# POLITECNICO DI TORINO

Collegio di Ingegneria Gestionale

**Corso di Laurea Magistrale**
**in Ingegneria Gestionale e della Produzione**

Tesi di Laurea Magistrale

# Innovative methodological approach for collaborative market exploration


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Aprile 2018

*“Organizational Foresight is […] the organizational ability to read the environment – to observe, to perceive – to spot subtle differences.”*

*(Tsoukas and Shepherd, 2004)*

# INDEX

# ABSTRACT

The choice of the realization of this work has as a starting point the increasing need of companies to predict the rapid changes that take place within the markets to which they belong, to avoid being overwhelmed and risking failure.
Adding to the above reasons, it is important to take into account that the current market's boundaries are no longer as defined as in the past and the influence of one sector on the others makes many organizations without the skills and the resources necessary to deal with the changes.

In this context, companies are looking for new ways to deal with the situation. For market leaders, a solution may be to develop internal R&D programs and to buy external resources across the board to meet the emerging needs of customers. This solution is not affordable by small and medium companies, as it would require funds and time that normally they do not have.

An emerging method in response to this need is external collaboration, in some cases also adopted by industry leaders. With this methodology, the companies are grouped into a team whose members provide all the other knowledge, resources and funds to cooperate in order to achieve the common goal. The number of participants varies according to the size of the project and to the objectives to be achieved.

A major problem is the management of multiple partners, in fact each of these will have diverse internal management and processes to complete work. Frequently, these will not match with the one of the other members, creating delays in achieving the assigned tasks and dissatisfaction on the quality of the results achieved.
The greater is the number of members involved, the greater the difficulty of maintaining the same level of participation, interest and focus on the final vision is.
When this occurs the group becomes counterproductive, the benefits related to the collaboration are lost and the pre-established objectives are not achieved.

Over the years, many collaborative groups have been created but only a few have succeeded, unlike many single firms have been able to achieve unexpected results.
A concrete example, which will be explored in chapter 2.2.2., "Comparison between Better Place and Tesla", is related to two organizations: Tesla and Better Place.

The first one is a car company widely known in the collective imagination, born fifteen years ago, and producer of luxury electric cars.

The second one, unknown to many, was a start-up founded on an ambitious goal: to totally eliminate the carbon dioxide emissions produced by automobiles, replacing petrol engines with electric ones. To achieve this, the project required the creation of the battery charging infrastructure and the construction of an all-electric car with swapping batteries able to be changed in few minutes in a service station.
Therefore, the start-up, to achieve its goal, involved numerous partners including members of government of United States, Denmark, Australia and carmakers as Nissan and Renault. The synergy created was not adequately exploited and the project, after a few years, failed.

The example briefly reported compares two start-ups, founded circa at the same time and with the same macro objective, but with two completely different results: Better Place as a group, despite it has more resources and more expertise, has failed while Tesla, as everyone knows, it has managed to launch its product on the market, obtaining a good reputation.

The comparison between these two entities highlights a need, common to many other cases: to make external collaboration between companies effective and efficient, managing to create an organizational structure that allows the various partners to work univocally as a 'one big company, making the partners focused on the realization of the collective goal.

## Scope of the thesis

In this thesis I tried to generate a solution to the problems mentioned above:

- the difficulty of forecasting changes in the market of interest and identifying long-term business opportunities, which reflect the new expectations of customers;
- the inability to fully exploit the benefits obtainable from collaboration with partners outside the company of origin and to manage the resources and knowledge available;
- the difficulty of structuring a network of partners that has the competences and the expertise to be able to critically analyse the market and identify concrete business opportunities for future development;
- the difficulty of keeping the members of the network, for the entire duration of the project, pro-active and committed to the final objectives.

The goal I set myself is to define an approach with which any network can explore any market, identify long-term innovative business opportunities and effectively manage cooperation between partners.
The goal to which I refer is the identification and the implementation of innovative ideas that allow to achieve the greatest common benefit. In fact, normally they are not feasible by a single company and require the involvement of multiple members with different expertise to be developed.

In this thesis I refer to the term "network" to a group of organizations, with different backgrounds and belonging to the same market, or to similar segments, which share their capabilities, their own contacts with market's actors and internal resources in order to achieve a common goal.
In the thesis I referred to networks composed by many partners (at least five organizations) because the greater number of partners are involved and more critical the collaboration is. However, the results achieved will be adoptable also from smaller networks, but they will be less relevant.

The methodological approach in question therefore aims to be:

- a guide for the construction of effective and efficient networks, able to achieve the set objectives;
- a sequence of actions and milestones that can be used by the partners to achieve the established results, without losing the vision of the project and fully exploiting the skills and resources available;
- a set of forecasting tools that facilitates the identification of future developments and changes in the market under analysis and the objective assessment of business opportunities in order to launch them profitably in the market.

I treated the new approach with two levels of abstraction: a more theoretical one representing the general case, in which I define in the characteristics and the phases of the methodological approach and a second more applicative, in which I started to validate, together with René Rohrbeck and Matthew Spaniol, the new approach applying it to a real case: PERISCOPE Interreg Project.

## Structure of the thesis

The thesis is structured in six chapters, the contents of which will be briefly outlined below.

In the first chapter, "INTRODUCTION", the research question that has guided the development of the thesis is introduced, the initial objectives of the work and the motivations that make the topic particularly relevant are clarified.

The second chapter, "CURRENT UNDERSTANDING", has the main purpose of underlining the importance of collaboration in rapidly developing markets. It defines what are the intrinsic characteristics of companies that allow to collaboratively explore new business and it outlines the difficulties that the organizations must face in order to be able to innovate in rapidly changing environments or in segments diverse from the current one.

To support these explanations, two different case studies were presented.
The first compares Netflix and Blockbuster, with the aim of highlighting the need to understand and precede future market trends in order to continue operating in a sector without failing.
The second compares Tesla with Better Place with the purpose of highlighting the potential of the networks and the need to be able to properly manage the resources that compose them.
Finally, in the end of the chapter the concept of "market forecast" is defined to assess the feasibility of new business opportunities and the "3P Method" method is described, commonly used in market exploration made by a single firm.

In the third chapter, "METHODOLOGY", it is explained the method that I used to design the new approach. The method adopted is the DSRM (Design Science Research Methodology). The DSR is an iterative method that allows to gradually improve the results and obtain a comprehensive artifact. In the chapter the phases constituting the method and its main characteristics have been described. Finally, its implementation in the approach's design is explained, stressing the importance of iterative design, a key feature of this method.

In the fourth chapter, "PROCESS MODEL", I defined the approach in its entirety. It explains how to organize the collaboration between partners belonging to the same network, which aim to jointly develop new growth opportunities. It is an innovative and repeatable method to explore any market in order to identify profitable business opportunities.

It was developed under the supervision of René Rohrbeck and Matthew John Spaniol using the DSRM. The approach was validated and refined through the discussion with the participants of the case study, "PERISCOPE Project" funded by the EU Interreg.

In the fifth chapter, "CRITICAL REFLECTIONS", in the first section it is outlined a parallel with the previous literature to highlight the bases of the new methodological approach.
In the second part are defined the limits of the current version of the approach.

And finally in the sixth chapter, "CONCLUSION", I underline the objectives that have been achieved and define the open points for the realization of future research.

In the appendix, "FORESIGHT HISTORICAL EVOLUTION AND MOST COMMON METHODS", are presented first, a historical overview on the evolution of the different interpretations and the most commonly used methods, and then an analysis of the methodologies and tools most used to predict the feasibility of new business opportunities.

# ACKNOWLEDGEMENT

I would first like to express my gratitude to my supervisor Emilio Paolucci for supporting me during these months abroad. Despite the distance, he always showed his engagement through the learning process of this master thesis. He was always available for useful comments and feedback that helped me to conclude this work.

I would also like to thank my thesis advisor René Rohrbeck at the Aarhus University of Business and Social Sciences. The door to Prof. Rohrbeck office was always open whenever I ran into a trouble spot or had a question about my writing.
He consistently allowed this paper to be my own work but steered me in the right the direction whenever he thought I needed it.

I would also like to thank Matthew J. Spaniol who was directly involved in the development and validation of the new approach presented in this thesis. Without his passionate supervision and input, the work done could not have been successfully conducted.

Finally, I must express my very profound gratitude to my parents, to my friends and to my boyfriend Giovanni for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of writing this thesis. This accomplishment would not have been possible without them.
I will be grateful forever for your love.

# 1. INTRODUCTION

In this chapter, I am going to present the motivations that led me to write this thesis, to introduce the problem underlying the motivation and explain why topic is of broad relevance. To facilitate the understanding of the importance of the treated topic, I will introduce it starting with a brief example, which will then be taken up and illustrated giving more exhaustive details in the chapter 3.2.2 "Comparison between Better Place and Tesla".

Tesla Motors is an American company specialized in the production of luxury electric cars, energy storage and solar panel manufacturing. It was founded in 2003, only 15 years ago, and it has become popular in the collective imaginary[1].
Elon Musk, the company's CEO, initially focused its efforts on engine and battery development to match and to guarantee the same performance of petrol cars but eliminating completely the gas emissions into the environment.
To facilitate and to promote the purchase of his cars, he immediately started to install charging spots for his clients in key places around the world. Despite the efforts, he could not create a widespread charging infrastructure and the recharging was always annoyance.
In recent years, to improve the service for his customers and the benefit given to the car owners, he began to devise methods that speed up the recharge: both improving battery performance and thinking about battery-swapping technology.
To support his business plan, he had to turn to wealthy clients, who could support (but not completely cover) the enormous development costs and willed to pay th.e selling price.

Now let's imagine: Elon Musk a leader of a group of partners with transversal skills in the automotive world, in the realization of batteries and representatives belonging to diverse governments (able to stimulate the demand, to give incentives to population to switch to electric cars and to help in the creation of charging infrastructure).

Probably whit a network so heterogeneous, he could have immediately turned to the broader segment of average customers, he would probably have been able to overturn the current automotive paradigm and immediately and allowed a wider diffusion of the electric car.

In effect, it was created a network with similar characteristics.
A company that set out to create the transition from internal combustion engines to electric propulsion was Better Place: a start-up founded in 2007 that had the scope to switch all the

[1]Forbes, Jie Ma and Masatsugu Horie, (2017), https://www.bloomberg.com/news/articles/2017-08-29/the-leaf-is-the-world-s-best-selling-electric-car-now-nissan-needs-to-catch-up-with-tesla

cars in circulation from gas or oil to electric power, making in this way the world a better place. To achieve this ambitious goal and substantially reduce emissions, Agassi has the purpose, since the beginning, to reach the average customer.

He had to design a cheap and easily usable car. The solution he tried to implement was a car in which the battery could be replaced (like in the mobile phones): a method faster than the charging and more convenient than an oil refuelling.
Besides the design of the swapping battery car, he planned to build an entire charging infrastructure: to make his vision achievable he looked for partners. He built up a fruitful relationship with Israel government, his home country, and he created independent groups of managers from United States, Denmark and Australia. He also wrote a contract with Nissan and Renault commissioning the electrical car with his specifications.
Despite the expectations were excellent and the idea have a high potential value, Better Place went bankrupt in 2016.

At this point the spontaneous question that shows up is:

*"How is it possible that a single company can have a disruptive impact and succeeds in its vision whereas a network of valuable partners, with more resources and more skills, fails?"*

In this thesis I tried to find out an answer to this question, in fact the problem is huger than it seems: examples such as Tesla and Better Place, there are all over the world.

The motivation of the failure, in the vast majority of cases, is the mismanagement of available resources. Until now, the groups of companies, that have decided to collaborate, were not been able to act in unison as a one big company: after the initial enthusiasm, the selfish interests of the individual have always prevailed, and the overall vision has been lost. For this reason, the collaboration from being a competitive advantage turns to be the reason of catastrophe.

The challenge I have set myself is to create a methodological approach that guarantees multiple actors to exploit and develop new businesses, using effectively and efficiently the resources available and keeping clear in their mind the goals to be achieved.

# 2. CURRENT UNDERSTANDING

In this study, the main purpose is to develop a methodology to explore new markets and identify new business opportunities in organizational networks.

The following chapters have the purpose to define what are the main characteristics of a collaborative business exploration and to outline what are the difficulties of innovating in a fast-changing environment that companies have to face entering in new business fields.

To support these explanations will be present as examples two different study cases.

Therefore, it will be presented a foresight method used to design the New Approach, described in chapter 4 - PROCESS MODEL..

At the end, the main concepts of the topics previously discussed will be summarized to create a knowledge base for the reader, to proceed with the reading and the understanding of the new approach.

## 2.1. Collaborative business exploration

Initially in this chapter it is introduced briefly the definition of external collaboration and the explanation of the main features that characterize companies able to efficiently collaborate with third parties.

Later I will focus on the explanation of network collaborative environment, describing its successful characteristics, the benefits for its members, its strengths and weaknesses and the motivation of its increasing importance in foresee of innovative business fields.

### 2.1.1. External Collaboration

In this thesis I interpret as “External Collaboration” an agreement in which two or more parties work together as a team with the purpose to reach previously defined goals, sharing resources and knowledges.
Collaboration allows to share among the parts with different backgrounds capabilities and techniques with the aim to fill in the gaps of each other to individualize new competitive advantages/innovative products and to sustain the current business in a long-term view.
The results of the collaborative work are advantageous to all the parts involved but only if the initial goals are compatible with the interest of the participants and there are no conflicts

of interest among them[2]. Each partner accepts responsibility for its own inputs, as well as for the equitable sharing of returns on outputs.

According with Economist Intelligence Unit study sponsored by Cisco[8], companies see collaboration as best suited to achieve four goals:

1. improving profit margins by increasing operational efficiency and productivity;
2. problem-solving;
3. knowledge sharing;
4. competitive differentiation.

The literature refers to external collaboration with many terminologies and definitions.
In the following paragraphs I collected the ones that I consider comparable to the one used in this thesis.

A first definition that reflects the meaning given in this thesis to External Collaboration is provided by Miles (2005)[6]. He defines **Collaborative Entrepreneurship** the ability to collaborate among partners of the same market or among partners with useful and diverse backgrounds to build up in synergy new business or innovate the existing one.

Partners provide resources in a brief time. In this way, in accord to Belderbos (2010)[3], the likelihood to have success in the commercialization of the results is increased and the abilities to explore new field are improved.

