakeholders involved in it or, in other words, its value chain, and to predict where it is heading, bearing in mind different future scenarios.

It may also be helpful to identify sectors that share certain analogies with the challenge under study, with a view to finding ways to partial solutions or complete solutions adapt to it.

Example

For example, if a supermarket is looking for new ways to reduce customer waiting times at the checkout, the motorway sector could be analysed to identify the best practices for reducing queues at tolls.

Competitors

In the past, benchmarking was considered an essential practice for competing. Focusing too much on competitors, however, may lead to the generation of undifferentiated solutions, which will eventually prompt a price war, which companies with greater financial muscle tend to win.

It is nonetheless very useful to know the situation of competitors associated with the challenge. A series of questions should be answered:

- what do they offer to resolve the challenge?
- at what segments of customers are they targeted?
- how are they placed?
- what are the core areas of their value proposition?
- what prices and what costs do they have?
- what distribution channels do they use?
- what resources and capabilities explain their competitive advantage?

As mentioned in the section on defining the challenge, it might be of interest to analyse not only direct competitors, but also the two additional categories that follow, as they may provide a source of inspiration:

- alternatives.
- mirror companies.

Example

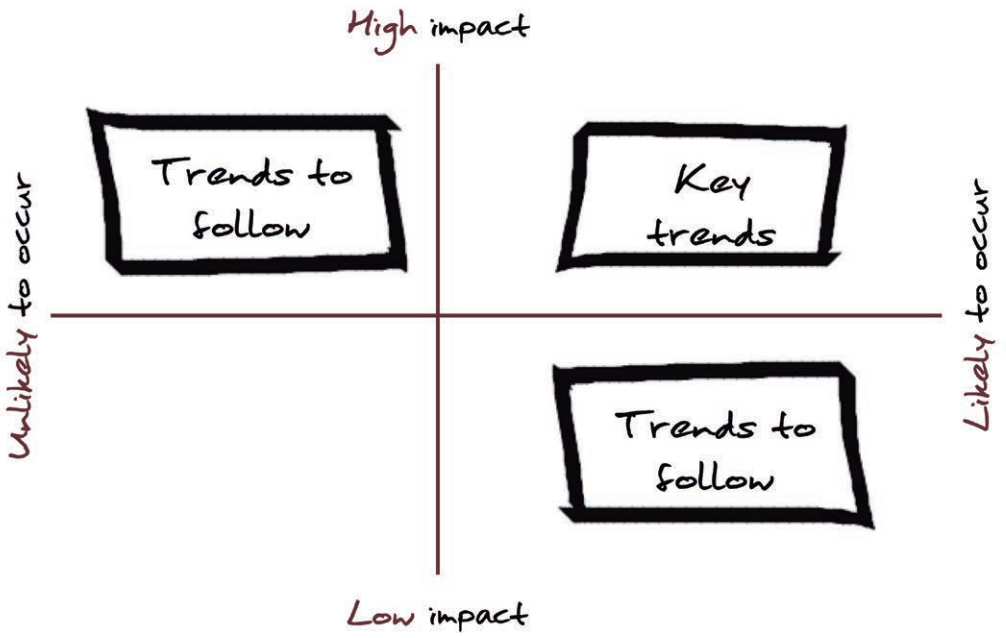
Imagine a company that wishes to address the need to eat at lunchtime and focuses on the segment of customers who have to eat out because of work. To do so, the company wishes to develop a service that enables customers to order their lunch from a website and have it sent to work.

Two alternatives to this service are restaurants and the option to taking food from home in a lunchbox. Mirror companies could be companies that sell products on Internet or any company located in another geographical market that is already marketing the proposed solution. Although not strictly direct competitors, they should be taken into account.

Trends

Trends can be a very powerful source of inspiration when innovating. New solutions that oppose current and future trends cannot be generated. It is therefore essential to establish mechanisms with which to identify and classify those trends that might be of greatest interest for each innovation challenge.

Different sources of information are used to identify as many trends as possible and to select those that may most influence the innovation project. It is then advisable to perform more in-depth analysis that also includes the option of consolidating these trends. They may therefore be represented as follows on a graph:



Technology

Technological evolution is very dynamic and changeable. It is therefore important not to fall into the trap of thinking that the key technologies (whether new or existing) associated with the challenge are already known. Technology must be monitored. The company, in other words, should scan, seek and explore those technologies that may have some impact on the challenge in question.

Depending on the challenge, this monitoring process should logically involve a greater or lesser degree of thoroughness. It is, however, always necessary. The appearance of new technology may quickly change the rules of the game and mean that there is no longer any purpose to the challenge in question or that it must be changed.

At this point the following questions must be answered:

- How can the contributed value be increased with available technologies?
- What new emerging technologies may influence the challenge the company wishes to resolve?
- How are existing technologies evolving?
- In what areas associated with the challenge may disruptive technologies appear?

6.3.2.1.2. Analysis of the customer/user

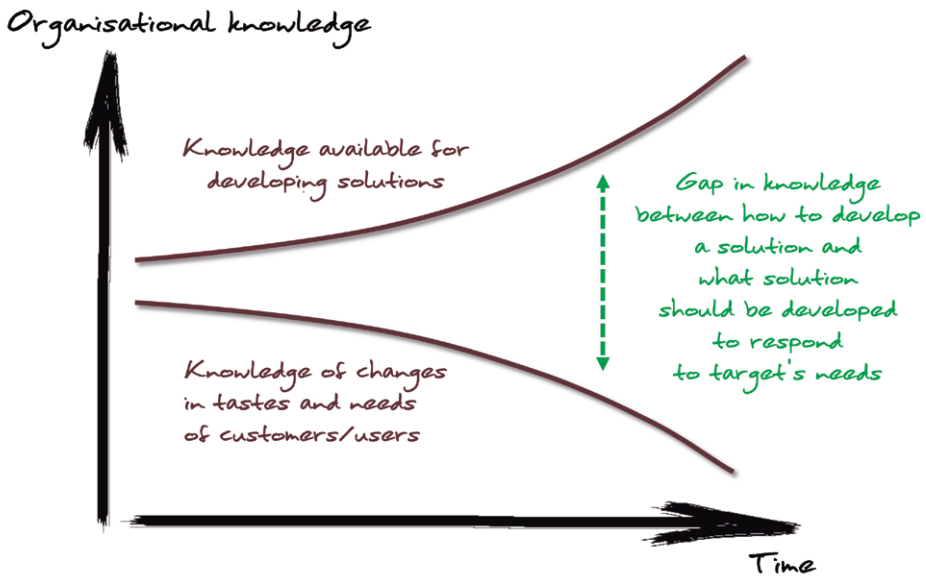
Different investigations show that **a very high number of the products launched fail**. The percentages vary depending on the sector but in some cases may amount to 90%[42]. Although this occurs for different reasons, **the main motive seems to be the scant differentiation of most products**.

This lack of differentiation may be explained by companies' lack of knowledge of their customers. This is mainly due to:

- the constant change in the tastes and needs of customers and users.
- the use of market research techniques not very suited to generating the inspiration and information necessary to create differentiated value solutions.

Change in the tastes and needs of customers and users

In the past, companies were able to foresee their customers' choices more easily, partly because there were far fewer options. Although companies are currently far more aware of how to develop new solutions, they very often do not know which solution to develop in order to satisfy their customers' needs.



Source: adaptation of Kumar, V., & Whitney, P. (2007). *Daily life, not markets: customer-centered design*. Journal of Business Strategy, 28(4), 46-58.

Customers' needs may range from articulated and satisfied needs to unarticulated needs, also known as latent or unsatisfied. Qualitatively, customer needs are associated with the different types of benefits mentioned previously. Remember that three types of benefits were identified: functional, emotional and social.

Needs should be viewed as problems that organisations need to solve. Companies should therefore have not only technical expertise, but also information on the context of both their current and their potential customers/users.

It is not advisable to start the innovation process directly with a session for generating possible ideas for new solutions, without first having devoted some time to understanding customers in depth.

42 See Goffin, K., Lemke, F., Koners, U. (2010). Identifying Hidden Needs: Creating Breakthrough Products. Palgrave Macmillan.

Inadequate market research techniques

Although the importance of integrating the voice of the customer in the process of developing new solutions is broadly accepted**, the traditional approach is not the most suitable at this point of the innovation process.**

This is mainly because the focus of research tends to be on the reactions a solution generates, rather on an in-depth understanding of customers. The most common techniques, such as questionnaires, interviews and focus groups, have some significant limitations that should be considered when performing exploratory research[43]:

- Customers often experience problems when articulating their needs and therefore direct questioning does not usually help.
- The customer's knowledge regarding possible new product/service developments may be limited.
- People taking part in the study may often be tempted to say what they think is politically correct.
- Situations are usually artificial or, in other words, customers are not immersed in the context where the activity takes place.

These traditional techniques provide information about the existing offering and this allows companies to make certain improvements or even incremental innovations. The problem is that they rarely provide any in-depth knowledge about the user. It is therefore hard to turn the information obtained into solutions with a deeper level of innovation.