In a collaborative environment, the weak spots of a company are complemented by the strengths of other companies, in this way it is easier and faster find solutions to achieve the final goal. Another benefit of sharing with partners is the growth of the network: every time a firm reach out another one, from private or public sector, it reduces the effort required by them to explore new business.

Furthermore, Brandenburger and Nalebuff believe that in a competitive business environment, major is the number of companies that decide to work together and bigger is

[2] http://www.businessdictionary.com/definition/collaboration.html
[3] Creating shareholder value via collaborative innovation: the role of industry and resource alignment in knowledge exploration, Sebastian Heil and Torsten Bornemann, (2017), RADMA and John Wiley & Sons Ltd

the success that they could reach. They aim results in collaboration than alone could not even imagine.
They called this phenomenon: **Co-opetition** (Cooperation and Competition)[6]. With this term it is implied that the key to survive in the marketplace with an intense competition is to work together. Unlike the past, there will be multiple winners that can get a larger and more valuable market.

Finally, a last interesting interpretation of collaboration is given by Humphries and Wilding, they refer with the name of **(C3) Behaviour**[4].
In fact, with this term they describe in a more exhaustive way the concept of team working with actors with different backgrounds. (C3) Behaviour refers to a Co-operative, Co-ordinating and Collaborative team work. The boundaries of the team can be internal or external of the firm, in either the situation the members must respect and share the goals and operate in harmony with all the members, benefiting of the shared results and of the collaborative synergies (Humphries and Wilding 2004). C3 Behaviour is an efficacious strategy to maintain a fruitful business partnership and it is used to create value (Axelrod 1984; Metcalf et al. 1992).

There are two possibilities of External Collaboration:

1. Combining **similar competencies.**
   The partners have knowledge and resources similar to each other's that permit to have available supplementary resources, to create value, to share risks and exploit economies of scale and scope (Knudsen, 2007; Swaminathan et al., 2008)[3].
   In this case, it is difficult generate a disruptive innovation because of the similar background, but it is unlikely to under employ the resources. Because of the returns from exploration seem uncertain and remote, it could be useful incentive the employees to find targets with distinct knowledge with the purpose to develop novel products that provide superior value for customers (Makri et al., 2010)[3].

2. Combining **dissimilar competencies**: the partners have diverse background and complementary resources of the focal firm. In this case, the different configuration and organization of the partner may allow to create synergies exploiting the investment and the experiences to develop an innovative output (Teece, 1986; Swaminathan et al., 2008)[3].

[4] Long Term Collaborative Business Relationships: The Impact of Trust and C3 Behaviour, Andrew S. Humphries & Richard D. Wilding, (2004), Journal of Marketing Management, 20:9-10, 1107-1122

In this case, one complication is the creation of trust among the parts because the menace of exposing critical information to the partner. The major risk is not to pull in full use the complementary resources that don't fit with the project, this could negatively affect the alliance and generate conflict among partners. Otherwise, differences between the focal and partner firms' industry domains allow to reach a higher value of collaborative innovation.

An online survey, of 394 senior global executives, conducted by the Economist Intelligence Unit in 2006[8] will be used to highlight the main requirements and the challenges of a fruitful business collaboration.

A successful collaboration requires:

1. **a formal process to find the right partners**[8]. To find a good one, the companies must identify their goals in advance and have to be supported by key managers and employees. In order to guarantee the process of work it is crucial to decide, before any commitment, the resources, the process to review progress and the milestones.

2. **planning, goal-setting and follow-up**[8]. In accord to the results of the survey if the collaboration initiative is not adequately plan and control, 70% of them fails. Vice versa, with a structured plan and appropriately allocating resources and funds, the percentages are the opposite with only the 30% of failures.

3. **frequent and open communication**[8]. The modern technologies allow to communicate easily and provide the tool to share in a safety way any document of the project. The following image (Table 2-1: Technologies for collaboration) provided by the survey conducted by the Economist Intelligence Unit, shows tools commonly considered "collaborative". Only few of them are really considered effective to collaborate. The most useful are e-mails, web conferences and intranets with sharing online data. The respondents shown a strong desire fort better collaborative technology.

| *Tool* | *How much it is used* | *How helpful it is to collaborate* |
|---|---|---|
| *E-mail* | 96% | 61% |
| *Shared calendars* | 51% | 13% |
| *Intranets with share online data on employees, clients, vendors and projects* | 49% | 23% |
| *Instant messaging* | 42% | 10% |
| *Web conferencing* | 43% | 25% |
| *Document collaboration* | 32% | 16% |
| *Wikia (allowing multiple authors to post and edit articles, building up a body of knowledge)* | 10% | 11% |
| *Collaborative tools for designing products* | 8% | 9% |

*Table 2-1: Technologies for collaboration*

4. **trust among partners**[8]; a supportive environment with strong leadership, incentives, processes and metrics. The biggest challenges that companies in a collaborative environment have to face are the measuring and monitoring of the benefits of collaboration. The following image, (Figure 2-1: Measure of the influence of collaboration in business organizations) provided by the survey conducted by the Economist Intelligence Unit, shows that only the 21% of the interviewed firms measures the benefits from collaborations.
   Some of the other 79% assume that from the start of the partnership the collaboration will be effective, some other try to evaluate it based on time savings and some other add the value to collaboration taking in to account the outputs of the collaborative work.

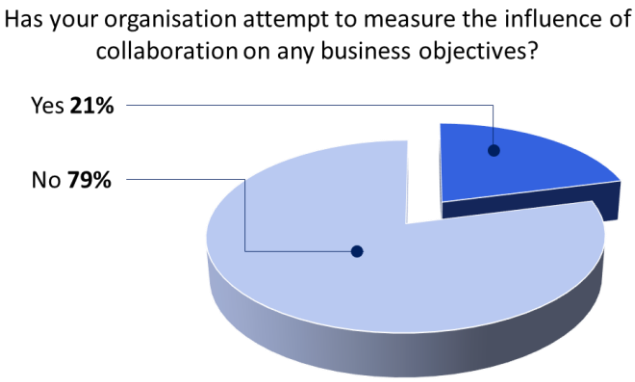



*Figure 2-1: Measure of the influence of collaboration in business organizations*

There are many reasons of the failure of a collaborative business: lack of common goals, miscommunication, perceived inequities, distrust and insufficient resources, etc. However, the most important one, in accord to one-half of the respondents of the survey, is lack of support and an unclear commitment of the executive ranks.

Likewise, organizational tension, complexity, and coordination challenges are not to be underestimated because they are fundamental for performances (Stettner and Lavie, 2014, p. 1906)[3].

Another reason why some companies don't want to collaborate externally is the difficulty to find a measure that confirm the convenience of the collaboration, especially when the results do not reflect expectations.
Measuring and monitoring the benefits of collaboration are a steep challenge for the firms. The results of the survey[8], of 394 senior global executives, conducted by the Economist Intelligence Unit show that only 20 % of the participants have tried to come up with appropriate methodologies to measure the benefits with many difficulties, the results for these companies are usually positive. The other 315 senior global executives did not make this kind of effort, but they recognize the utility of this measure.

### 2.1.2. Firm's characteristics to collaborate externally

A company, before expanding beyond its boundaries with the purpose of being a part of a collaborative team, has to strengthen internally the ability of work in cross-functional team and manage an integrated cross-organizational communication (Miles et al. 2005)[6]. In fact, working in a collaborative environment allows a deeper awareness of the capabilities both of the firm and of its employees.

The ability of open interaction between employees with diverse proficiencies permit:

- to examine a project under different perspectives, to enhance problem-solve and to get the more useful resolutions;
- to understand and to get used of the group dynamics that will be amplify in multiple-companies team work.

Nowadays, the ability of internal cooperation has increased in the firms as well as the will to collaborate externally: the next step is to grow the culture of external collaboration in the companies taking advantage of the internal abilities previously mentioned.
To achieve this goal, it is necessary a vision shared both by the management and employees.

In accord to Miles et al. (2005), Hansen and Nohria (2004), Morris et al. (2005), a company with the ability of collaborate efficiently both internally and externally has to be able to control and manage three main elements that are described in the following figure (Figure 2-2: Internal and External Collaboration)[6]:

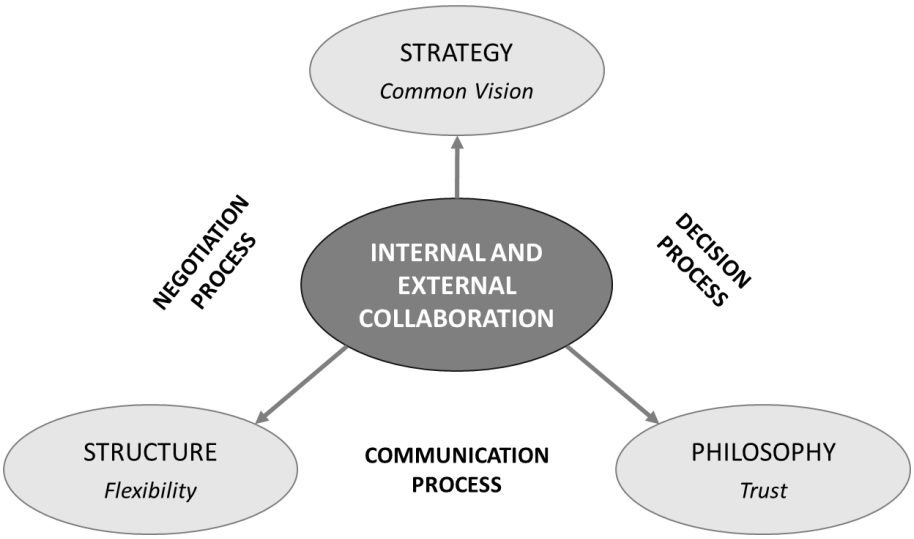



*Figure 2-2: Internal and External Collaboration*

1. **Strategy**: the ability to clearly communicate the main goals of the project and ensure the consistency of the objectives and the involvement of all the partners (Berry 2004).
2. **Structure**: the organization of the company has to be flexible, the internal relationships have to be non-hierarchical to facilitate the sharing of the ideas or

opportunities both bottom-up and top-down and the ability to adapting to the changing of the environment.

3. **Management Philosophy**: it is strictly related to the typology of the structure. The trust among employees and managers and owners is fundamental to share without inhibitions ideas and successfully exploit all the capabilities. Open communication is the key to reach the level of trust that allow to stimulate creativity, innovation, competitiveness and permit to the firm to avoid being stuck in its routines and consider different perspectives.

The combination of these characteristics makes easier some internal processes of firms. For example, the combination between the building of trust and the structuring of a flexible organization simplify the communication process among employees and managers because every idea is listened without repercussions and valorised if are advantageous.
Another one that it is facilitated is the decision process: because in an environment built on trust and in which the company's firm is shared, it is more immediate decide for the firm's interests because everyone agree in what is the best.
Finally, it is simplified also the negotiation process, thanks to the combination of a shared strategy and a flexible structure.

### 2.1.3. Networks

Collaborative businesses have the purpose to extend beyond the comfort zone of a single firm, to grow the network business, to stretch the boundaries of the organization and increase strategic flexibility.
The scope of a network is innovating in the market thanks to the contribution and to the active participation of every partners. This work in synergy will be a benefit both for the partners and for the network itself[5]. To achieve this goal, it is important that the network has a heterogeneous partner structure that brings complementary resources, backgrounds, knowledge, practices and habits[5].

According to R.E.Miles, C.C. Snow, Ø.D. Fjeldstad, G.Miles and C. Lettl, inter-organizational cooperation in the form of innovative network is the collaboration among at least three companies or firms that have the purpose to innovate their businesses together[5]. Instead, T. Heger and M. Boman changed the meaning introducing the concept that the member of a

[5] Networked foresight—The case of EIT ICT Labs, Tobias Heger, Magnus Boman, (2014), Elsevier Inc.

network could be also university and research institute that are non-directly related with the market but that can contribute usefully in the network with their knowledge[5].
They believed that academic could be important asset thanks to their complementarity with the firm's resources and capabilities and that could have a key role to exceed innovation bias.

Networks establish the inter-linkages that permit to distribute and transfer among partners different levels of knowledge and resources[6]:

- cognitive (e.g., team mental models, networked organizations),
- affective (e.g., social support),
- behavioural (e.g., teamwork).

The main characteristic of networks is that they are dynamic: this means that the diverse members usually don't have a fixed role in the team and they shared their internal resources to help each other to achieve the goal estabilished[6]. Likewise, according to Teece, Pisano and Shuen, the partners have to own dynamic capabilities that let them to integrate, build and reconfigure their competencies to change quickly with changing environment and to be complementary with the ones of the other team's members[5].
The relationships built among members are essential because they allow to share competencies, to divide hands-on work, to reduce costs and, sometimes, expenses of development[8]. In the major part of the cases these benefits permit to achieve a better and more successful solution that a single firm couldn't reach[3].

In this context, the negotiation process becomes more difficult to manage because of the increasing number of people involve in decision making (Druckman and Olekalms 2008)[6]. Whit the growth of partecipans also the communication and coordination process become difficultier (Kogut and Zander 1992; Brian et al. 2000; Zahra and Bogner 2000; Antunes and André 2006; Kersten and Lai 2007; Pietroni et al. 2008)[6]. The members a network have to manage more complex problems to achieve their goals.

The interactions with the other actors of the market allow companies to be up-to-date with market expectations and to anticipate new trends, which are fundamental aspects that avoid them to be trapped in their routines and best practises[3].

[6] Overview of Collaborative Entrepreneurship: An Integrated Approach Between Business Decisions and Negotiations, Domingo Ribeiro-Soriano · David Urbano, (2008), Springer Science+Business Media B.V.

Being a part of a network is an important ability of the organizations that want to continue to innovate[6]. According to R. Rohrbeck, the dynamic capability to foresee new business opportunities in a market together with the other partners permit to each partner to renew their portfolio of resources and competences[7].

Because of the high path dependency of the best practises of a single firm, it is important learning how to explore new market maintaining the flourishing old one when there are not business problems and not when a firm risks bankruptcy.
In fact, working in synergy with people with different knowledges permit to get over the bias of the incremental innovation, create novelty value for innovative products/services (Rosenkopf and Nerkar, 2001; Rosenkopf and Almeida, 2003)[3] and improve the efficiency, the productivity, the competitive differentiation and the ability in problem solving[8].

Exploration improves innovation as a firm distance itself from its knowledge base.
The absorptive capacity is the characteristic that allow the company to limit its cognitive distance from a collaboration partner (Wuyts et al., 2005; Nooteboom et al., 2007)[3].

Collaboration is become every day more essential because the environment and the market change quicker than in the past and the firms have to move faster into the unknown, not to grow but to survive.
The collaboration itself will become the key competitive advantage but it requires a cultural shift inside the companies, it is imperative that they learn to work across functions, geographies and corporate boundaries.

In the following chapter will be explained the challenges and the difficulties that firms have to face to explore and to launch new business opportunities in new market.

[7] R. Rohrbeck, Corporate Foresight: Towards a Maturity Model for the Future Orientation of a Firm, Physica-Verlag, Springer, Heidelberg, New York, 2011
[8] Collaboration Transforming the way business works, The Economist Intelligence Unit (2007)

## 2.2. Challenges in growing in new business fields

After the definition of collaboration, I will now focus on the main challenges in developing new business field.
New business fields can be new to the focal firms or new to the world. In both cases the collaborating firms are entering in a market which is not fully defined and where its rules are still unknown and developments uncertain.
Another problem is that companies entering new markets often face the "Chicken and the Egg" dilemma[18]. To justify an investment into a market, firms need to anticipate the market size, which market share they expect and which profitability is possible. New markets cannot provide data on which the firm could build its analysis and there are no other firms to imitate, resulting in an inability to take the decision.

In this chapter are shown two examples used to help the reader to understand the challenges that firms have to face developing new products or services and the risks that they run without innovate.
The first example describes a comparison between a company that failed because of its inability to forecast the changes and another that has understood the market's needs, it changed its business and now it is the leader of the market.
The second describes a comparison between two companies that had tried to innovate in the same market: the first one failed due to the speed with which it tried to develop its project, the inability to develop its own activity and to build a network that sustain the business; the other has focused on a niche of the sector and slowly became of the most important market's players.
The purpose of these examples is to highlight the difficulties of operating in a fast-changing market and the importance of having a clear understanding of the evolution of the market and the customer's needs.

Finally, they are explained the principal uncertainties and how to manage them.

### 2.2.1. Comparison between Blockbuster and Netflix

Managing a business is more complicated than in the past. The cause of this instability is the speed of economic and technological changes. The main worry of a company is to decide for a development of a business that may work in the moment of the decision but could be a disaster for the future. A successful firm can solve these dynamic problems, adapting its

capabilities to the changes: this ability is what separates those who excel from the companies who go bankrupt[9].

Finding the correct path to follow is not easy, especially for the accomplished firms that could be stuck in their profitable business and don't adequately care about the future development of their market. They have the wrong certainty to do not need any change: this bias is the main reason of failure with the misunderstanding of the future development of the market and of the customers' needs.
To survive in a fast environment, it is necessary find the correct combination of the medium and long-term strategies and the ability of change of the firm.
To support the previous statements following there will be described the different strategies of two big companies in the video business: Blockbuster and Netflix. The first one went bankrupt and today the second is the leader of video market.

Since the beginning, the video rental market was high profitable, and it was constantly growing. In fact, the tapes changed the habits of the costumers, thanks to them it was no more necessary go to the cinema or to turn on the television at a planned time to watch the desired film, they had to buy it and planned the vision as the better time for them.
The problem was the high cost of the tape, $75 each, but the rental stores solved it. With the price of a single tape a family could see approximately twelve different videos. Once a tape had been rented a few dozen times it became 100% profitable for the Company. Thanks to an attentive strategy of highlight the films most requested, the video rent was a profitable business model[10].

- **Blockbuster** was founded in 1985 and it became the most famous brand in the film and video game rental market. It adopted the pay-per-rent method, a single rent cost circa 10$ and it was available at every hour of the day and the night, and it defined high late fees and brief due dates. Its business model was a success.
  In ten years Blockbuster obtained 60 million business partners, owned retail stores in 25 countries (including Canada, Australia, New Zealand, Japan, Great Britain, Portugal, Denmark, Israel, Mexico, Argentina and Italy) and built 4800 shops only in the United States.

[9] Forbes, Cheryl Conner, (2013), https://www.forbes.com/sites/cherylsnappconner/2013/03/04/the-8-great-challenges-every-business-faces-and-how-to-master-them-all/#5c05acb63891
[10] Forbes, Jonathan Salem Baskin, (2013),
https://www.forbes.com/sites/jonathansalembaskin/2013/11/08/the-internet-didnt-kill-blockbuster-the-company-did-it-to-itself/#2b90ad666488

In 1994 was acquired by Viacom for 8,4 billion dollars and the company analysed Big Data insights about customer needs. The results were that the consumer was attract by the box office popularity and not by the in-store experience; in fact, they went in the shop only if they had the necessity and not to spend pleasant moments.
From that year the trade decreased, and Blockbuster's strategy to get back on track was to maximize the value of each transaction. They started to sell candies, toys and a lot of other impulse products. Blockbuster became a convenience store. Despite it was a huge empire Blockbuster could not save itself from bankruptcy. It was not able to evolve its business changing based on the new market requests. It is the proof that also the giants can fall down[11].
At the beginning of 2000 because of its inability of being on internet, the company had not the capabilities to concur with Netflix, the pay per view and the online streaming[12] and in 2010 Blockbuster declared bankruptcy. After an acquisition for 233 million dollars by Dish network, in 2013 Blockbuster failed with the closure of the last 300 shops in the USA.

- **Netflix** was founded in 1997. It entered in the market as a rental DVD shop, but diversely from the classical pay-per-rent model it introduced the delivery by post at home of the movie chosen. It started a new method of sale: the DVD-by-mail[13]. The prices and the due dates were similar to Blockbuster, but Netflix introduced two important innovations making its business model more consumer-friendly. The first one was the abolition of late fees and the second ones was the availability of a wide selection of movies. These two benefits were more appreciated than the possibility to rent a video during the night[13].
  In 2000 Hastings, the Netflix CEO, offered to sell 49% of Netflix to Blockbuster but it declined the offer. By 2005 Netflix had 4.5 million of subscribers and it beat out any online efforts of Blockbuster[14].
  Since 2008 it became popular watch streaming videos and the Netflix consumers wanted more and more to watch DVDs rented directly online. The company started

[11] Startupover, Andrea Dusi, (2014), http://www.startupover.com/lincapacita-di-innovarsi-ha-portato-al-fallimento-di-blockbuster/
[12] Wired, Giuditta Mosca, (2016), https://www.wired.it/economia/business/2016/07/08/aziende-non-intramontabili/
[13] Forbes, Peter Cohan, (2013), https://www.forbes.com/sites/petercohan/2013/04/23/how-netflix-reinvented-itself/#642f7fe52886
[14] Business Insider, Tanza Loudenback, (2015) http://www.businessinsider.com/reed-hastings-netflix-bio-2015-8?r=US&IR=T&IR=T

a streaming online on demand service keeping the DVD-rent-by-mail. The streaming was available directly from the customer's device paying a fair subscription. The company separated the identities of the two services: the DVD rental service was offered to Qwikster. Netflix allowed the cannibalization of its own DVD business and aggressively promoted the streaming service[17]. Entering in the streaming market was a success choice for the company that allowed a fast grow accommodating the market requests.

From 2010 Netflix expanded its boundaries in South America and in Europe. At the beginning it couldn't convince studios to grant the licence of the most popular contents[13]. In 2013 to ensure the quality of contents to its customers, Netflix launched the production of original tv series and movies, such as House of Cards. Thanks to its own production of contents Netflix's popularity increased: in 2014 obtained 50 billion of subscribers and 74 billion of costumers. By the end of 2016 Netflix was the leader of the on-demand sector with 93,8 billion of subscriber.

The following figure (Figure 2-3: Comparison between Blockbuster and Netflix) summarised the evolution of the strategy for the two companies during the beginning of streaming online. The graph[15] at the bottom of the figure economically highlights the efficiency and the cost-effectiveness of the different paths adopted.

Nowadays it easy to understand the winning strategy and blame Blockbuster for its choices, but at the beginning of 2000 it was not so evident. In fact, lot of people thought that Hastings strategy of splitting Netflix in two autonomous business – DVD and streaming- was a hazard. However, he was right about the competition between his own services despite it caused a high volatility of shares. It was a brilliant decision because he milked the old DVD business and he used that profit to establish the faster growing streaming business.

*"We started investing 1 percent to 2 percent of revenue every year in downloading, and I think it's tremendously exciting because it will fundamentally lower our mailing costs. We want to be ready when video-on-demand happens. That's why the company is called Netflix, not DVD-by-Mail." (Reed Hastings, 2017)[16]*

[15] Korsgaard's Commentary, Sean Cw Korsgaard, (2013), http://www.korsgaardscommentary.com/2013/11/blockbuster-finally-gone-bust.html

[16] CNBC, Michelle Castillo, (2017), https://www.cnbc.com/2017/05/23/netflix-ceo-reed-hastings-on-how-the-company-was-born.html

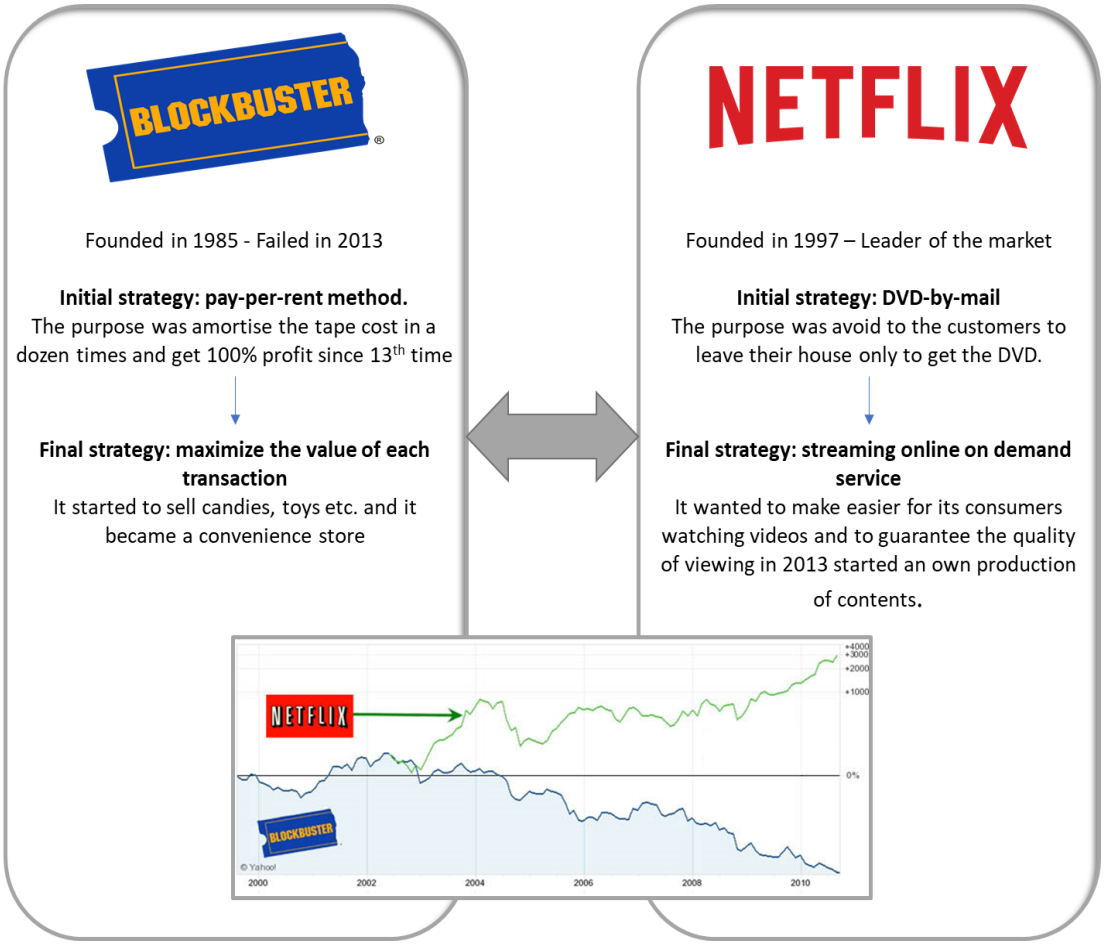



*Figure 2-3: Comparison between Blockbuster and Netflix*

Thanks to the long-term outlook of its CEO, Netflix survived the market transition[17] and established its position as market leader, introducing new strategic branches as the backward integration as provider of contents and the low pricing, with the possibility to simultaneous stream[13]. It is plausible to think that with its background Netflix will be able to find the resources and the knowledge necessary to continue to deliver superior value to consumers despite the fast changing of the technology and of the environment in which it works[13].

#### 2.2.1.1. Lesson learned

Usually the vast majority of the company would not act as Netflix, but they would try to save and extend the core product of the firm as long as they can without understand and care about the evolution of the market and customers need. This attachment to obsolete core product and the cash out impeded the more valuable entrance in the new market[17].

[17] Forbes, Adam Hartung, (2013), https://www.forbes.com/sites/adamhartung/2013/01/29/netflix-the-turnaround-story-of-2012/#1f5dc62e26ab

Blockbuster acted as one of these companies. It tried to save its renting business for too long and went bankrupt. Blockbuster had not technology problems, it would become Netflix but it turned down its offer, but it had a consumer's problem: becoming a convenience store did not give to the consumers the pleasure to visit its store.
The solution could have been to focus on consultative selling helping the costumers to find movies, to suggest new films in line with their preferences and to promote all the library titles (that were pure profit), establishing a solid customer relationship it could get their loyalty and cash out. After that, Blockbuster would develop a predictive engine that would help with the online choice of new film, as later Netflix did[10]. The real Blockbuster enemy was itself.

A company that wants to survive in a fast growth market has to[10]:

- clearly understand the business in which is in;
- be sure to have completely understand the truly "Big Picture" (the contest in which the company works);
- remember that usually the technology alone does not change the world.

The comparison between Blockbuster and Netflix highlights that a strategy that considers the customers' needs and the technological progress appears to be paying off.