> To explore unarticulated needs, other types of experienced-centred techniques should be used

Hence**, in order to explore unarticulated needs or new market opportunities other types of research or techniques should be used**. The significance of more traditional techniques at other times in the innovation process should, however, not be underestimated: they are very useful once the new solution has been defined.

During exploration, if the intention is truly to create new, differentiated solutions, it is essential to understand customer/user experience and to view reality through their eyes. This is precisely why it is advisable to perform research focused on the user's activity rather than on the solution. Remember that the most successful innovations are based not only on technological expertise, but also on the knowledge a company might obtain by analysing the overall experience of the people in the customer segment it wishes to serve.

Techniques focused on experience use a different approach to those focused on product or service. **The emphasis is placed not on the solution, but on the users**. The focus of attention is transferred from the object to the subject. This involves studying their behaviours, activities, needs and drives.

43 Aimed at exploring new areas opportunity.

Focus should be not just on the most obvious part of the customer/user's experience in using a solution, but also on the different activities associated with its use.

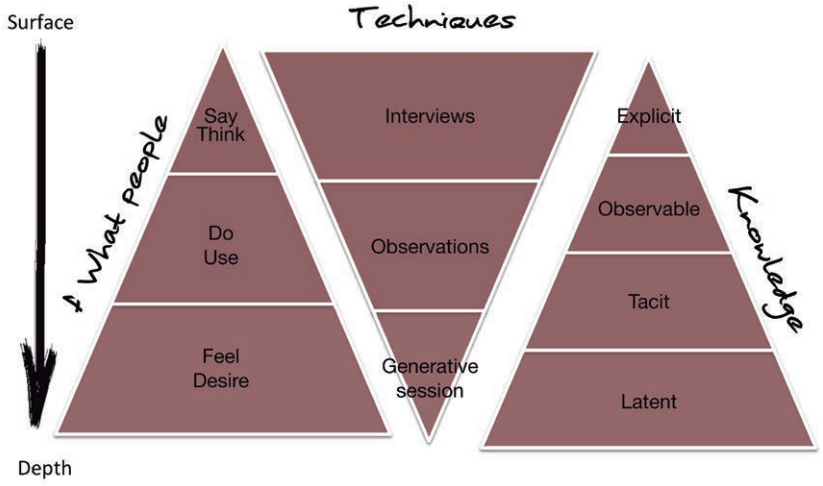
For example, a food manufacturer could focus on understanding everything related to "food and drink at home", a detergent manufacturer on "caring for clothes" and a cosmetic product manufacturer on everything connected with "improving personal image". Observing the activities that revolve around a given product rather than seeking reactions to the product, can generate new insights.

Customer/user centred

Regardless of whether traditional market research or other techniques considered more up-to-date because of their application in the business world are used, the focus should be on the customer/user and on what he or she does to satisfy a specific need, rather than on the product.

The use of experience-focused techniques allows for in-depth study of the lives of the people involved in the subject being investigated. The approach is focused on human dimensions with a view to generating six types of information regarding customers/users:

- What are they saying?
- What are they thinking?
- What do they do?
- What do they use?
- What do they feel?
- What do they desire?



Source: Visser, F. S., Stappers, P. J., Van der Lugt, R., & Sanders, E. B. (2005). *Contextmapping: experiences from practice*. CoDesign, 1(2), 119-149.

It is not usually advisable to rely on just one technique. Several should be applied on a complementary basis to investigate the same aspect (a process known as triangulation).

Regardless of which methods are eventually chosen, the sequence of steps taken tends to be similar:

- Determining the research objectives.
- Choosing the technique to be used.
- Producing the research guide.
- Establishing profiles of the different participants and recruiting them.
- Applying the technique to undertake the research.
- Encoding and ordering the information.
- Analysing the information and establishing areas of opportunity.

Techniques for generating new areas of opportunity

Some techniques with a customer/user-focused emphasis that may be most suitable for generating new areas of opportunity are listed below. For reasons of space, an emphasis has been placed on those that are not only best suited to this state of the innovation process, but also the least well-known.

> ***Ethnography***

The ethnographic techniques used in different social sciences such as anthropology can help companies a lot when doing research based on the way customers act.

To understand customer experiences and the context in which they take place in greater depth, it may be better to observe rather than ask questions, particularly if the questions are too direct. One advantage of observing is that it is direct and does not depend on customer or user perceptions of a specific product or service.

Ethnography applied to market research is a qualitative technique and includes a variety of methods. One feature common to them all is that they are all undertaken in typical customer environments, where it is easier for customers to act openly and honestly when responding, and where observation of their behaviour when using solutions is also more reliable. This can lead to the identification of latent customer needs that are unlikely to be discovered using traditional market research. Ethnography can help to generate innovations of which people were neither aware nor desired.

The range of possibilities can stretch from new applications for existing products, the design of better products, the identification of opportunities to create new solutions, and the discovery that the customer/user appreciates hitherto unconsidered dimensions.

Building a complete picture of the experiences of customers being targeted requires a clear understanding of five dimensions:

1. Physical: physical interaction with objects.

2. Cognitive: Meaning attributed to the objects with which they interact.

3. Social: Behaviour in groups.

4. Cultural: Reactions in light of shared rules, habits and values.

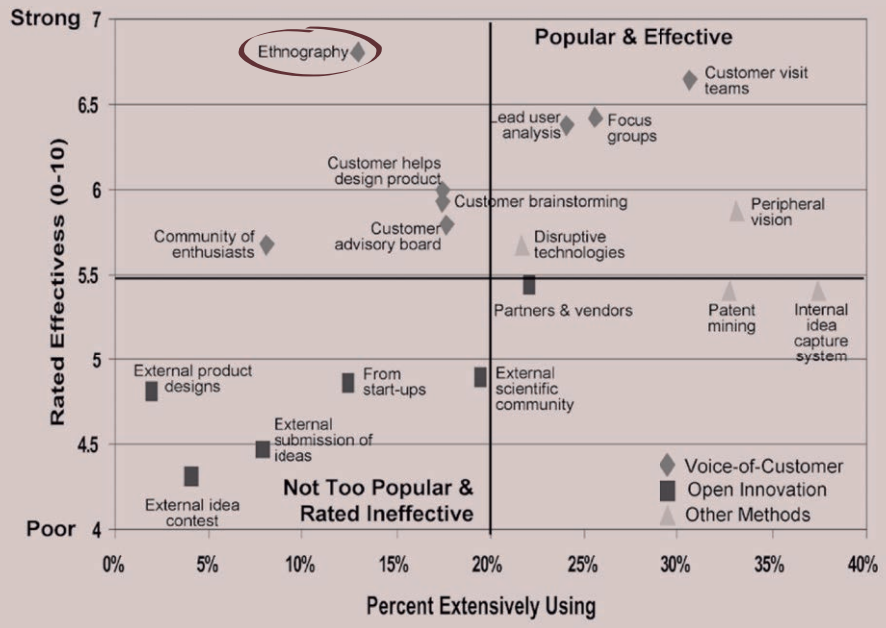
5. Emotional: Way of handling emotions and thoughts.

Given that 95% of consumer decisions take place unconsciously[44], understanding the customer is a core part of the innovation process. This requires spending time with them in their own environment and globally understanding their needs and experiences. For example, a company that wishes to design a new MP3 player should focus on the experience of listening to music rather than simply looking at the product.

These methods, however, are still little-used, largely because of unawareness of them (they are still not taught in most business schools and universities) and fear of change (long tradition of marketing specialists who rely on traditional market research techniques).

A recent study shows that even though it is one of the least-used techniques, the managers of companies that do use it consider it the most effective.

44 See Zaltman, G. How customers think. Essential insights into the mind of the market.



Source: Cooper, R. G., & Edgett, S. (2008). *Ideation for product innovation: What are the best methods?* PDMA Visions Magazine, 1(1), 12-17.

Ethnography can be applied in any environment: hospitals, homes, banks, factories, offices. Some of the techniques will be more suitable than others, depending on whether the space is private or public.

The objective is to convert unarticulated into articulated needs on the basis of how customers/users actually set about certain activities in real situations (instead of relying on how they describe these experiences in simulated environments for traditional market research).

The intention here is not to obtain a statistically acceptable sample, but to explore customer knowledge in greater depth from a qualitative perspective, which involves working with small samples. Quantitative techniques may also be used to validate the results or to determine the size of a particular market segment.

When performing an ethnographical study, a number of principles -some of which have already been mentioned- should be taken into account:

- *Whenever possible, studies must be performed in the natural environments of the people involved in the research.*
- *Researchers must immerse themselves in the environments subject to study and strive to understand different situations through the eyes of participants.*
- *Observers can adopt different roles, which range from acting simply as an external observer to actually taking part.*
- *Regardless of the technique used, information must be encoded using a predetermined model. This may be supplemented with photographs, transcripts, audiotapes and video recordings.*
- *Participants' responses should not be taken as absolute truths, as they often do not match what is observed.*
- *Researchers should regularly reflect on what they have seen or heard, and on what can be learned.*

When is it appropriate?

Although ethnographic research is mainly being applied for consumer products, it is also relevant in the B2B sector. It is suitable for discovering opportunities both in services and in products.

It is particularly suitable when the context of customers/users is a key variable, and when what is required is a holistic view of what occurs when a product or service is used.