The considerations made in the previous chapters are primarily valid for the companies that need to revolutionize their business but, if we consider the new entry of an innovative product into the market, there are other uncertainties and considerations to discuss.
New business opportunities are characterized by a multi-dimensional uncertainty. A company that wants to enter in a new business field has to face with many questions and for each one has to find an answer. The main uncertainties regard: the market size, the presence of a real demand, the willing to pay of the customers, the ability of the firm to satisfy the demand, the need of the customer, the choice between the development of a product or a service or a hybrid, the profitability of the new business etc.
This multidimensional uncertainty translates into the "chicken or egg" dilemma: the inability to determine whether it is better to establish before the technology or properties of the final product, because they affect one another[18].

[18] Strategic foresight for collaborative exploration of new business fields, Tobias Heger, René Rohrbeck, (2011), © 2011 Elsevier Inc.

### 2.2.2. Comparison between Better Place and Tesla

In the following paragraph, to better understand the relevance of the dilemma, is described as example one of the most discussed topics of our days: zero emissions transportation. The development of the electrical car has been approached in many ways, but one interesting comparison is between two different companies that prioritised different aspects: Tesla Motors, that focus on the engines and on the maximization of the autonomy of the batteries, and Better place, that focus on electric infrastructure to minimize the time spends on charging and to automatize battery swap out[19].

**Better place** was a start up with an ambitious goal: switch all the cars in circulation from gas or oil to electric power. Shai Agassi, the start-up CEO, started the project with a clear, green and sustainable vision: make affordable the electrical car and to achieve this goal he would have to eliminate oil industry. This idea came from as an answer of a simple but at same time revolutionary question: "How do you make the world a better place by 2020?"[20].
Agassi found the solution of this problem in electrical cars.

Analysing the electrical cars, he found out that they were less attractive than the traditional ones because of their high price, the limitative autonomy of the battery and the high time of charging. To increase the attractiveness of electrical power he decided to make a business plan based on the battery, and he decided to literally separate the battery from the car. In this way, Better Place could have solved the problem of battery autonomy and time of charging.
In fact, with an autonomous battery-switching chain spots and an autonomous robot it could have been possibly to change the out of power battery with a fully charged one in about 5 minutes. The switching would have been faster than a traditional charging and more convenient than an oil refuelling, as it is shown in the following figure (Figure 2-4: Automated battery swap out station).

The batteries would have been a Better Place's property and that would have allowed to reduce the price of the car and to improve the battery technology[21].

[19] Clean Technica, Andrew Meggison, (2014), https://cleantechnica.com/2014/05/01/shai-agassi-project-better-place/
[20] Better Place: "leadership team: Shai Agassi ", Archived 2010-05-06 at the Wayback Machine.
[21] The Guardian, Marc Gunther, (2013), https://www.theguardian.com/environment/2013/mar/05/better-place-wrong-electric-car-startup


*Figure 2-4: Automated battery swap out station*

Better place revolutionary goal to transform global transportation was approached differently from the car makers: its business plan was similar to the telecommunication industry, in fact they would give the car (the smartphone) to customers at an affordable and promoted price and they would earn from subscriptions charging plan (the minutes and internet plan) to a chain of automatized spots.

He founded a conglomerate – venture that was focus on the charging network instead on the car. To make this platform alive he needed the contribute of different actors:

- someone who developed the car with the possibility to change the battery;
- someone who defined the standards and the policy;
- someone who incentivized the population to buy the electrical cars;
- someone who gave subsidies for electrical cars.

Agassi started the search of the partners: he built up a fruitful relationship with Israel, his home country, and after he created independent groups of managers for government of United States, Denmark and Australia. He also wrote a contract with Nissan and Renault commissioning the electrical car with the changeable battery.
The start-up was founded in 2007 and it obtained $850 million as first round of investments, it was supported by eminent investors as HSBC Group, Morgan Stanley, General Electric, Vantage Point Capital Partners, and the conglomerate Israel Corp., its biggest shareholder. The Danish and Australian enterprises raised their own funding from such local partners as DONG -Energy, Denmark's giant utility.

It was a great moment to start an enterprise in the electric-car industry because at that time it was consisted almost only of Tesla Motors, a firm that had a completely different business, they sold their two-seated sport car with a starting price of $100.000 instead Agassi wanted to sell a family car for $20.000, or in the final stage give it for free[22], to support that price it planned to sell 100,000 Renault cars between 2011 and 2016 in Israel and Denmark.

Better Place was one of hottest clean-tech investment opportunity in the world and for a few years it truly was winning. However, in 2013 Better Place went bankrupt, the most stunningly failed technology start-up of the 21st century[22]. It sold only about 750 cars in Israel with a growing loss of more than $500 million[21].
The main reasons of this failure were:

- the lack of automotive experts or manager with experiences in the automotive industry[22];
- the unclear deal with Renault. Agassi thought that he could have the car for $20.000, and sell it for the same price to the costumers or in a second moment for free, despite Renault never agreed with that price and it sold each car to Better Place for $32.000[22];
- the insufficient support from the countries, as Israel. Shimon Peres, the former Israeli president, didn't provide the subsides to electrical vehicles as they agreed[21];
- the wrong assumption that other automakers will start to produce cars with the Better Place's battery-swapping technology[21];
- the megalomaniac behaviour of the CEO over dimensioned the mission[23].

Despite the failure, Better Place is a great example of a network with concrete opportunities to get a huge revolution. If Agassi would have managed in a diverse and more efficient way the partners, Place could have reach its goals and maximize the positive externalities for the environment and for the citizens of participating countries. This potential was understood also by the first Better Project's competitor: **Tesla Motors**.

[22] Fast Company, Max Chafkin, (2014), https://www.fastcompany.com/3028159/a-broken-place-better-place
[23] Tablet, Daniella Cheslow, (2013), http://www.tabletmag.com/jewish-news-and-politics/135816/ev-better-place-agassi

In fact, Elon Musk built up a less ambitious and risky business plan: he focused on the batteries autonomy, he placed a lot of cheaper plug-in charge spots and only after consolidating this business he decided to explore the battery-swapping technology[23]. In 2013, after circa a month from Better Place bankruptcy, Tesla proposed its battery-swapping technology, but not for free as Better Place, for a fee ($60-80) for each battery change[24]. The goal of that project was less ambitious than the one of Better Project, in fact Musk's purpose was to permit to travel from Los Angeles to San Francisco thanks to the battery-switching stations, in which customer could have paid for an immediate charged battery or could have wait and have free charge by plug-in[22]. He did not plan to cover an entire country with his battery-switching stations.

However, before we make a comparison between the two companies, in the following paragraphs it is analysed the evolution of Tesla Motors' strategy, a company that in 12 years transformed itself from a start up to an important automaker[25].

In 2003 in Silicon Valley Martin Eberhard and Marc Tarpenning founded the firm with a clear vision: prove that electric car could be better than gasoline-powered car. It would be powerful and aesthetically pleasing as the traditional car but with the supplementary characteristic of being totally green, without emissions[25]. The founders pursued their goal developing, from 2004 to 2008, their first model "The Roadster" showed in the following image (Figure 2-5: Tesla Roadster (2008)).

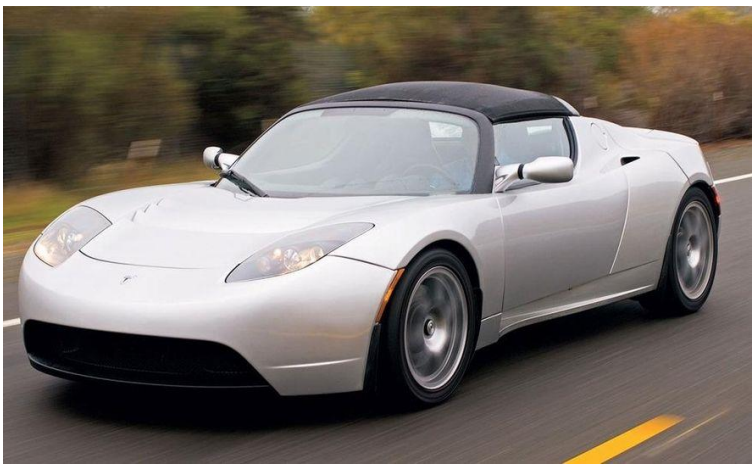


*Figure 2-5: Tesla Roadster (2008)*

[24] Forbes, Mark Rogowsky, (2013), https://www.forbes.com/sites/markrogowsky/2013/06/21/6-reasons-teslas-battery-swapping-could-take-it-to-a-better-place/#5fc01a1346d9

[25] Investopedia, Amy Wu, (2016), https://www.investopedia.com/articles/personal-finance/061915/story-behind-teslas-success.asp

In 2008 Elon Musk became CEO and he evolved the mission of the company[26]:

*"…to accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible".*
*(Elon Musk, 2013)*

This mission has to be interpreted as a long-term goal, as a point of arrival. In fact, the founders were aware the as start-up they did not have the skills and the economies of scale to satisfy the mass market: initially they decided to approach the luxury market, particularly they first develop a high-performance electric luxury sport car. In this way they could concentrate only on the success of the car, taking into account both an engineering and design point of view, without worrying about the final price and being concretely competitive with the gasoline alternatives.
The success of the company is to be attribute to the focus on the launch of one product at time. Musk started to develop a mass market car only in 2015: in fact, the Model E will be available by the end of 2017 with a price under $40.000[25].

The Tesla's business is based on three aspects to take care of its clients, accompanying them from the selling to the charging of their electrical car[26]:

1. **Direct sales**. Tesla has created an international network of showrooms in which they sell directly their cars. Unlike its competitors, they decide to own their showrooms because they consider a competitive advantage the chance to improve the customer care and experiences inside the shops and to deeply understand the needs of their clients being at their service. These practises allow to develop faster new and esteemed products.

2. **Service**. Tesla has merged the sales and service point in luxury showrooms in the centre of the most important city in the world. This combination allows them to expand retail concept called "service plus".

3. **Super charger network.** One of the greatest obstacle to electric vehicle was the necessity of refuel during long trip. To facilitate the adoption of electric cars and permit to their customers a fast and complete charge, Tesla build its own charging station all over the world and it continues doing that.

[26] Investopedia, Kristina Zucchi, (2015), https://www.investopedia.com/articles/active-trading/072115/what-makes-teslas-business-model-different.asp

This is a successful business model that allowed to show to the world that compelling electric cars are competitive in the market. Tesla represents a bridge between the old and new ways to develop cars. Probably thank to its strategy it would face the challenges of the future and survive to them[27].

#### 2.2.2.1. Lesson learned

The first of main characteristic that diversifies Tesla from Better Place is the focus on a product at time. The last company has tried to merge numerous interest of diverse actors of the network, from carmakers to citizens to governments. Instead, Tesla has only care about its own business[24], this strategy has permitted to the company to sell more of the Model S than Renault ever sold of that Fluence and this is an advantage that growth over time that Better Project never had.

The second one was the character of the two companies: Better Place leased batteries and Tesla is an automaker. This distinction explains why they have treat in two different ways the swapping technology: Agassi hoped to profit from this activity and Musk was aware that initially it will be an important cost.
Moreover, Tesla did not develop simultaneously with Better Project the swapping-battery because its initial incomes were based on Zero Emission Vehicle credits to other auto manufacturers and probably the California Air Resources Board would not give Tesla additional credits for the battery change project, they prioritised to not die in their debts[24].

The previous examples highlight multiple uncertainties, now in the following bulleted list there are summarize and rationalise the main reasons way many companies hesitate before entering in new business fields[18]:

- the complexity to identify correctly the financial potential starting from an excessive amount of information[18];
- the recognition of the explicit and tacit customer's needs and the correct channel to reach and communicate with them[9];
- the developing sectors don't emerge from the monitorization of concurrency[18]. The innovative information come from a proactive behaviour: the lack of an efficient

[27] Business Insider-Nordic, Matthew DeBord, (2017), http://nordic.businessinsider.com/tesla-business-model-in-trouble-2017-5?r=US&IR=T

managers' problem-solving competency could be the cause that limit the growing of the business and identify risks correlated to the new opportunities[9];

- the identification of the right talent and capabilities that are needed to the development for the new business/product and to ensure the growth of the firm. An organization has to hire the most valuable people balancing the use of capital[28];

- the fear that the new business opportunity could cannibalize the current product/service[18];

- the focus on short-terms goals, that permit to the firm to survive, instead a long-term plan. This is a temporary solution because the failure of a strategically long plan term could cost the bankruptcy of the company[9];

- the size of a company. If it is over-structured and the hierarchy blocks essential information for the future of the firm, the inertia will prevail and the company will become too slow to adopt the necessary changings[18],

- the changing regulatory environment could stop the entry in a new business for the fear to invest in the wrong technology[9].

Some of these uncertainties could be solved with a change in the company behaviour, some of them could not be solved in any way and some other could be explained by different methodologies of strategic foresight, that will analyse and explain in the appendix.

[28] Forbes, John Hall, (2013), https://www.forbes.com/sites/johnhall/2013/11/03/12-challenges-faced-by-the-fastest-growing-companies/#4470ef47657e

## 2.3. Strategic Foresight and Strategic Business Development

This chapter has the purpose to define and explain what Strategic Foresight is and build the basics information to understand the application in the New Approach described in the next chapter.

In the last years Foresight became increasingly accepted and the vast majority of researchers, academics and managers recognise its importance, above all for the growing need to find solutions to keep up with the fast market changes. The exploration of market and the recognition of new business opportunities are made increasingly in network[5].

Strategic Foresight is the managers' ability to foresee the future and create new development possibilities for the company that they manage. Foresight is essential in the company strategical plan, in fact it could[18]:

- support the research of new business field by proactive **scanning**;
- support the management to understand the **interdependency** between the numerous information and their economy potential. Above all, the Strategic Foresight is useful in case of multi-dimensional uncertainty because it can analyse the situation under different point of view and permit the managers to understand better the interests of the different stakeholders;
- incentivize the **integration of the management**, removing the filters between the diverse level, permitting in this way a free flow of ideas (about new markets, changings, etc.) without the fear of the cannibalization of the present business. In this manner the top management could do a more aware decision-making;
- **avoid corporate** inactivity and the inability to seize new business opportunities because of the incapability of a fast changes.

In this thesis I will focus mainly on the ability of individualize new strategic opportunity.
Before proceeding, it important define the meaning of *strategic opportunity*.
A strategic opportunity is a course of action that aim to achieve positive and valuable MVP (minimum viable product), it can have a stronger or lower interdependency with the resources, with knowledges and with internal/external activities[29].

[29] Giovanni Gavetti, Anoop Menon (2016) Evolution Cum Agency: Toward a Model of Strategic Foresight. Strategy Science 1(3):207-233

The following quotes represent an evolution of the Strategic Foresight's interpretation that will be used in the New Approach, described in the following chapters.

The first one[30] highlights the ability of Strategic Foresight to anticipate interpreting different signals the market changings and customers' needs, permitting to the companies to develop new products/services that satisfy them:

> *"Foresight marks the ability to see through the apparent confusion, to spot developments before they become trends, to see patterns before they fully emerge, and to grasp the relevant features of social currents that are likely to shape the direction of future events." (Tsoukas, 2004)*

The second one[31] adds to the definition of Tsoukas, the ability of Strategic Foresight to involve all the stakeholders, to realize more successfully new business opportunities, and to collaborate instead of competing, to get the necessary competences and resources to enter in unexplored market segments:

> *"Corporate foresight permits an organization to lay the foundation for future competitive advantage. Corporate Foresight is identifying, observing and interpreting factors that induce change, determining possible organization-specific implications, and triggering appropriate organizational responses. Corporate foresight involves multiple stakeholders and creates value through providing access to critical resources ahead of competition, preparing the organization for change, and permitting the organization to steer proactively towards a desired future." (Rohrbeck R., 2015)*

To better understand the importance of Foresight there is a brief description of its historical evolution and the most used methods in appendix (I. Foresight historical evolution and most common methods).
In this enlightenment it is explained that one of the main literature's focus is on **Corporate Foresight** because its tools help the employees and managers to develop an innovative way of thinking, to be more proactive and to find long-term solutions to keep up their firm[31].

[30] Tsoukas, H., Shepherd, J., 2004. Managing the Future: Foresight in the Knowledge Economy. Blackwell Pub, Malden, MA, USA.
[31] René Rohrbeck, Cinzia Battistella, Eelko Huizingh (2015), Corporate foresight: An emerging field with a rich tradition, Technological Forecasting & Social Change 101, 1–9.

Another one is the **Model of Evolution cum Agency** developed by Gavetti G. and Menon A. (2016)[29] in which he described how managers can forecast successfully the future development of the market. They merged three diverse views: the Evolutionary view, the Cognitive view and the Economic view. The final concept it is that a manager to foresee the future have to rely upon his experiences: if the new challenges are similar to situations that they already knew or that are correlated to them, they could easier understand the boundaries conditions to foresee correctly the signals and correctly interpret the economic potential of the opportunity analysed.

An emerging issue is **networked organizations** correlated with Corporate Foresight, in fact has the same purpose to analyse the market in a fast-changing world to launch innovative business opportunities not as a single firm but as a multiple-firms team, this permit to develop bigger project sharing resources and knowledges[51].

I want to focus on method that characterize the Corporate Foresight and that, in my opinion, could represented the base of thinking also of the other methods previously cited.
These habits help single firms to explore markets with the purpose to identify new business opportunities: to achieve this goal it is important to individualize and to define what are the trends (perception), to analyse and evaluate the implications of each of drivers (prospecting) and finally actively test the ideas' value on the market developing the product/service (probing)[32].

This set of practices is also known as the 3P Method:

1. **Perceiving**[32] usually begins whit the necessity of a firm to improve its knowledge of the environment in which works, reducing the blind spots (Day and Schoemaker 2004, Winter 2004).
   To be more aware of the opportunities of the market it is essential individualize the trends that characterize it. The result of this procedure is the identification of ideas the could be or clear and structured or unclear and vague. Each idea has a different level of uncertainty (ease of predicting its evolution) and for the most uncertain it could be useful adopt specific foresight tools that can help to understand the future changes and to better explicit their evolution (Vecchiato and Roveda 2010).
   The ideas will be classified with different criteria (for example impact, dimensions, sector or feasibility) depending on the firm's focus: with this list should be more

[32] Jakob Højland & René Rohrbeck (2017): The role of corporate foresight in exploring new markets – evidence from 3 case studies in the BOP markets, Technology Analysis & Strategic Management

explicit the drivers of changes in the analysed environment (Peter and Jarratt 2015) and this better awareness of the future allow the companies to be more competitive (Rohrbeck 2010).

2. **Prospecting**[32] is composed by practices that allow to better understand the ideas identified in the Perception and to transform them into insights.
   To recognize the value of the insight are adopted specific methods (as scenario planning) that permit to define and plausibly foresee, reducing the level of uncertainty, their future development (Gavetti and Menon 2016). In this way the firms can be aware of the risks of each opportunity and decide which opportunity develop, being informed about the consequences that the choice will bring. In this choice the decision maker has a key role because his experiences and his background will influence the final decision (Vecchiato 2015).
   To achieve this decision in this phase there is a new market exploration for the individualization of systemics effects in which a lot of trends are involved and they influence and depend to each. This intercorrelation generate a high potential change and customers' interest. When they reach these conditions, they are in turning point because they become mainstream and their demand exponentially increase (Gladwell 2001).

3. **Probing**[32] is the last phase. There are two ways to approach it. In a first interpretation firms are directly involved and they have to act to verify if their insights, identified in the previous phase, are really successful. It is the phase of revolution, in which the firm starts a new path to embrace the change, for example establish strategic partnerships. In another interpretation firms use this phase to experiment with the purpose to obtain insights (Gavetti and Levinthal 2000), for example prototyping a new product.
   In both the two interpretations the firm can go beyond the internal boundaries and involved external partners to be helped to find or develop innovative solutions, this practice is increasingly become common (Rohrbeck, Döhler, and Arnold 2009).

The sequence of these phases has not to be necessarily linear, as it is shown if the following figure (Figure 2-6: 3P Model iterations), for example Probing, as phase of action, could precede Prospecting to generate insights. Together they constitute an iterative process that aim to transform general ideas, before in concrete insights, and then in innovative and successful products/services, from each iteration the firm learn something new and useful to understand the changings.

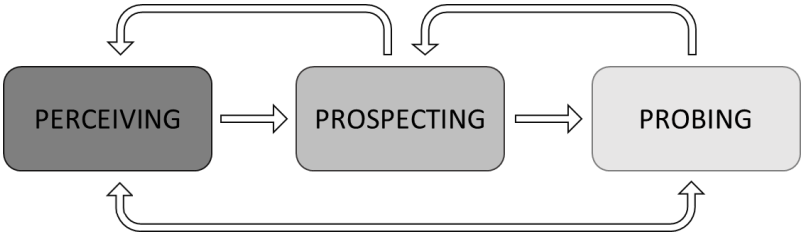



*Figure 2-6: 3P Model iterations*

Recent studies (J. Højland and R. Rohrbeck 2017)[32] suggest using the 3P Method in the initial phase of the market exploration to avoid the risk to un-identify some valuable opportunities. They also confirm the importance of the iterations among Perceiving, Prospecting and Probing, in fact the most successful projects went through a lot: a possible explanation is that multiple iterations allow to collect more feedbacks and analyse the same ideas with different perspectives.

In new market exploration it is fundamental balancing cognitive search (Perceiving, Prospecting) and practical search (Probing), they are both equal important because with the first one is it possible to identify long-term opportunities and with the second one test them giving feedbacks that that could give rise to new opportunities or improve the characteristics of the insight before the market launch[32].

This chapter represent a solid base for the description of the Foresight used in the New Approach.

## 2.4. Guiding theoretical framework

After taking the reader through the literature about collaborative business exploration, in this chapter I want to briefly highlight the main concepts that the he has to have understood before proceeding with the reading of the New Approach (chapter 6, PROCESS MODEL ).

Nowadays the vast majority of market change faster than in the past and frequently the firms don't know how to keep up with the new customer needs and the novel market trends. In this context, it became increasingly necessary to go beyond the firm's boundaries and collaborate with partners with different backgrounds, capabilities and techniques to individualize long-term solutions, new competitive advantages and innovative product/service to meet the costumers' needs[2].

Collaborating in networks can be advantageous for all involved parties. In fact, each partner makes available its own resources, both financial and physical, and its capabilities to achieve the common goal of finding opportunities that reflect the new market requirements. By pursuing this goal collectively, they can aspire more ambitious results, that the single company could not think to get.

It is important to build a network in which there is trust among partners, frequent and open communication[8], and where partners share a common goal. Otherwise, the collaboration between partners with a selfish interest would be counter-productive.
Another important aspect is the variety of the knowledges inside the team: Heger and Boman describe that a network is not only a team made up by multiple firms, but that for better results it would beneficial to involve academic partners and research institutes, because they will be able to contribute different expertise and perspectives[5].

To build-up a multi organizational team with these characteristics it is important to establish a formal process to find the right partners and define a plan to achieve the target scope[8]. If a firm is used to collaborate internally, Miles et al. (2005), assume that it is also more probable that it will be able to collaborate efficiently with external partners[6].

To conceptualize business exploration in networks of organizations we use as mind set the generic strategic foresight framework, for single firms, that is organized along the three phases perceiving, prospecting, and probing (3Ps)[32]. The three phases work together in an iterative fusing. The framework has been used to describe strategic foresight approaches in single firms but is sufficiently generic to be also adopted for networks of organizations. In the

following figure, Figure 2-7: 3P Model used in a network, are represented the diverse phases and how the partners of the network are involved in the opportunities creation process.

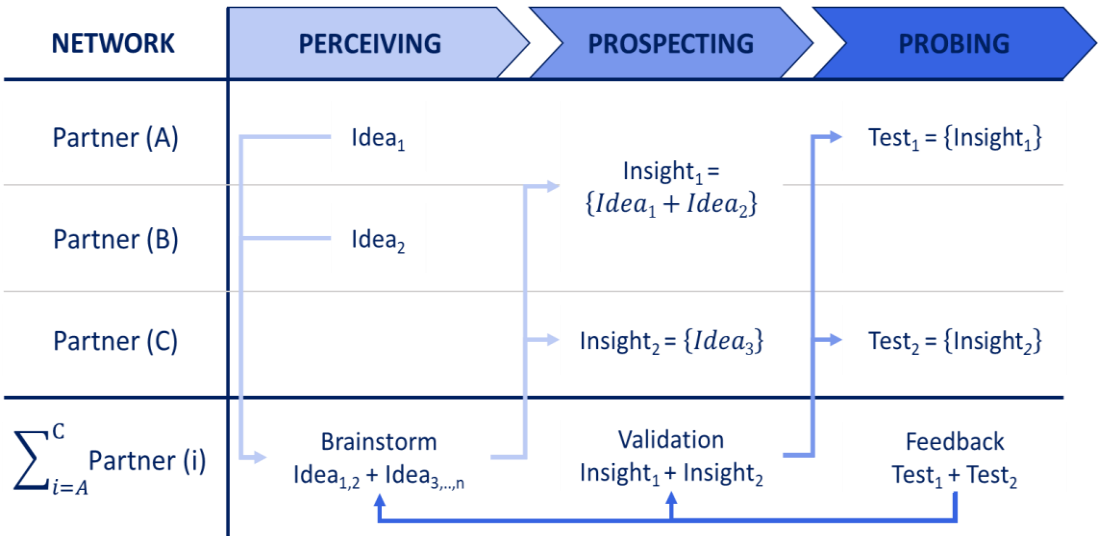



*Figure 2-7: 3P Model used in a network*

The size of a network could vary depending on the purpose, generically I define it as the set of partners, $\mathrm{Partner(i)}, \mathrm{i} = 2, \dots, \infty$:

$$N = \sum_{i=2}^{\infty} Partner(i)$$

They could be firms or university and R&D centre. There are no limits to the number of members of a network, but to explain the application of the 3P Model I will use one composed by three partners: $N = \{Partner(A), Partner(B), Partner(C)\}$.

The purpose of the Perception phase is to understand the megatrends of the market analysed and define some creative and innovative ideas of possible business opportunities. In the definition of the ideas not necessarily all the partners are involved but they are in the brainstorming moments in which they discuss about the findings and they create new business possibilities. For example, in the figure (Figure 2-7: 3P Model used in a network) the Partner(C) doesn't generate any idea but he is involved during the brainstorming in which together create new ideas ($Idea_{3,\dots,n}$).

In the second phase, Prospecting, the aim is to deeply analyse the implications of each idea and define them concretely and objectively. The ideas that complete this phase became Insight, opportunities better understood and described. Usually partner work on the ideas

that best fit with their background, it can happen that some partners analyse together a group of ideas to better understand their value; for example, Partner(A) and Partner(B) work together on $Idea_1$ and $Idea_2$. As in the previous phase, all the partners meet together to discuss about the results and validate them, also during these meeting it is possible that they create new ideas.

Finally, during the Probing phase, there is the active test of the Insights ideas: it is valuated the feasibility of the opportunities, they are developed and launch on the market. Not all the partners are directly involved in the development or in the field test, are chosen the partners with more experiences. Also in this phase, some partners can share their resources and work together. All the partners have to participate in meetings in which they share the feedbacks collected in the field that could be used to generate new ideas or to improve the understanding and the definition of the insights.

The three phases have not to be done linearly but they iterate until the partner achieve the results established: concrete and profitable business opportunities ready to be launched in the market.

# 3. METHODOLOGY

I this section of the thesis I want to explain the method with which the New Approach, described in chapter "PROCESS MODEL ", has been developed: the Design Science Research Methodology (DSRM).

I decided to use this method because I think it is optimal for the research setting and for answering the thesis' research question. In fact, the development of a methodological approach valid for every network involved in a market exploration is complex and it is impossible to achieve in only one time. Multiple consults and feedbacks are needed to achieve the results expected and DSR method, thanks to the possibility to iterate it many time, allows to improve gradually the findings and to obtain an exhaustive artefact.

In the following chapters initially, I will illustrate the DSRM, how I have implemented it, together with René Rohrbeck and Matthew Spaniol, to develop the innovative approach (chapter 5,PROCESS MODEL ) and finally I will underline the importance of the iterative designing, key feature for this method.

## 3.1. DSR – Design Science Research

Design Science Research is a modern method born few decades ago that has the purpose to generate and to define artefacts with the aim of finding exhaustive solutions for concrete problems[33]. It has the goal to ensure both pertinence and rigor in prototyping research projects[34].

The DSR approach has its root in the Engineering and Computer Science disciplines but can also be applied in many other disciplines. DSR has been used in many studies, in fact thanks to engineering disciplines, it is generally considered a valid and respected research methodology. In addition, the explicit value connected to the utility of the artefact has raised the popularity[35].