It may not be the most appropriate technique:

- *when the solution for development has already been decided*
- *when there is not enough time for an in-depth study of customer/user activities*
- *for analysing samples with many profiles*

It is not advisable either for those companies that are convinced that they know their customers. Ethnography requires an open and even naïve attitude. In other words, prior value judgments should be avoided.

Types of techniques:

The two main general methods are systematic observation and contextual interviews. Both can be used with different techniques and focus on studying customers in their own environments or places in which they do the activities under study: either at home, at points of sale or in their work environments.

Observation:

Observation can be passive or active. The researcher may be an outside observer of the activity or, otherwise, be actively involved in the same role as the individuals under study.

- *Active observation*

  If the aim is to innovate in the production process, the researcher may, for example, take on the role of operator, or if the aim is to analyse the culture of motorcycling enthusiasts, attend a rally.

- *Passive observation*

  Passive observation, i.e. when the researcher takes no direct part in the activity, can be direct or indirect:

  For indirect observation, webcams or cameras installed at different locations such as airports, car parks, shopping centres, auditoriums, etc. may be used. This is appropriate when it is thought that the researcher's presence may influence the participant's behaviour, when access to the participant is difficult for geographical reasons, or when it is hard to predict the appearance of the item under study.

  For direct observation, the observer is present onsite at the activity and can take notes, take photographs or record images. It is important to ensure that the observer's presence influences as little as possible the behaviour of the subjects studied.

Interviews:

Formal ethnographic interviews are often used to complement observations. They are held in the customer/user's environment and can generate a lot additional input for the design of new solutions. They are usually based on a previously prepared script that contains a list of open questions on the main themes of the study.

They are intended to yield understanding of what the customer/user does and the driving forces behind each action. One way of doing this is to question customers while doing this activity. This tends to highlight differences between what is said and what is actually done. In other situations it may be more useful to go to a specific place such as a house and to ask about the environment in question (mainly about the different objects present).

There is also the option of less formal interviews, which the researcher observes over a period of time, with or without the knowledge of the person observed, and then asks a series of questions. A researcher working for a car manufacturer may, for example, observe users loading their cars in a shopping centre car park and interview them there in order to identify opportunities to help improve this activity.

It is often a good idea to combine ethnography with traditional market research techniques. It may be useful, for example, to undertake quantitative research with much larger samples, to validate statistically the qualitative conclusions drawn from ethnographic research.

What technique should be used?

When deciding on the most appropriate ethnographic technique for each situation, it is necessary to consider the time available, the budget and other resources, as well as the place where the study is to be run. Performing it in a home or a factory is not the same as in a public place like a department store.

The suitability of some methods or others depends on these elements. If the aim is to observe consumers buying at a point of sale, it is unlikely that in-depth interviews can be held or cameras or video used.

> *Cultural probes*

Cultural probes are related to ethnography, but here it is participants who document their activities with a number of elements they are given in order to yield information about them and their world.

This technique is intended also to yield understanding of the behaviour of participants and to explore new opportunities for innovation.

It should be used in the following circumstances:

- *When participants are geographically remote or inaccessible because of the risk involved for the researcher.*
- *When the activity being studied is a delicate matter or of such a nature that it cannot be observed, e.g. anything associated with personal hygiene habits.*
- *When the presence of the researcher may influence the behaviour of the participants, e.g. at a teenagers' party.*
- *When the activity occurs intermittently or for excessively long periods of time that would render the presence of an external observer inefficient.*
- *When what is needed is not only a neutral description of events, but also an in-depth outlook from participants (as well as finding out what they do and say, it is also necessary to know what they feel and want).*

Participants receive a set of materials with which to record information and/or perform specific exercises. These kits may contain images that evoke memories and emotions, drawing material, journals for recording information, cameras, recorders or any other material considered appropriate.

For example, if the brief is to find out aspects of an activity where neither observation nor interviews are possible, each participant may be issued with a journal and a camera to answer periodically a number of questions related to the study, and to provide graphic documents of activities undertaken, objects used and the environments in which they take place.

In these cases, before beginning the study, participants receive a set of guidelines on how to record the information and on what aspects are most important for the research. An in-depth interview is usually held at the end of the study in which the different entries made and other additional elements such as voice recordings, photographs, or drawings are discussed.

> *Participatory sessions*

These are informal sessions with customers/users who are invited to share their experiences and to participate in activities in which they can express their opinions on issues related to the project. They are intended to reveal what they know, what they feel and what they want, and are often based on indirect methods with which tacit and latent aspects may appear.

Participatory sessions, also referred to as co-creation, include a variety of methods the common feature of which is the active involvement of customers/users and other stakeholders throughout the innovation process. The methods include cultural probes, journals, collages, photographs, creative toolkits and co-creation workshops.

The methods can be classified into three categories according to the activities the participants perform to express themselves:

- *Making: collages, models, diagrams, drawings, etc.*
- *Explaining: stories, journals, ordering pictures to tell a story, etc.*
- *Acting: role plays, games, improvisations, etc.*

Another criterion for classification involves basing the session on the end pursued:

- *Participant self-awareness*
- *Preparing participants for future sessions*
- *Understanding their current experiences*
- *Generation of future scenarios and concepts*

These methods can be carried out throughout the discovery process or, in other words, in the needs exploration phase, in the generation of new concepts and in the evaluation of the different prototypes built.

Participants sometimes receive a kit beforehand (cultural probes) and thus arrive at the meeting with prior knowledge of the issues involved in the project, having devoted time before the meeting to reflection, which allows for deeper exploration. During the session, participants therefore feel more comfortable, as it is easier for them to share their experiences during the meeting and to reflect on their memories, feelings and motivations.

> *Lead users*

An increasingly common practice is for companies to work with their customers to discover new opportunities. Incorporating what are known as lead users is a practice that goes one step further. Instead of considering typical customer profiles, this method focuses on those who have more advanced needs and who, in many cases, do have no solutions (they themselves eventually develop their own solutions to respond to their own needs). These users can be a source of inspiration for companies who wish to understand the future needs of their customers and also a great help when devising future solutions.

It may also be interesting to work with certain customer segments that do not fit major customer profiles and are different from lead users (e.g. users with extreme needs or dissatisfied users).

> *Crowdsourcing*[45]

The term Crowdsourcing comes from a combination of the words "crowd" and "outsourcing". It involves transferring some of the functions normally performed in the company to an external network of people (customers, users, scientists, experts, general public, etc.), who voluntarily respond to the call made by an organisation. These people thereupon go on to assume an active role both in identifying problems and in creating solutions. It basically involves understanding the best way of working with them to encourage and make use of their expertise. One example is the ideas contests run by online platforms.

45 Crowdsourcing as a mechanism for addressing innovation matters is not new. What has changed in recent years is the potential offered by technological developments, particularly the emergence and spread of Internet.

6.3.2.2. Learning: analysis of information and extracting insights

At this point**, the innovation team analyses and sums up the information in order to reach objective conclusions with which to nourish the process for devising new concepts.**

Establishing insights involves specifying items learned, both in the study of customers/users and with regard to elements that shape the competitive environment, i.e. technologies, trends and companies in the same or other sectors.

Insight

An insight is a revelation of an opportunity that arises through seeing reality in a special way. Remember that each individual perceives reality subjectively. The type of insight identified therefore depends on how different items of reality are arranged.

An insight is based on an observation. However, it must provide information that can be explained using reason. An insight cannot be said to exist unless the observed fact can be explained. All information must therefore be understood for it to be relevant. For example, if 62% of people are said to watch television while using social networks but no explanation is given about this fact, then it is simply a statistic and cannot be considered an insight that can be used to generate ideas.

These revelations of opportunity are more powerful and useful for the creation of new solutions when they not only provide a cause explaining the observed fact, but also offer new perspectives that generate new understanding of the observed fact.

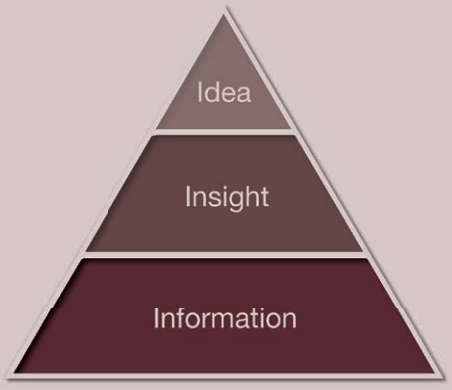
Insights should be recorded using a structure similar to that detailed below:

Customer X says/does/thinks/needs (observed fact or need)
because (cause or new discovery that explains why)

Extracting insights that represent areas of opportunity for the creation of new solutions is one of the most difficult tasks, as it involves processing a lot of information, separating what is relevant from what is not, and assessing whether knowledge of important elements is lacking (which would require more time to be spent on researching information).

To gather insights it is very helpful to use tools from disciplines such as anthropology and design, which facilitate an orderly structure and analysis of the available information. These methods allow for the identification of needs and behavioural patterns that may represent new market opportunities and help to understand different processes, interactions and types of language used by participants.

The information gained during the research phase can be used to generate insights, which should be used in turn as material to yield new ideas.