Design Science Research is a methodology, in other words Eekels, and Roozenburg (1991)[35] defined it as set of procedures and principles used to explore specific knowledge field.

[33] Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. MIS Quarterly, 28(1), 75–105.
[34] Weber, S. (2010). Design Science Research: Paradigm or Approach? In Proceedings of the 16th Americas Conference on Information Systems (p. Paper 214).

Usually it is composed by three main elements: principles to define the meaning of the research, applicative rules and the process, that will be followed to aim the solution.
The methodology also is usable by the researchers to present and published their result in a rigorous way, accepted and understandable by all the research community[35].

The scope of Design Science Research is utility[33].
The Design Science Research principles can be recapitulated in the creation and the evaluation of an artefact through a rigorous design process that has to identify the problem
The scope is to define the goals that the researcher want to achieve (the solutions of the problem), to evaluate the concrete solutions obtained and to efficaciously communicate them to the interested audience[33].
The designed model allows to represent a real-world representation, this is fundamental for develop future research or improve the understanding of the current one[34].

The DSR is also a mental model in fact, it is construct by the perception, the creative thinking and a deep awareness of the problem's context. It sets the researcher's mind to create a process that permit him to analyse the problem, to specify the solutions and to define severely the artefact and the outputs[35].

An artefact is created with the purpose to tackle a specific problem[33] and it has the goal to be a relevant and rigorous solution, on a higher level of abstraction[34], for heretofore issues. It is evaluated considering diverse aspects among which the most important are quality, efficacy and utility[33].
An artefact could be any designed object that has been developed embodying the research contribution for a defined problem and creates utility for its stakeholders (March and Smith, 1995)[34].

To describe the DSR I am referring principally to K. Peffers et al. (2007). In fact, in their study they present the phases of DSRM in accord with seven important previous researches, with the purpose to define a methodology that can be commonly used as a framework for the future researchers.

The broad consensus on content is what enhances their explanation of the method.

They identified six main phases that characterize Design Science Research, also previously identified by Hevner et al. (2004)[33], that are represented in the following figure (Figure 3-1: DSRM Process Model):

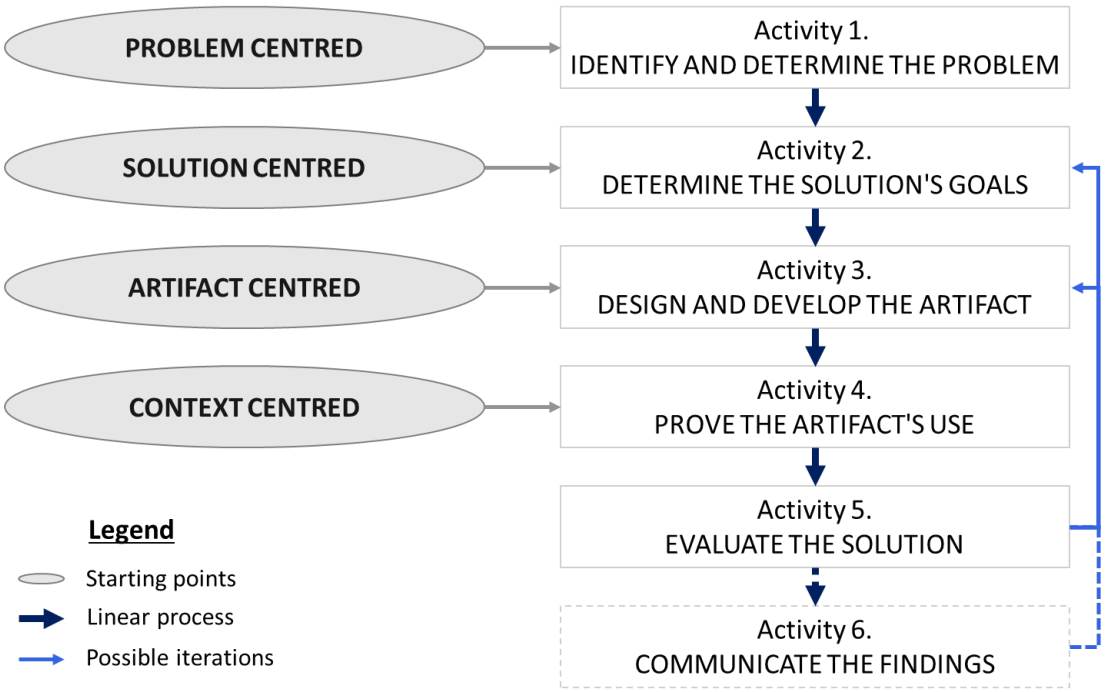



*Figure 3-1: DSRM Process Model*

I. **Identify and determine the problem**[35].

In this first phase the focus is on the definition and the explanation of the problem and of its solution.

It is important specify in detail what is the value added of the solution because it is the basis on which the artefact will be developed.

The deeper specification of every detail of the problem helps both the researchers and the stakeholder of the findings to understand the implications of the problem and its solution. The stakeholders, aware of the researcher's reasoning, could better use his results and aim to improve them.

It is fundamental have clear the definition, the current state of the problem and the importance of the implications of its solution, because are the basis to develop the artefact. In fact, the design of the artefact is an iterative process and it is defined incrementally, it doesn't correspond to the problem's solution.

[35] Peffers, K., Tuunanen, T., Gengler, C. E., Rossi, M., Hui, W., Virtanen, V., & Bragge, J. (2007). A Design Science Research Methodology for Information Systems Research. Journal of Management Information Systems, 24(3), 45–78.

II. **Determine the solution's goals[35].**

The researcher must understand the feasible scopes of the problem's solution because they will be the main characteristic of the artefact.

Usually they are obtained by the rational analysis of the problem. Thy can be quantitative, if it is possible define some parameters with which compare the results with the current situation, or qualitative, if it is only possible define how the new artefact can improve and solve the current problems and not the future ones.

III. **Design and develop the artefact**[35].

In this phase, it is concretely defined the artefact: the main functions and the architecture are specified, considering the goals identified in the previous phases.

There are different ways to interpret the definition of an artefact: Peffers et al. (2007)[35]retained that it is anything that has been developed embodying the research contribution in the design.

Hevner et al. (2004)[33] defined it as construct, as model, as method or as an instantiation.

Järvinen (2007)[35] described it as an innovative characteristic of a whichever resource.

IV. **Prove the artefact's use**[35].

This is the phase of the demonstration of the successful artefact's application: the researcher must prove, with test on field or experimentations or other structured activities, that it can completely or partially solve the problem for which it has been designed.

V. **Evaluate the solution**[35].

It is the evaluation of the artefact's ability to realize a valuable solution for the initial problem.

The researcher has to compare the results achieved with the established goals and measure them through an appropriate analysis technique, depending on the nature of the problem and of the artefact.

Usually, if the artefact allows it, is preferred a quantitative analysis in which are measured the current parameters and compared with the previous ones; if the solution is qualitative is harder to define the improvement but is possible comparing the present functionalities with the previous ones or doing logical proofs.

At the end of the evaluation the researcher could be satisfy of the results achieved and proceed with the final phase or he could iterate back to the phase of the artefact development and improve its efficacy.

VI. **Communicate the findings**[35].

This phase is not compulsory but the vast majority of times it has been done.

The researcher summarizes all the information relevant for his readers: starting from the importance and the definition of the problem, the goals, the artefact, until the novelty and the effectiveness of the results achieved.

The Design Science Research Methodology has been presented as a linear process in which is respected the sequence of the six phases. However, it is not compulsory that the researchers follow this structure: they can adapt the method depending to the necessities and to the typology of their research, starting from any step and deciding the sequence of phases that they retain more useful[35].

For example, a research centred on the problem will start with its definition and it will probably follow the six phases, because at the beginning it has to start with the identification and the definition of the problem.
Another one based on goals and solution will start from the second phase. These first examples could be triggered by previous researches or by requests from the external environment.

An artefact centred approach, that starts in the third phase, should be the result of an existent artefact that can be adapted and can be the solution of different problems.
Finally, a research based on the context will start from the fourth phase because it has the purpose to generalize practical solutions that work to be adapted also to another context.

The main characteristic of Design Science Research Methodology, that differentiates it from other methods, is the iterative designing: because of this importance this aspect will be describe in the chapter 4.3 “Quality assurance mechanism”.

## 3.2. Application of the method

In this chapter I want to explain how I used the Design Science Research (DSR) method to develop, together with René Rohrbeck and Matthew J. Spaniol, an innovative methodological approach to explore new markets, that it will be described in the chapter 4, PROCESS MODEL .

In chapter 4, it is not defined how the Design Science Research Methodology has been applied, because I focus only in the detail description of the final iteration of the approach; for this reason, in this chapter I briefly explain the process with which we designed the proposed version.

Our research is an intermediate version between the "solution centre" and "problem centred" typologies: in fact, since the beginning they were clear the main characteristics of the problem and the main solutions that we wanted to achieve.
The main aim was the design of a process that should have to guide the external collaboration between several partners in the identification of new business opportunities in any market. While, the problem was the lack of achieving satisfactory results in projects managed by networks, especially in the European panorama; the reason for these failures was usually linked to the inefficient management of both the resources and the available skills.

These two inputs allowed us to define the artefact of our research: it is an approach, consisting of steps to be followed and tools to be used, which defines a method through which a network, composed by at least two partners with diverse backgrounds, can effectively and efficiently explore a market of interest and identify new concrete future business.

Referring to the six phase of K. Peffers et al. (2007), it is possible divided them in two main groups[33], that can also represent the main practicable iterations of DSR:

1. **Building of the artefact**: composed of activities 1,2 and 3 (Identify and determine the problem, Determine the solution's goals and Design and develop the artefact). This group of activities have in common the goal to produce and define an innovative artefact that it will be the solution for a concrete and real problem and it will be the basis for the future ones[33].

2. **Evaluation of the artefact**: composed of activities 4,5 and 6 (Prove the artefact's use, Evaluate the solution and Communicate the findings). These activities otherwise, aim to evaluate if the artefact's results correspond with the desired solutions of the

problem, to give feedbacks to improve it and to communicate to the stakeholders the findings[33].

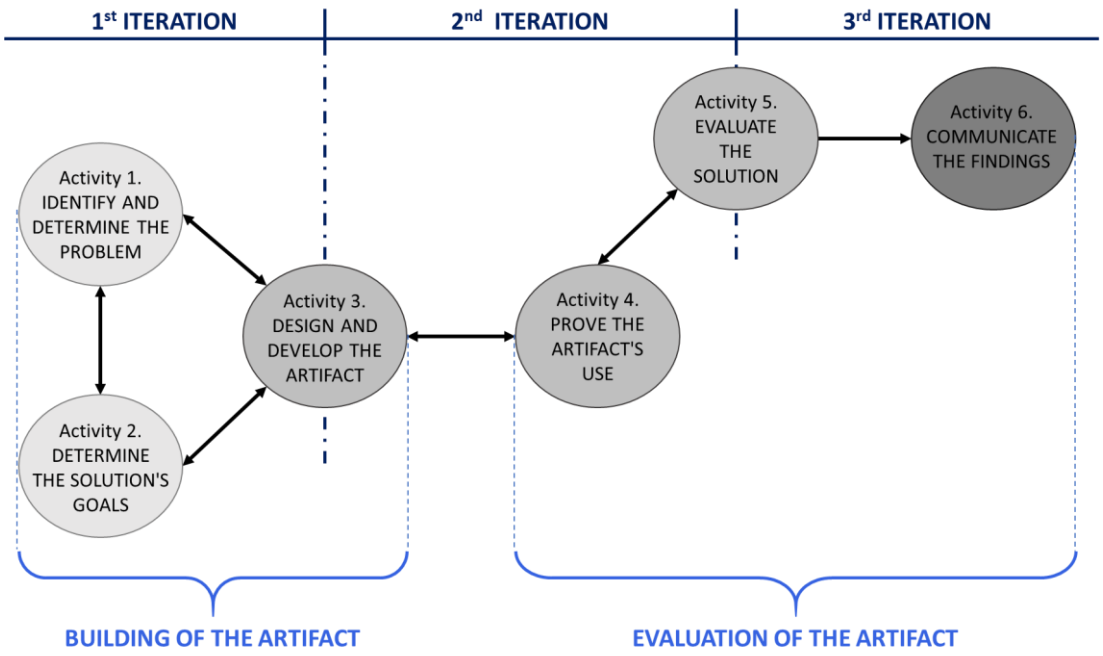



*Figure 3-2: DSRM Process for the New Approach*

In the figure (Figure 3-2: DSRM Process for the New Approach) I represent the sequence of the phases that we used to define the New Approach highlighting the three main groups of iterations that we have done:

- **1st Iteration**

  It includes the first three activities (Identify and determine the problem, Determine the solution's goals and Design and develop the artefact).

  In the first part of the research we focused mainly on the understanding of the problem and on the definition of its solutions, this permitted us to define the artefact of research. We did not always follow the linear sequence of the activities: sometimes reasoning on solutions we had ideas on improvements for the artefact and this also implicated a better specification of the problem.

- **2nd Iteration.**

  It includes “Design and develop the artefact”, “Prove the artefact's use” and “Evaluate the solution”.

After the design of the artefact we proceed with its application in a real project to test if the results corresponded to the solutions desired. Also, in this iteration we collected the feedbacks that permitted us to improve the definition of the artefact.

- **3rd Iteration.**
  It includes the last two activities (Evaluate the solution and Communicate the findings).
  When we finished to test the artefact and we retained to have reached the solutions expected we elaborated the approach to communicate our findings to the stakeholders.

The first iteration is associated with the "Building of the artefact"[33], instead the second and the third are associated to "Evaluation of the artefact"[33].

The various iterative cycles occurred spontaneously through the comparison of ideas during the various meetings.
These three iterations do not represent closed blocks that once finished can no longer be modified, in fact they can still influence each other and lead to new modifications and improvements of the previous steps.
For example, initially we focused on the definition of the artefact focusing more on the first three activities (1st iteration). Then we tried to validate the artefact applying it on a real project and evaluating the results achieved (2nd iteration). The feedbacks obtained from the evaluation of the results led us to redefine the expected solutions further and refine the artefact (returning to the 1st iteration).