Source: Vianna, M., Vianna, Y., Adler, I., Lucena, B. and Russo, B. (2012). *Design thinking Business innovation*. MJV Press.

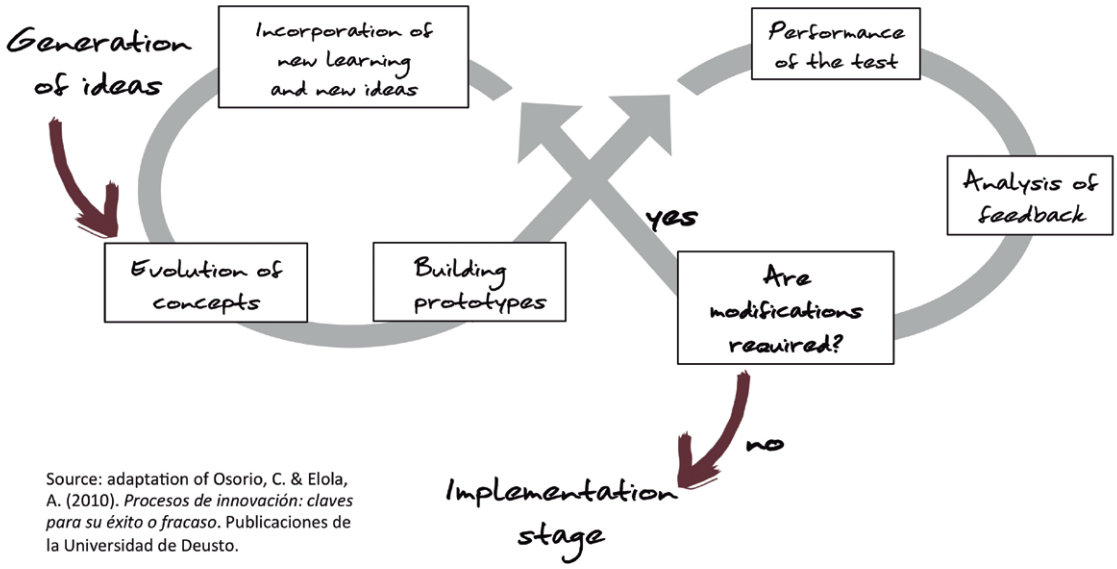
To gain insights, the innovation team should classify the information and group it with a view to seeking relationships among different pieces of information. Grouping may involve the use of different criteria and require regrouping to establish meaningful clusters.

The goal is to redefine the problem and associate information, however obvious it may seem, to yield a new vision with which the team can come up with new solutions.

6.4. Exploration of the area of the solution

Exploration of the solution contains the states "Ideate and filter" and "Transform and test". Although they are explained separately for clarity's sake, they are nonetheless very closely connected and iterations among them are constant.

The process involves encouraging individual ideas, generated from previously identified insights, until a global solution has been formed. This is achieved through different iterations between ideation sessions, through subsequent formal or informal evaluation, and through building basic prototypes and the performance of tests to generate feedback for subsequent analysis in order to determine what actions should be taken.



Source: adaptation of Osorio, C. & Elola, A. (2010). *Procesos de innovación: claves para su éxito o fracaso*. Publicaciones de la Universidad de Deusto.

Ideas, concepts and systems

Three levels of evolution shall be referred to in this process:

> *Ideas: these elements are individual and not very developed. They spring from the initial solution generation sessions and often take the form of a single phrase.*

> *Concepts: these are individual ideas that are developed or the combination of different ideas. They should always provide the following information:*

- *Description of the concept.*
- *Segment of customers to whom it is addressed.*

- *Need it responds to and the benefits it contributes both to customers and to the company.*
- *Concepts against which it will have to compete on the market.*

> *Systems: a system refers to a combination of concepts that mutually reinforce one another in order to generate more value. Although not all innovation projects need to reach this level of evolution, those that do are, in fact, more difficult to copy, as they generate more synergies and competitive advantages.*

6.4.1. State 3: ideate and filter

As mentioned previously, this state features two opposing forces: first, the generation and subsequent refinement of ideas and, second, the filters used to select the most promising ideas. **The exercise of generating ideas is focused on the insights identified in the previous state, while filtering is based on criteria that will have to be defined.**

These two forces amount to what are often referred to as diverging and converging forces. In the divergence stages, teams focus on generating options or, in other words, ideas and concepts, without applying any critical judgement, normally based on creative techniques. The convergence stages involve filtering and reducing the number of options on the basis of established criteria (thus avoiding the development of concepts not considered promising).

6.4.1.1. Defining criteria

To ensure the ideas chosen are suitable, **criteria that the solution must fulfil must be established.** Regardless of the creativity techniques used, it is always necessary to consider a number of criteria that provide a benchmark with which to evaluate the different proposals. **These criteria establish requisites to be met by ideas and concepts in order to ensure continued evolution**. Innovation guidelines were mentioned in the reflection phase. There they referred to general criteria. Here, they refer to specific criteria for each innovation project.

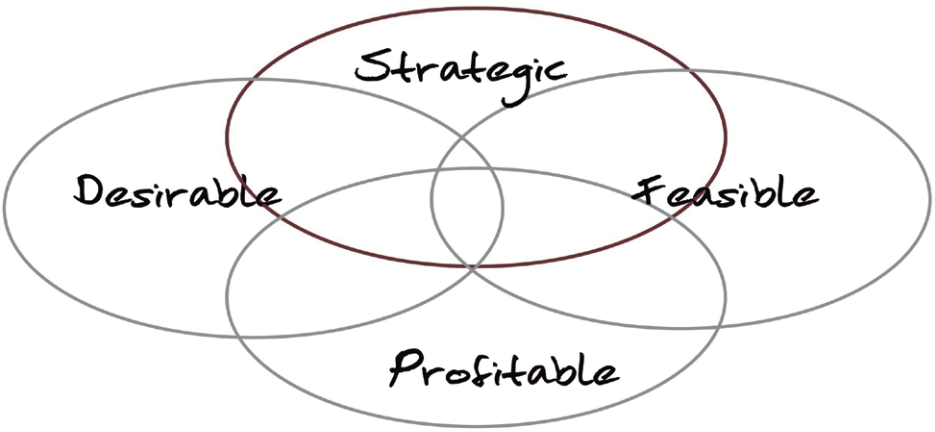
Criteria

Criteria are rules or standards that can be written in one sentence. For example, a criterion for consideration in the development of a sustainable product could be: "a sustainable product should tell a convincing story throughout its lifecycle". Criteria such as the cost of producing a product or service could also be used.

The insights obtained in the previous state may be used not only to devise new concepts, but also to impose constraints on the new solutions. They must therefore be taken into account when defining the criteria.

The following aspects of the solution must be contemplated in the criteria, as successful innovation of success lies where they intersect:

- It should be aligned with the company's innovation strategy.
- It should be desirable for customers/users.
- It should be technologically feasible.
- It should be financially profitable.



Source: adaptation of Euchner, J., & Henderson, A. (2011). *The practice of innovation: Innovation as the management of constraints.* Research-Technology Management, 54(2), 47-54.

Although the criteria act as constraints that limit the scope of the solution, they also provide focus, align efforts and direct all energy in the same direction

Just as at the beginning of the Discovery stage a document describing the innovation challenge was written, at the start of the "Ideate and filter" state, it is useful to draft a document that compiles all the information generated to establish criteria that must be met by the eventual solution. Before starting to use creativity techniques to generate ideas, it is therefore necessary to draft a document compiling the different criteria that the solution must meet and that will be related to the four aspects mentioned above. Once the development of new concepts is in progress, these will be evaluated in accordance with whether or not they fulfil the different criteria.

Creativity without focus makes it hard to achieve solutions that can be implemented. It is therefore important to establish direction and limits. Although the criteria act as constraints that limit the scope of the solution, they also provide focus, align effort and direct all energy in the same direction.

6.4.1.2. Ideation

Upon defining the criteria limiting the scope of the solution, it is time to start the ideation sessions**, in which different creativity techniques are used to explore new possibilities** (one of the most commonly used techniques is brainstorming or any of its derivations, as there are many and each company should use those it deems best).

In creativity sessions teams attempt to generate fresh, bold ideas based on what they learned in the previous phase. This ensures that concepts can be justified and are realistic.

Creativity sessions and techniques

To come up with good ideas it is necessary to generate a lot and to choose the best. Although many do spring from a Eureka moment, that does not mean we should rely solely on moments of inspiration. Ways must be sought to systematise the generation of ideas. Creativity techniques specifically help to give some methodology to the generation of ideas.

In creativity sessions, what are known as creativity killers should be avoided: people who criticise ideas while they are being generated. Some such comments are typically: that will never work, it will be too expensive, it might work in the future but not now, we've never done anything like that before, we are not capable, we don't have the necessary resources or time, etc. One cannot expect good ideas unless proposals are given a chance.

A great many techniques can be used in creativity sessions (brainstorming, brainwriting, hybridisation, forced analogies, SCAMPER, etc.). It is a good idea to be familiar with a few as the suitability of the chosen techniques will depend on the team, the challenge or situation. Note that the use of a creative technique does not necessarily yield great ideas.

In general, the following aspects should be considered when applying any creativity technique:

> Teamwork.

> Focus on the challenge in question.

> A search for quantity.

> Encouragement for the generation of bold, ground-breaking ideas that challenge common sense.

> Not criticising/judging others' ideas (critical evaluation comes later).

> Building on others' ideas.

> Being visual (whenever possible).

6.4.1.3. Filtering

As mentioned above, the process of developing ideas is iterative. Throughout the different iterations, the team will often have to select ideas. Filtering ideas and concepts can have different levels of formality. There are many techniques for selecting ideas (e.g. forced classification, point-based voting and evaluation matrixes). More intuitive techniques tend to be used in the initial cycles and, as they change, other more analytical techniques are used.

When filtering ideas, a series of aspects should be considered:

- **Holistic perspective**: Ideas should not be judged on a sole point of view, as this might involve emphasis being placed on specific aspects while others are ignored. This is why this task should be performed in multidisciplinary teams.
- **Flexibility**: as the process advances, new information is generated and this should be taken into consideration in subsequent selections. Bear in mind, therefore, that selection criteria can be incorporated or changed.
- **Knowledge of the project**: the people who perform the task of filtering the different proposals should have in-depth knowledge of the entire innovation process undertaken to date, and should be familiar both with selection criteria and techniques.
- **Objectivity**: the process of selecting the different proposals must be fair and objective. Regardless of who has presented them, all proposals must be reviewed according to the same parameters of rigour.

Political aspects, personal interests of internal hierarchies may occasionally condition the selection of ideas and this could have a disastrous impact on the credibility of the process.

Description of the process: from idea to concept

Prior recommendations

Whenever possible in the ideation process, it is a good idea to involve people who are not on the innovation team (suppliers, customers, experts, etc.).

External members can provide fresh and new points of view to the project, as they are not "contaminated" by the internal outlook of the company and of the sector. Customers also provide tacit knowledge of their needs and of what they would like as an eventual solution (do not forget that they are probably unaware of the aspects related to feasibility and profitability).

It is also useful to consider the environment in which these sessions are held. They may be run in company training rooms, specially fitted out for creativity sessions, or even outside company facilities in inspiring surroundings that help to switch off from day-to-day routine.

Preparation

Once the right team and space are available and measures have been taken to avoid any interruptions or distractions, it is time to start the idea generation process. These sessions require a great deal of energy, concentration, involvement and collaboration. Interruptions such as phone calls, emails or visits should therefore be avoided. Although this may seem a very obvious point, interruptions are often seen in these sessions and can have a very negative impact on their outcome.

An explanation of the purpose of the innovation project should first be given, followed by a summary of all the available information, both regarding the definition of the challenge and the areas of opportunity identified in research on the context and customers/users. This will bring up-to-date all the external members who were not present throughout the innovation process. It also acts as both an inspiration and a constraint when exploring new concepts. All this information should be available throughout the sessions. It is most usually hung on the walls or on panels or files and dossiers can also be created. The information should be presented in a format in which the message to be conveyed is easy and quick to grasp (graphics, processes, diagrams, photos, etc.).

Once all this information has been presented and explained, participants should then be given a creative focus and the criteria to be met by the eventual solution. The creative focus may be the same question that was formulated to define the challenge or other questions resulting from a breakdown of this question.

From this point onwards, warm-up exercises that bear no direct relationship with the challenge can be performed. The intention is to break the ice and begin exercising the capacity to diverge and to acquire a state of mind suitable for generating ideas.

Ideation

The next step is to apply the chosen creative technique to the desired creative focus. The technique chosen should be clearly explained before it is applied. The group may be separated into subgroups, each of which can work with different techniques or different creative focuses. The task of the facilitator is crucial in coordinating the work of the different subgroups and ensuring that the techniques are properly implemented in the given time.

Once the greatest possible number of ideas has been obtained, they are read aloud and ordered. This favours the creation of new ideas.

After several rounds of generating ideas, those relating to the same creative focus should be organised. To do so, the creative focus is written in the centre and around it different clusters of ideas are arranged, each sharing a common theme.

Once the ideas are organised according to similarity, each theme is given a name and a mind map is obtained for each creative focus, i.e. for every question asked during the idea generation sessions.

As the ideas are still very rudimentary at this point, the first round of critical judgment and selection of ideas should not start here. If there is such a round, it is better to filter themes than individual ideas, i.e. to decide which dimensions of all those obtained provide more opportunities for innovation.

Whether specific themes have been selected or not, the next step might be to start crossing ideas from different groups and combining them to form concepts. This implicitly involves a selection of the best ideas.

Conceptualisation

To develop the concept, a focus should be placed on aspects related to the value proposition and the customer segment. Once a convincing and desirable value proposition for customers has been generated, attention could be shifted to the other elements of the business model.

To move on from ideas to concepts a series of points should be considered:

- *Describe the proposed idea (solution).*
- *Describe the segment of customers targeted and the need answered.*
- *Describe the main benefits it contributes (value creation).*
- *Describe the main obstacles that customers will have to deal with to adopt the new solution.*
- *Identify the main competitors and describe the elements that differentiate the new solution from other existing solutions.*

A file, which includes the information mentioned above, should be created for each concept. The different concepts may therefore be standardised and evaluated and subsequently refined. This change from ideas to concepts will include different aspects to be dealt with in the following state. These include the identification of key assumptions (uncertainties and risks), the building of prototypes and subsequent testing of these.

Once it is thought that all the necessary knowledge is available and that the key assumptions have been validated, the next step is to think about other elements of the business model and to combine, where appropriate, different concepts to form the eventual system.

6.4.2. State 4: transform and test

In this stage the abstract concepts are transformed into more or less tangible prototypes. Its main purpose is to validate the assumptions upon which the solutions generated are based.

Prototypes are nothing other than a series of simulations with which to anticipate problems in the development of the eventual solution, to validate hypotheses and to represent concepts with a view to making them more tangible and prompting debate.

Once built, the prototypes are presented to the different profiles involved in the project while complementary tests are performed to yield information useful for decision-making and for guiding the following steps. The aim is to grow the solution and leave it ready for the implementation phase.

> The main purpose is to validate the assumptions upon which the solutions generated are based

This process of building prototypes and subsequent gathering of feedback from customers or users is essentially a **learning tool** with a twin function:

- As an idea takes shape, the details start to become significant. Prototypes become increasingly faithful to reality. To do, therefore, is to learn.
- Upon presenting the prototypes to users and interacting with them, these users may evaluate the solution and offer feedback, on the basis of which the solution evolves and is refined. Users are therefore a source for learning.

This iterative process ends with solutions that contribute value both to customers and to the company. This cyclical process involves three steps:

1. **Design of the test.**
2. **Prototyping and testing.**
3. **Analysis of the results.**

6.4.2.1. Design of the test

Tests can range from simple demonstrations to customers of different low-resolution prototypes to pilot tests[46] performed prior to the market launch.

However real the tests are, the aim is to observe the reactions caused by the new solution in the different stakeholders involved in the project. To do so, unlike the tools used in the "Observe, listen and learn" state, now research tools focused on the solution are applied.

A broad range of techniques may be used. They include in-depth interviews, focus groups, usability tests, user journals or recreations of a specific experience. Whatever technique is involved, whenever possible, they should be applied in the same environment as the solutions are to be used.

A series of questions should be asked when designing a test:

- **What is the assumption to be validated?**
  The aim is to determine the specific objective of the test, the questions participants will be asked and the reactions observed.

  It is essential to start with assumptions that become keys for the new solution. The first thing to do therefore is make a list of all the assumptions that the new concept is based on in order later to prioritise them according to their relevance.

  At this point, the assumptions that require most attention from the team are those that refer to the value created for customers/users and other stakeholders involved in the solution. In other words,

46 These tests are run in market conditions, albeit on a limited scope, for which the only real difference is the scale.

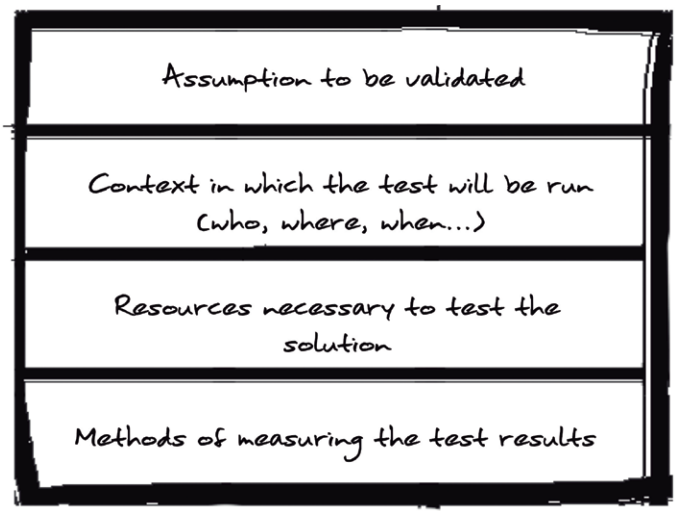
this includes everything that makes the new concept desirable for the customer/user and may include aspects such as utility, usability and pleasurability.