The entire sequence of the activities should be also repeated. In fact, we have tested only a part of the artefact because the project used still run. It is important collect the feedbacks along all the project because the partners of the network every step more conscious of their needs and of the weaknesses of structure of the artefact. They could be used to improve it and until the end of the project every single step could be revised.
Furthermore, the artefact would be improved thanks to the feedbacks of every project will be applied in the future.

This does not limit the results achieved, because the project is used only to verify that the results correspond to the expectations, but the artefact is designed to be applied to any project that involves a network in the exploration of future business opportunities.

## 3.3. Quality assurance mechanism

In contrast with the traditional approaches, that are based on hypothesis that have to be tested to confirm or deny their veracity (e.g., Bagozzi et al. 1991)[36], the Design Science Research develop artefacts, which have to pass the test of utility, quality and efficiency[33]. To that end the design includes multiple iterations that collectively ensure the finding of an optimal solution (design).

Implementation and iteration are central to this research approach[33]. Usually the researchers that adopt DSR are exploring complex problem for which it useful iterate many times through a cycle that includes observing the contest, identifying the problem, defining the solution and implement it.

The six phases of the process are conducted in parallel and in diverse sequences to develop an artefact with a real utility and that it can be adapted to different contest (Markus et al., 2002)[33]. These continuous iterations are called also build-and-evaluate loop, because the researchers during each of them have the possibility to become deeply aware and to get closer to completely understand the problem: after each loop the quality of design of the process has been improved[33].

The extensive knowledge, the ability in problem solving and the creativity intuition of the researchers are fundamental characteristics to interpret the findings, to improve the process, to identify limits and go beyond them.

They have the possibility to study in depth and have a more complete overview of the problem thanks to the iterative process of its evaluation and improvement of the quality of design process. Usually the build-and-evaluate loop is followed a number of times (Markus et al. 2002) before to generate the final design artefact[33].

I think that the following citation perfectly summarize the importance of the iterative process in DSR:

> *"Progress is made iteratively as the scope of the design problem is expanded. As means, ends, and laws are refined and made more realistic, the design artefact becomes more relevant and valuable" (Alan Hevner, 2004).*[33]

[36] A Design Science Approach for developing Information Systems Research Instruments, T. McLaren and P. Buijs,
https://www.rug.nl/staff/p.buijs/design_science_approach_for_developing_isr_instruments.pdf

# 4. PROCESS MODEL

The approach, that will be described in this chapter, has the purpose to explain how to organize open innovation in network organizations that aim to jointly develop new growth businesses. It is an innovative and repeatable method to explore any market with the purpose of identify profitable business opportunities.

It has been developed under the supervision of René Rohrbeck and Matthew John Spaniol using the design science research. We decided to present only the last version of the approach because the previous versions were uncompleted and inconsistent. As explained in the chapter 3.2 “Application of the method”, the approach, explained in detail, is the result of multiple iterations and of numerous changings during the design.

The approach will be validated through discussion and refinement by participants in a case project, the EU Interreg funded PERISCOPE Project.
Its goal is to identify systematically potential business in the Marine and Maritime industry of the North Sea areas.
PERISCOPE started at the beginning of November and it will last three years, this is the reason why, in the last part of the chapter, it is described and validated only the first phase of the project. We are aware that the version of the approach that I am going to present it will change during the validation with the project, because adopting it in the reality we will collect feedbacks, we will solve criticalities and improve the artefact in which it is based.

## 4.1. Methodological approach

The following figure (Figure 4-1: Methodological approach) summarizes the approach that will be used to manage the activities in the network in order to identify new business opportunities by exploring the analysed market.

The approach consists mainly of three phases: Front loading, Development and Launch. For each one of them will be established events (conferences, workshops) and activities that the partners of the network have to attend to complete the milestones.

The network consists of three main categories of actors: Leading Group, Cluster Organizations and Research Group.
The members must participate and organize the events and perform the activities of each phases. The activities are represented by blue rectangles, Figure 4-1: Methodological approach: they can be thick, when they refer to main activities that require greater effort both in terms of time and resources used, or thin, when they refer to support activities in which the actor will be involved only occasionally as an aid to the actors of the main activity.

The milestones are depicted in green, three like the phases: they represent the outputs that must be obtained at the end of each one. For each milestone it is represented the main method used to summarize the results and, for graphical reasons, it is aligned with the actor who most contributed to obtain it.

At the bottom of the figure are represented two legends that facilitate the interpretation of the above part:

• The blue legend is the explanation of the elements constituting the phases

• The green legend is the explanation of the elements constituting the milestones

In the following paragraphs, they will be described the main characteristics that should have the partners of the network, the main task constituting the phases, the methods used and the milestones to achieve.

Finally, the outputs achieved will be summarized and the validation through the PERISCOPE Project will be presented.

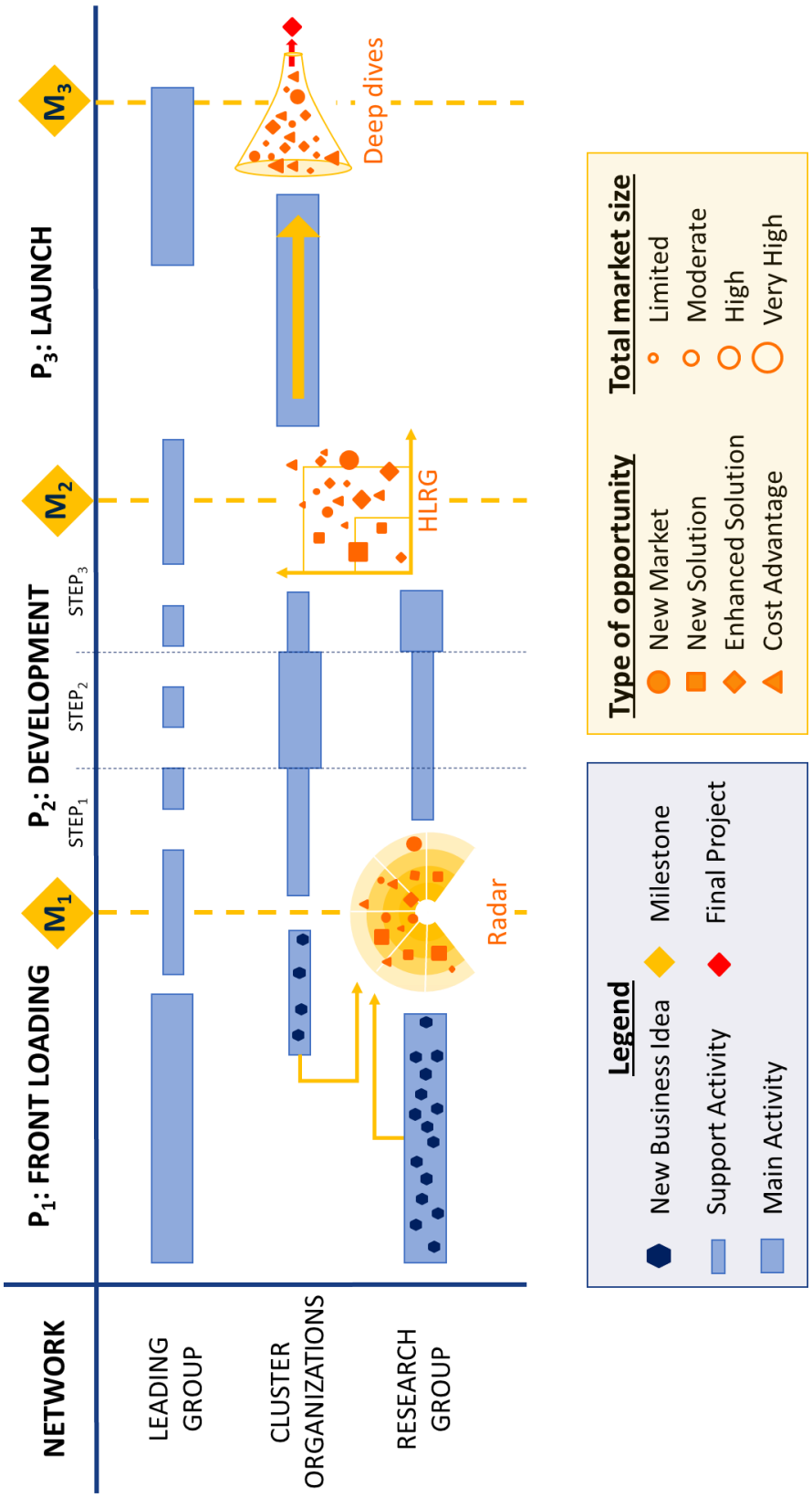



*Figure 4-1: Methodological approach*

## 4.2. The network

In the previous chapters, I highlight the increased importance of the exploration of new businesses in collaboration with other market's actors, because it permits to have a more complete and objective overview of the future trends of the market, thanks to the diverse backgrounds of the team members.

In this thesis with the term "Network", Figure 4-2: Network, I refer to a team of companies that has decide to achieve a common goal together sharing knowledges and resources.
It is composed by a Core Group of partners (in yellow), who individually lead other groups of companies (in dark grey), which can provide skills and alternative points of view to be used within the Core Group 's project. In turn, these companies can be part of other groups (in light grey), which can be consulted to provide innovative solutions to their leader. And so on.
Therefore, the network can be defined as a contacts net between companies in similar sectors, leaded by the Core Group, that has an open flow of resources, capabilities and expertise used to achieve the common goal. They all benefit of the outputs and they will be involved in the development of the new business opportunities.

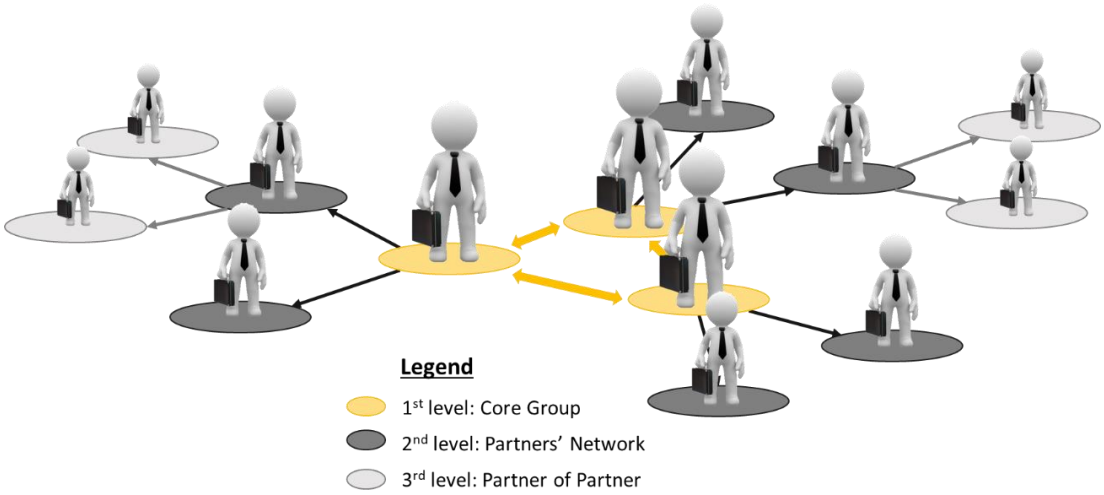



*Figure 4-2: Network*

I use the term "Partner" to refer to the components of the network's Core Group.
They can be people, companies, organizations or other networks, it depends on the project's size. Each partner will select a representative that will join the others of the Core Group and he will be completely involved in project rather than to his company's daily tasks.

The Core Group of partners decided to work together to achieve a common goal.

In this case the goal is the market's exploration in order to identify innovative business opportunities. The goal must be defined and shared by all members. The importance of achieving the goal can lead to exceed competitions and sometimes it allows collaborations between competitors in the sector.

Building a network with members with diverse backgrounds and wide-ranging competencies is the primary importance to reach the common goal. It is also important balanced the different knowledges with the purpose to have a complete overview of the analysed sectors. For this reason, I found three main figures that can't be missed to build the network's Core Group: a leader, an expert and a researcher.
It does not matter the size of the network: if it is a small one these figures will be people or small team, if it is a big one they will be structured team or groups of companies.
The approach presented was mainly designed to manage large collaborative groups (at least 5 companies). We decided to change the names of the previous figures in ones related to groups composed of several people: Leading Group, Cluster Organizations, Research Group.

Now we present the main tasks of the different actors, which will be deepened in each phase of the approach:

- **Leading Group**: is the term associated with the figure of the *leader*.
  This group of people is responsible for managing the other Core Group 's members. Just as project leaders, it must define a road map and the related milestones in order to achieve the starting goal. The coordination of the work of multiple partners is not a task that should be underestimated: the main purpose of this team is to keep all members co-productive and 100% committed, for the duration of the project.
  Furthermore, this team has to identify suitable partners, interested in the scope's project, to expand the network.
  Initially it has also to obtain and manage funds for the development of opportunities and to promote the network to the various stakeholders.
  Usually internally in this team it is elected a representative who will be the leader of the Core Group.

- **Cluster Organizations**: is the term associated with the figure of the *expert*.
  This term refers to companies or groups of companies operating in the analysed sector. They are subjects who have a vertical knowledge in the field in which they operate. It is useful involved experts both from the sales area (who therefore know in detail the needs and expectations of their customers) and from production area (who know the technical details and the properties of the product developed).

This group should not be established of companies that are specialized only in the same field.
To deeper analyse an entire market, it is essential been able to cooperate with actors with diverse backgrounds, with the purpose to recreate the most detailed overview of the market and its competitive environment.
However, it is also important the presence of companies operating in the same field as competitors, they can provide diverse point of views and allow useful comparisons.

- **Research Group**: is associated with the figure of the *researcher*.
  These subjects are usually connected to the academic field. They can have different backgrounds and, depending on the size of the project, it may be necessary to create sub-groups to describe them. We identified two mains sub-groups:

  - The market innovation specialists: they know the latest innovations and experiments in the various sectors. They can belong to both university research departments and R&D sections of the various partners.

  - The strategic specialists: qualified in the adoption of strategic methods that will be used during the approach. They will analyse the information gathered and they will re-aggregate them in final results useful to identify business opportunities.

Network heterogeneity is essential to achieve results more effectively and faster

In fact, creating a group composed only of experts of the sector is not enough because belonging to different firms, they are busy in internal activities, they will be focused mainly on the interest of their firm and probably they will not trust each other's. It could create management problems and would lack someone with a good knowledge of the research projects and the various available prototypes.