However, it is important not to forget the elements associated with profitability, and those related to technology and the capabilities required to develop the solution and send it to market.

- **What environment will the test be performed in?**
  Once the objectives have been clearly established, it is necessary to establish the place, the moment when the test will be performed, what it consists of and the profiles that will be asked for feedback. It may be a good idea to involve not only different segments of users, but also suppliers, distributors, experts, installers, etc. The choice of profiles depends on the type of solution and on the assumptions to be validated.

- **What resources are necessary?**
  The resources necessary to perform the test should be considered. These include finance, facilities, equipment and people.

- **What measures will be used to evaluate the results of the test?**
  Lastly, it is also necessary to decide what measures will be used to reach conclusions from the test, and whether these will be quantitative or qualitative.



6.4.2.2. Prototyping and testing

A prototype is any type of representation of one or several dimensions of a concept, be it a product, a service, a process or a system. Note that prototypes for any type of solution (not only of products) can be built.

Prototypes may be built for different reasons:

- **Learning:** prototypes act as tools for learning as they help to establish answers to two questions that are crucial in all innovation processes:
  > Will it work?
  > Is this the best way of satisfying customer needs?

- **Communicating:** prototypes enable communication with managers, sellers, customers, suppliers, partners and the team members themselves. It is a way of shaping thoughts, building a common language and creating dialogue with the environment.

- **Exploring**: prototypes are also a mechanism for exploring opportunities that may have previously been overlooked. This can lead to the identification of new aspects (initially neglected) that have arisen through the dialogues facilitated by prototyping.
- **Integrating:** prototypes evolve through the collection of different points of views, and act as elements that integrate the expertise and opinions of the different departments and stakeholders involved in the project.
- **Meeting targets:** prototypes also help to underline the advances made in the project and strengthen the credibility of the team. Having well-developed prototypes is often necessary in order to obtain resources to move on to the implementation phase.

Depending on how realistic they are, prototypes can be classified as:

- **Inspiration prototypes:** these are low-resolution representations generally with a low economic cost and very rudimentary. Their purpose is to explore different aspects of the solution, to encourage dialogue to show what might not work and to generate more ideas. They encourage the visualisation of ideas.
- **Evolution prototypes:** these are more detailed than the previous types and usually focus on a specific dimension. They normally incorporate functional elements, albeit partially, which means they may be used for experimentation. They may require some technical expertise and can be used to identify aspects that work better and worse, thus generating knowledge and pointing to problems to be resolved before major investments are made.
- **Validation prototypes:** these are representations of the eventual solution to be launched on the market. They are used in pilot tests. They are therefore extremely detailed, both in their exterior appearance and functionality.

***Other possible methods of classifying prototypes**:*

- *Physical vs. conceptual prototypes: prototypes can be physical or conceptual representations of reality. Physical representations are tangible elements such as a model while conceptual representations are intangible items such as a computer simulation of a product or service.*
- *Partial vs. global prototypes: this distinction refers to whether the prototype features all the attributes or characteristics of the eventual solution, or whether only a part is reproduced, thus making it a partial prototype.*
- *Appearance vs. functional prototypes: here the difference lies in whether the prototype will look similar to the final version or whether the prototype, regardless of its appearance, focuses on how different elements work. When developing a new model of washing machine, for example, the prototype might be a foam case that reproduces the external appearance of the washing machine, or it could include its functional parts but not the casing.*
  Appearance prototypes generally have many uses, not only for products, as they also allow for the recreation of environments and analyses of customer reactions and behaviours in simulated situations. If the aim is to develop an experience or service, for example, foam furniture or cardboard boxes may be arranged in a space to reproduce different elements of the environment, and used in role play to simulate the different activities that take place in this situation and to understand the behaviours, interactions and reactions generated.

When the test has been designed and the most suitable prototype is available, the test should then be performed. It must be run strictly in accordance with the previously established plan.

In addition to consolidating knowledge about the needs to be answered, prototypes are used to identify the technical capabilities required to develop the solution that the customer really wants.

6.4.2.3. Analysis of the results

There should then follow an analysis of the results, which should be used to take a number of **decisions that may include improving or making variations to the concept**, **returning to any of the three previous states, and moving on to implementation, and even rejecting the concept.**

The team should be willing to reject a concept or even to stop or restart the project if the information obtained during the process so recommends. Here, discretion is the better part of valour as the company will be able to avoid allocating too many resources to a solution with little potential and to use all the knowledge acquired for other projects. Making such a decision means neither falling in love with ideas/concepts nor being afraid of failure (fear that the project will be seen as a failure within the organisation). The risk of going ahead with a project that objectively does not provide the minimum value desired must be avoided.

In cases where the results of the test are positive, work should be iterative to help the project move on. The solution should be refined until it is considered ready to progress to the implementation stage.

These iterations among the different states can be very arbitrary. A good mechanism for guiding the innovation team is the type of feedback from the different profiles the prototypes have been presented to, especially customers and users:

- If the feedback refers to aspects of the prototype, the team should modify the prototype or even rebuild it.
- If the feedback focuses on the concept, it will be necessary to return to the ideation state to refine it.
- If the feedback suggests that the assumptions regarding the challenge are wrong, the insights reached must be reviewed or it may even be necessary to return to one of the initial states (“Define the challenge” or “Observe, listen and learn”).

To avoid the latter two situations, the gathering of opinions and feedback of customers/users from tests referring to the results from previous states (initial definition of the challenge, insights obtained and concepts generated) can be brought forward without waiting for the “Transform and test” state.

6.5. Preparation of the business case

At this point of the Discovery stage, before the implementation phase has started, the team will now have focused on a reduced number of solutions. At this point, broader consideration should be given to the four following aspects of the solution: value for customers, technical viability, profitability and alignment with the company’s strategy and capabilities.

This is the time **to prepare an explanatory document (business case) to accompany the prototypes made and to explain the different aspects of solution, with a view to convincing decision-makers it should be developed** (if there is an innovation committee, the decision-maker is this committee).

Business case

The business case is a document that defines the reasons behind the proposed solution, what it will be like and the aspects to be considered in developing it. This document must feature the elements required in order to decide whether or not to implement the project.

The contents of this document may vary from company to company. It should nonetheless adhere to a structure similar to the following:

Customers:

- Specify the need/problem to be met/solved and determine its significance for the different customer segments considered.
- Specify the customer segments the company wishes to target.
- Mechanisms to appeal to, acquire and keep customers.
- Channels of distribution that are used to bring the solution to customers.

Solution:

- Description of the solution and its main characteristics or attributes.
- Determine whether the solution contributes value to customers and users while responding to their need/problem (this involves enumerating and evaluating different dimensions) with a view ultimately to establishing a clear and differentiated value proposition.
- Identify the different existing options on the market intended to resolve the same problem and analyse their value propositions.

Strategy and organisation:

- Analyse how the new solution suits the company's current strategy.
- Determine whether the organisation has the capabilities and resources necessary to develop, to produce and to distribute the solution. This includes aspects such as design, operations, technology and distribution. If some resources or capabilities are not available, a plan to obtain them must be devised. This should involve either acquiring or outsourcing them or collaboration with other organisations.

Financial aspects:

- Establishing the market size and customers' willingness to pay a given price. This will require research with quantitative methods.
- Study the costs involved in creating and bringing the solution to customers.

Risks:

- It is important to identify and prioritise the different types of risks faced by the company in developing the solution and to determine the measures required to minimise their impact.
- It may also be helpful to consider the risks involved in not developing the solution.

The business case must be accompanied by an initial plan of the project, featuring specification of the capabilities and resources required for the development of the new concept. The following aspects should be considered in drawing up this plan:

- List of major tasks and activities.
- Identifying the resources and skills required to perform the tasks and activities mentioned above.
- Determining the resources and capabilities the company has and the mechanisms that will be used to acquire those it does not have (internal development, outsourcing, acquisition, etc.).
- Initial planning of the schedules for achieving milestones and assigning resources.

The decision-makers evaluate the business case and the plan presented by the team. If approved, the next step is the implementation phase (see chapter 7).

These documents provide a link between the Discovery stage and the Implementation stage.

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7 Implement
(Innovation process)

7. Implement (Innovation process)

Key ideas

- Stage in which the solution to get it to market is developed in detail.
- A linear method is proposed, as the level of uncertainty associated with the project has decreased considerably in this stage.
- The Stage&Gate method, which involves dividing the process into stages and gate decision points, is recommended for managing this stage.

7.1. Introduction

Once the Discovery stage is complete, the concept to be launched is now ready. **The Implementation stage involves thorough development of the concept to launch it on the market,** which allows for the inclusion of design, engineering and operational aspects.

As mentioned previously, a linear model should be used at this stage because the levels of risk, particularly market risk, have now decreased considerably and thus the activities to be performed are more similar to those involved in project management. There is, however, no single recipe and in some specific contexts an iterative model may be more advisable (for example, when using the SCRUM method to develop new software).

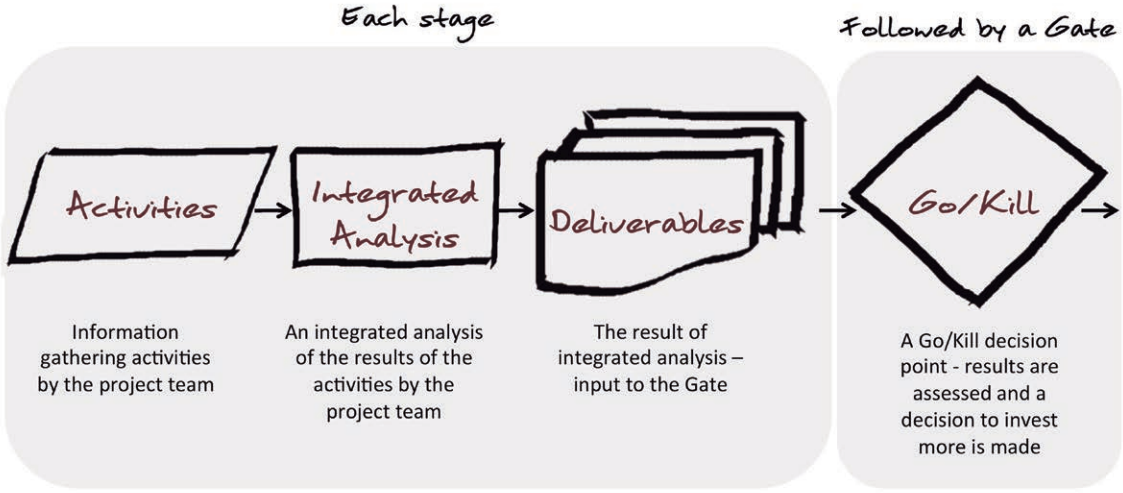
One of the methods most commonly used in managing innovation projects that may be very useful at this stage is known as the Stage-Gate process.

7.2. Stage-Gate methodology

This methodology, in its original form, is intended to guide the progress of innovation projects from the initial idea to their launch. It is therefore a mechanism to improve the effectiveness and efficiency of the innovation process.

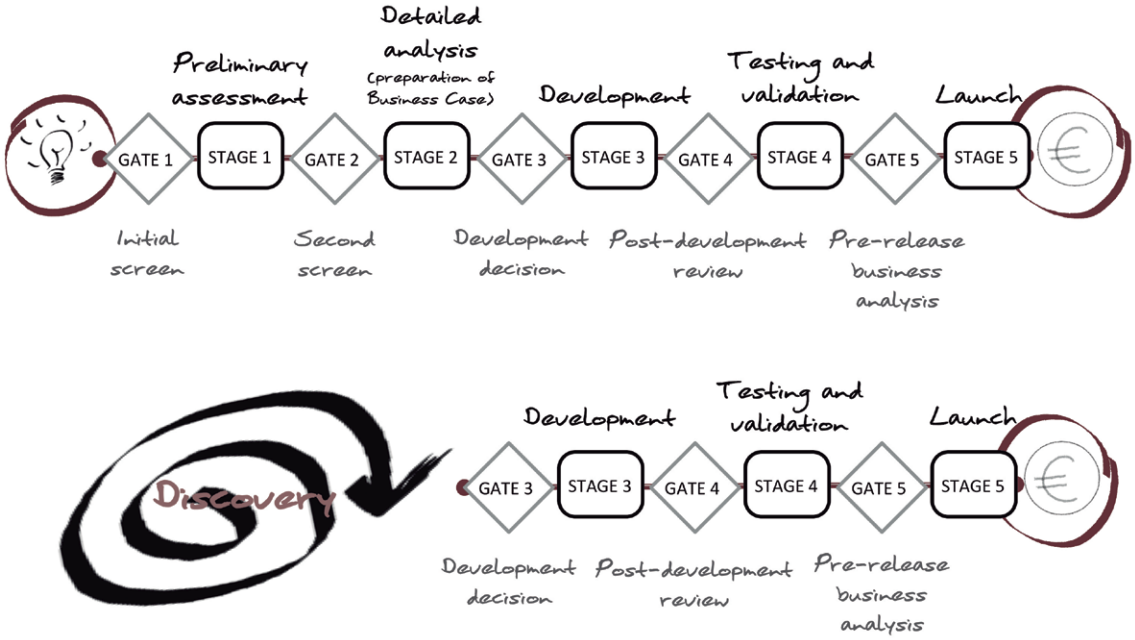
The process is basically divided into phases. The innovation team performs a series of activities at each stage: it obtains the information it needs, analyses and integrates this information and delivers it in an easily-understandable format for people who make decisions. This often involves a series of pre-established templates.

After each stage there is a gate decision point. It is at the gate decision or review points where decision-makers use the information available to decide whether to stop the project or to move on to the next stage (and therefore whether to continue investing resources in it).



Source: Cooper, R. G. (2008). *Perspective: The Stage-Gate® Idea-to-Launch Process—Update, What's New, and NexGen Systems**. Journal of Product Innovation Management, 25(3), 213-232.

Stage & Gate methodology starts with an ideation phase and ends with a review that takes place once the solution has been launched. There are five stages in between. In the proposed RxDxI model, the Discovery stage last until gate decision point 3 of this methodology. The Implementation stage starts at this point.



Source: adaptation of Cooper, R. G. (2008). Perspective: *The Stage-Gate® Idea-to-Launch Process—Update, What's New, and NexGen Systems**. Journal of Product Innovation Management, 25(3), 213-232.

Remember that at this point, the innovation team has already performed all the tasks involved in the Discovery stage, which it completed with the production of a "business case" and a capabilities and resources plan for each concept considered for acceptance in the implementation stage.

Since each project type may require a series of specific activities throughout the different phases in the implementation stage and, moreover, companies very often already have processes for implementing new concepts, this Guide will not explore the different phases in depth, as it has for the Discovery stage. However, certain aspects of the stages and the gates do require consideration.

7.2.1. Stages

Each stage includes a series of activities necessary to guide the project to the next gate decision point.

Characteristics of the stages for consideration:

- Each stage has been designed **to gather information required to reduce key risks and uncertainties.** The activities performed are therefore influenced by the information required.
- **Each stage has a higher cost than the previous stage.** It is an incremental process of commitment to the project.
- **The activities performed in each stage take place on a parallel basis** (whenever possible)**.**
- **Each stage involves activities that require the involvement of different functions** (teams tend to be multifunctional).

7.2.2. Gate decision points

These are quality control points at which decisions are made about the future of the project being evaluated.

The gate decision points feature the following three main elements:

- **Deliverables**: these are the elements that the innovation team delivers to each gate decision point and are used by the decision-makers to decide the future of the project. These elements may be documents or prototypes and will have been defined at the previous gate decision point.
- **Criteria for use in evaluating the project:** these criteria are intended to help prioritise projects and to differentiate those that have potential and those that do not.
- **Results:** for deciding whether or not the project should go ahead. If the project does go ahead, a plan of action should be defined for the next stage, plus deadlines and resources and a list of deliverables necessary for the next gate decision point. The following are different decisions that may be taken:
  > The project goes ahead: the project is approved and goes on to the following phase.
  > The project does not go ahead: the project is not thought to have enough potential and is deemed a bad investment and therefore stopped.
  > On standby: the project goes ahead but other projects are given priority. It therefore remains on standby to be continued later.
  > Under review: the project is considered a good investment, but the information prepared by the team is not explanatory enough. The team is instructed to review it before presenting it again.

In order to ensure the Implementation stage works properly, two basic aspects associated with the gate decision point require consideration:

1. Gate decision points cannot become routine elements of the system. A common mistake is that once projects have been initiated, they are not stopped at gate decision points. The purpose of these meetings is not to give a false sensation of control, but rather to identify and halt any projects that do not contribute enough value (and avoid investing more resources in them).
2. Another important aspect is the need for projects subject to thorough review and criticism and subsequently approved, to receive the resources necessary to carry them through to the next gate decision point.

In designing an innovation process like this, it is necessary to:

- Identify the people in charge of decision-making.
- Define the criteria with which projects will be judged.
- Avoid bureaucracy and information overload at gate decision points.

7.2.2.1. Who are the decision-makers?

It is important to establish who the people making the decisions are. The following guidelines may be helpful in choosing the decision-makers:

- They must be people who have the resources that the project needs (although people may also be included for their expertise).
- People from different functional areas should be included.
- In the early stages, they may be middle managers but as the project advances, they should be more senior managers.
- That notwithstanding, in low-uncertainty incremental projects the inclusion of senior managers may not be necessary.
- Decision-makers should spend some time with the innovation team and attend gate decision point meetings with some knowledge of the project. These meetings are not informative but designed for decision-making.

Note that as the project moves forward, it will require more resources. It is therefore essential for projects that do not yield value to be stopped in time. In this regard, the criteria play a crucial role.

7.2.2.2. Criteria

The criteria used at each gate decision point are crucially important in determining the desired innovation type. They **must therefore be aligned with aspects of the innovation strategy** such as the objectives, guidelines and portfolio of innovation projects.

Decision-making criteria are very often financial. Note that depending on the project's level of uncertainty, it may be impossible to get round these criteria, particularly in projects involving innovations that are riskier and further removed from the company's core business.

Some companies therefore use additional criteria and may not even apply financial criteria to radical innovation projects, instead basing decisions on matters such as strategic alignment, competitive advantage and market potential. If financial criteria are applied in projects with high levels of uncertainty, more suitable alternative methods of assessment such as ECV (expected commercial value) may be used.

A series of proposed criteria to be applied at the gate decision point between the Discovery and the Implementation stages appears below:

- Criterion 1: strategic fit
  > Alignment of the project with company strategy.
  > Importance of the project for the strategy.
  > Impact for the company.

- Criterion 2: competitive advantage
  > The new concept creates value for the customer.
  > The new concept offers a convincing value proposition (good value for money).
  > The new concept has a high component of differentiation from the customer's perspective.
  > The new concept has received positive feedback from customers/users (results of concept tests).

- Criterion 3: market attractiveness
  > Size of the market.
  > Growth of the market and future potential.
  > Average margins of the market.
  > Level of competitiveness on this market.

- Criterion 4: core competences leverage
  > The project makes use of the company's key capacities and strengths:
    - Technology.
    - Production or operations.
    - Marketing (image, brand, communications, etc.).
    - Distribution.

- Criterion 5: technical feasibility
  > Technical complexity.
  > Degree of technological expertise required in the company.
  > Difficulty in acquiring the required technical expertise.

- Criterion 6: financial reward versus risks
  > Financial return (NPV, IRR, ECV, etc.).
  > Certainty of financial estimates.
  > Level of risks and risk management capacity.

Decision-makers rate each of the criteria. Weighted averages can be calculated if it is thought that any of the criteria should exert more influence than others.

7.2.2.3. Bureaucracy at the gate decision points

It is important not to fall into the trap of designing systems that are too bureaucratic and yield a lot of worthless information.

Surplus information often accumulates, either because a false sense of control has been generated or because the key information required for each review has not been defined clearly. This does not help the work of decision-makers but instead makes it a cumbersome task requiring the analysis of a lot of irrelevant information. To avoid this it is recommendable:

- To make sure that the innovation team understands the nature of the tasks performed in each stage, and therefore what key information is required by decision-makers at the subsequent gate decision point. One of the best ways of doing this is by identifying at each gate decision point the unknown key elements or the key hypotheses that require validation or, in short, the unknowns, which should be the focus of the activities undertaken in the next stage.
- Not to design systems that include a large number of templates that must be filled in on account of the inflexibility of the system. Emphasis should once again be placed on the need for the deliverables subject to analysis at each gate decision point to contain only information that is really essential and contributes value.

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Conclusions

Part two of this Guide is focused on developing two of the eight factors required to become an innovative company. These two elements are considered to form the backbone for structuring the process to systemise innovation.

These elements are: innovation strategy and innovation process. For the purposes of this Guide, they have been broken down into three stages, resulting in what has been called RxDxI. R refers to the reflection stage (innovation strategy), while D and I stand for the stages of Discovery and Implementation (innovation process).

Remember that the reflection stage is general and serves to define the innovation strategy that the company will follow. It basically answers the question: what is innovation focused on? In other words, it establishes the specific areas in which the company wishes to focus its innovation efforts in order to create value and to build a competitive advantage.

The discovery and implementation stages, meanwhile, are intended to develop specific innovation projects (arising from the innovation strategy). The purpose of the Discovery stage is to understand the starting situation and to define a solution that resolves it satisfactorily for all parties involved. It is essentially intended to answer the question: what should be developed?

The purpose of the last stage, the implementation stage, is to bring that defined in the Discovery stage to market. The question in this case is: how should it be done? Depending on the type of solution defined, on the product or on the service, implementation can be very different.

The Discovery and Implementation stages, in association with the innovation process, are crucial in achieving an innovation. Their significance, however, varies depending on the innovation project to be undertaken. Performing a project based on an emerging technology for which it is unknown whether there is a real market, is not the same as undertaking a project based on the company's skills and knowledge that is addressed to a mature, familiar market.

The level of uncertainty and risk therefore determines the method of managing the different stages (the differences between performing an incremental or a radical innovation project are evident). Linear methods and iterative methods exist precisely to manage these contrasting situations.

The former are based on the fact that at the very start there are many ideas and proposals which, as the project progresses, are evaluated on the basis of criteria to determine which should be continued and which should be discarded. At the very end, there are therefore few ideas and proposals that become solutions that reach the market.

Although iterative methods may consist of the same phases as linear methods, they nonetheless prompt the gradual evolution of ideas, making it possible to pass through the same phase on more than one occasion (iterations), depending on what activities are necessary to reduce uncertainty at any given time.

The model proposed in this Guide for addressing the innovation process lies somewhere in-between. It is iterative in the Discovery stage, on account of the greater level of uncertainty in determining the solution to be chosen, and linear in the Implementation stage, in which what is to be done has been defined and in most cases the knowledge required to perform it is available.

Bear in mind, however, that every innovation challenge involves different levels of uncertainty and risk, on the basis of which it is necessary to decide the best method with which to develop the project successfully. It may therefore be interesting to design different innovation processes and apply the most appropriate in each situation.

Reflection stage

A company that innovates is not the same as an innovative company. The former applies innovation intermittently, depending on the needs of the given moment yet does not prioritise innovation as a core feature and does not therefore need to systematise it.

The latter, however, wishes to turn the capacity to innovate into a competitive advantage upon which to build growth and differentiation. It must therefore make innovation an intrinsic part of the company's DNA, build a common language, and determine its priorities when innovating.

Although both these companies have to find their way along the different steps involved in the innovation process, the difference between them is that only innovative companies should spend time reflecting and defining an innovation strategy.

The Reflection stage, in particular, should:

- Focus innovation efforts.
- Establish the direction to be taken.
- Define the rules of the game.

In other words, the areas that lie outside the innovation interest of the company must be clearly determined. This will not only avoid wasting resources but also prevent frustration, a sense of confusion and an eventually portfolio of unsuitable innovation projects (i.e. projects lacking synergy with one another that may even not have anything to do with what the company needs).

This stage consists of a number of points that can be performed sequentially or simultaneously. Before determining the innovation strategy, it is necessary to be familiar with the company strategy in order to ensure the two are aligned.

The following items should be developed in the Reflection stage:

- Establishing the importance of innovation for the company.
- Determining an internal definition of innovation.
- Establishing innovation guidelines and targets.
- Seeking information to identify challenges.
- Defining vectors and the project portfolio.
- Assigning resources

Discovery stage

Once the Reflection stage is complete, an innovation challenge is chosen and the project itself is initiated. This initial phase consists of three goals:

- Understanding the challenge.
- Defining the solution.
- Legitimising the solution.

It is divided into four states (not phases as it is an iterative stage):

State 1: define the challenge

This state involves the generation of a clear definition of the challenge and the different dimensions contained therein and their implications. It is essential to understand the nature of the situation for which a response is required, to separate causes from symptoms and to seek non-obvious relations among different aspects.

State 2: observe, listen and learn

This state involves the generation of knowledge about users or customers and the background to the challenge. Background refers mainly to the sector, competitors, trends and technologies that may be associated somehow to the challenge to be met. All this knowledge is then used to identify areas of opportunity or insights.

State 3: ideate and filter

This state involves the generation of alternative responses to the challenge, with consideration for either acquired or previously existing knowledge. These ideas can also pass through a series of filters so they may be compared against the criteria established that the solution must meet.

The state comprises two opposing forces: first, the generation and subsequent refinement of ideas and, second, the filters used to select the most promising ideas. It interacts constantly with the state of “Transform and test”, as they are both involved in exploring the solution.

State 4: transform and test

This state involves constructing and testing prototypes to validate the assumptions upon which the different concepts considered for development have been based.

Once the initial prototypes have been built, it is necessary to seek the opinions of customers and stakeholders associated with the eventual solution such as distributors, manufacturers and suppliers. The members of the innovation team will use the feedback obtained to reach conclusions and act accordingly (sometimes it is necessary to go back to the information search phase and other design phases in order to find solutions to specific aspects or it may even be necessary to redefine the original challenge).

The Discovery stage ends by choosing the solution to be implemented, for which a series of key assumptions will have been validated on the basis of the expertise acquired in building prototypes and establishing a business case.

Implementation stage

Once the Discovery phase is complete, the concept to be launched is now ready. This phase involves detailed development of the concept, which may feature aspects of design, engineering and operations required to bring it to market.

As mentioned previously, a linear model should be used as in most cases the levels of uncertainty and risk, particularly market risk, have now been reduced considerably at this stage and thus the activities to be performed are more similar to those involved in project management.

Innovation is said to involve defining solutions that are at once desirable for the market, feasible from a technical and operational perspective, and profitable. This stage focuses particularly on feasibility and, except in some very specific cases, the knowledge for making conceptual solutions tangible is available to companies.

There is, however, no single recipe and in some specific contexts an iterative model may be more appropriate.

One of the methods most commonly used in managing innovation projects, and that may be very useful at this stage, is known as the Stage-Gate process. This method has therefore been described in some detail.

Each company should define the RxDxI model most suited to generating a constant flow of innovations. In short, remember that the capacity to innovate is one of the few lasting competitive advantages.