On the contrary, gathering a team composed only by researcher and academics could be counter-productive as the other case. They could be updated on the latest innovations and be fascinated by the specific performances of a new product but, not be aware of the customer's needs. This could create limits in their judgment with the risk of developing opportunities relevant for scientific progress but without a real market.

## 4.3. 1st PHASE: Front Loading

In the first phase of the approach there are two main goals: to create a unanimous and cohesive Core Group and to identify innovative ideas for future business, taking into consideration the main market trends.

Regarding the first goal, the Leading Group is the group that more involved, in particular its representative, the project leader. The Core Group is made up of members who share the vision of the project and its final objectives, but fundamentally they do not know each other. Moreover, the cooperation, especially among the members of the Cluster Organization that could belong to the same market/segment, can be problematic. If it is not well managed it could create some mistrust and the members couldn't share their knowledge. It is up to the leader to create a relationship of trust and mutual respect among the members.

The Leading group must guide the other groups in the starting phases of the project, explaining the steps that have to be carried out, the methods that will be used and the motivation of strategical and organizational choices. This process is important to align all the partners both in terms of expectations and goals, and to achieve the best performance from work group.

The Leading Group also deals with the network expansion selecting plausible candidates to whom present the common goal. The companies selected must share the objectives that the other partners have set themselves and must be able to actively contribute within the team. Partners of the Cluster Organizations often help in this phase by providing names and contacts of possible candidates.

The second goal is the identification of plausible ideas for future business.
It mainly characterizes the first phase of the approach. The Research Group is actively employed to achieve this goal. Its members must be very creative and must try to clarify in their minds the market needs to identify the new business opportunities.
They must list the known needs and anticipate even the unexpressed ones.
They have to identify the megatrends and trends of the market to understand which the expectations and future needs in the analysed market are. In order to identify them, they mainly dedicate themselves to reading and analysing reports.
Thanks to this first study and team's brainstorming activities they understand which the driving factors are to design new business ideas and to understand customer needs. By alternating these phases of direct research and brainstorming, the Research Group members can draw up a list of business ideas that could conceivably be developed in the market.

To validate their hypothesis, they can:

- distribute questionnaires, mainly by mail, to reach people outside the network, for example potential customers of the idea analysed;
- attend conferences and workshops related to the analysed topics or at correlated with them.

The outputs of this research phase are ideas. With the term "idea" I'm referring to future business opportunities that are not completely detailed. They described them with a summary description of the main characteristic/peculiarity of the product or service to be developed. Several types of ideas can emerge:

- **concrete ideas:** related to products and services based on known concepts or technologies close to the current ones. They are described in detail, we know the steps necessary for the construction and the key components. We must explore them in detail. They are not disruptive, they are required by customers and therefore easily acceptable.
- **theoretical ideas**: related to futuristic products and services, which do not exist on the market and are based on unknown concepts or non-existent technologies. They are described in a generic way with the aim of making understand the basic concept and the potential of the idea. We do not know the elements and the development steps, basically we need diverse types of skills for the realization. They are potentially very disruptive and have an elevated risk of failure.

The Leading group also takes care of the marketing campaign to make the project known: its size depends on the magnitude and typology both of the network and the project. Usually this action is valid only for large and public project, the private ones tend to want to remain unknown. Finally, this team begins the search of funding for the early stages of the project, generally these first funds are paid by the members themselves.

The Cluster Organizations in this first phase are not really involved, they are asked to share their private network with the other partners, to participate in the introductory meetings and to provide the necessary funds for the research phases of the approach. The effort required will increase starting from the first milestone in which the different teams will meet and begin to participate actively, providing new business ideas themselves and improving those presented by the Research Group.

### 2.4.1. Methods

In this section I briefly describe the methods used in the first phase to identify and describe innovative business ideas that respond to the market needs:

- **Papers analysis**: analyse a report means to deep understand a topic breaking it down into concepts in order to inspect, understand it, and to restructure those data in a way that it is useful for the research. Usually, another purpose to analyse a research paper is to build a knowledge based on the topics treated and deeply understand the different aspects.
  To improve the knowledge about the market analysed it is important to classify the data collected in sections. Some useful data's categories to analyse a market could be: methods used in the paper, emerging sectors (according to the report, what are the general categories that are promising), emerging opportunities (what is specifically named as an innovative business opportunity), existing platform-enablers (what are the existing platforms/infrastructure from which new business opportunities can be launched), synergies between actors of the market, drivers of change in the reports, risks and uncertainties, barriers, challenges, obstacles and market growth forecasts.

- **Workshop**: there is no a univocal definition for this term because it includes many categories of events. They usually last 1 or 2 days. Workshop is more "hands-on" for the participants, in fact that the attendees are fully involved in the learning process and often they are the key parts to get results. Normally 25 people or less take part to these activities. During these events participants are going to work, think, do, process, create (maybe physically), and interact with other participants, etc. Usually they have to discuss and brainstorm about a daily topic, but if they have to do activities and exercises they are divided in small groups to have the opportunities to practice apply the concepts that are presented[37].

- **Survey**: is one of the most common tools used in the primary research. It is a tool exploited in both social and scientific research (psychology, sociology, economics, market studies, opinion surveys) that serves to collect information in a standardized way and on larger or smaller samples of population. The nature of the data collected with the survey could be: analytical, so then is possible to construct a database and

[37] Kelley Robertson, Carol Pierce and Meggin McIntosh, http://www.speakernetnews.com/post/seminarworkshop.html

carry out mathematical / statistical analysis, or subjective, such that it is possible to gather the opinions, beliefs and feelings of specific topics. It consists of a series of items or questions, which are asked to the interviewee directly by a person in charge of the survey, either in person or by telephone or indirectly, using a paper or digital survey.

Processing a survey is a very laborious operation. Its development presupposes, first of all, a thorough knowledge of the context and a precise definition of the variables involved[38]. Furthermore, its structure must comply with a series of rules that make it suitable to gather meaningful data for research and to easily interpret and process statistics.

- **Trend analysis**: it is the analysis of the evolution over time of different factors and needs that characterize and are able to change a specific sector. The purpose of this study is to foresee and anticipate them in order to exploit them in the development of innovative products and services, that reflect the needs and future requirements of customers[39].

  Normally the trends change in parallel with the changes of people's habits and culture and they describe how these things are going to happen. They adapt to the uses, aesthetic taste and behaviour of people following the development of society. The analysis of trends allows to anticipate future trends, monitor their changes and make them understandable and usable to everyone.

  From the analysis, we obtain strong insights on how a solution or a sector will evolve, important information that allowed to evolve or develop new ideas about products or services.

  Mega trends are global, sustained and represent macro-economic forces of development that impact business, economy, society, cultures and personal lives. Thereby, they define our future world and increase pace of change.

  Mega trends have diverse meanings and impacts for different industries, companies and individuals. The analysis of mega trends and their implications represents an important component of the establishment of long-term strategy, of the development and innovation process, and of the definition of the impacts and technology planning.

[38] Francesco Lunardon, (2014), L'analisi dei trend emergenti in un'ottica di innovazione strategica

[39] Tools, (2013), http://www.sketchin.ch/it/tools/trend-study/

Trends are similar but allows to define a short-term strategy because they describe factors correlated with the current market.

- **Idea jams**: are events in which people belonging to a working group discuss together and produce ideas related to a specific topic. This practice is becoming very popular within companies that want to innovate their business or in the innovation projects. The activity can last for a few hours or whole days and can be done either through physical meetings or through online chat and call.
  The characterizing part of this approach is the direct comparison between the members of the working group.
  It can also be extended to third parties who can actively contribute to the work.
  These meetings can be either led by a moderator or a list of points to be dealt with; the goal is to find starting points to discuss creatively about a specific topic and design new business ideas.

## 4.4. $M_1$: Radar

The first phase is dedicated to gather ideas of possible future business. Once we obtained them, as first milestone, we have the objective to start analysing and quantifying them. To simplify this procedure, we insert them in a radar, in order to have a visual overview of both the possible market developments and the required timing of development.

With the term "Radar" I refer to a foresight tool, represented in the following picture (Figure 4-3: Initial Radar), that allows us to obtain an overview of possible market developments compared to time and therefore to take strategic decisions in a more aware way.

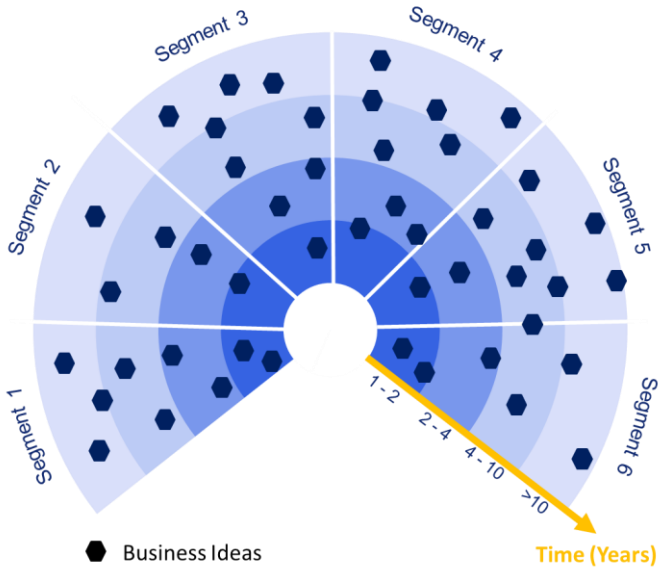



*Figure 4-3: Initial Radar*

The set of semicircles represent the analysed market. This has been divided in slices that represent different market segments. The number of these ones has not been defined in advance and it depends from the starting market's dimensions and from the level of detail that we want to reach during the analysis.

If the segments are very broad, is possible to divide them in sub-segments that allowed us to gather ideas compared to specific characteristics. In this way it is possible to develop for each segment another radar that is linked to the main one.

If we add to almost each segment a sub-radar we obtain, what we define, a chain of radar, represented in picture Figure 4-4: Radar's chain.

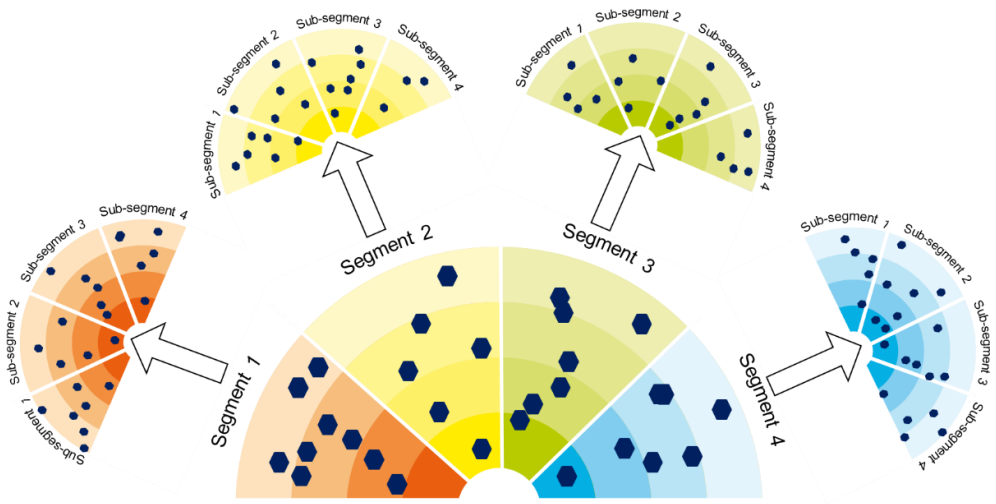



*Figure 4-4: Radar's chain*

The chain is made by a main radar, generically representing the market in its totality and the main ideas of every single segment, and by as many radar as the number of segments, that represent the respective sub-segments and the totality of segment's ideas.

With this representation we can decide the level of detail that we want to use to carry out the analysis. This option will be very useful in future phases where we will involve sector's specialists: having clear the sub-segments make easier insert specific ideas defined by experts.

In red has been highlighted the radar's axis, Figure 4-3: Initial Radar, usually it is not represented and only its intervals are showed. It is symmetrical for both the extremity of semicircles. Usually it is associated to time and divided in time intervals from which start the diverse semicircles.

The versatility of this foresight tool can permit us to represent ideas even with different criteria than the temporal one. In fact, we can associate to the centre of the radar an adjective and on the extremity its opposite or another one in contraposition, in this way the ideas will be disposed base on their similarity with the adjectives.

For instance, a contraposition that has been used many times, mainly with an innovative scope, is the association to the centre of the radar with the word "real" and the association in its extremity with the word "theoretical". In this way, we can have an overview of which ideas are the most likely to be realized with the current knowledge and which require necessarily more insight to verify the feasibility.

Finally, the blips, represented as blue hexagons in both figures, symbolize the core of the analysis made with the radar: the ideas found in the first phase of the approach.
Both the typologies of ideas can be represented: the concrete ones, that are already well structured and associated with concrete business opportunity, and the theoretical ones, intuitions created as answers to market's needing that need to be reviewed before they become feasible.

Initially these signals are ideas, then they become business opportunities to be deepened and finally they turn into really achievable projects.

The goal of the first milestone is not only the integration of the ideas in the radar but also the definition and the choice of any ideas that can be considered as a new business opportunity.

The type of signals evolves as the time pass: the radar is not a static tool, but it modifies itself, it progresses as analysis progresses.
Usually to transform ideas in opportunity the Leading group organize one or more workshop where the partners are invited to join and to give their contributions. In this way sector's specialists and researchers can compare their ideas.

I'm referring to workshop as a personal meeting in which partners could interact, but this could be easily replaced by a group video call (which is advisable when there is small number of partners or where there are logistic problems related to distance).

Usually the workshop is set in two main phases:

- **Detailed analysis** of every ideas, starting from the ones founded by the Research Group, with the goal of improve their definition adding the characteristics in which the market likely could be interested in.
  Each partner must add more information to the ideas that are directly related to his competence or try to collaborate with the other members to describe more in detail the ideas not completely defined. The last type of ideas is only drafted because related to unexplored businesses that require more studies and analysis. It is important to understand how much interest they arouse in the partners: if there is a high level of interest, they will be included in the radar otherwise they will be discard.

- **Rating of the ideas**. In this phase the partners have to evaluate the opportunities defined in the first phase. The criteria to evaluate them have been set by the

Research Group and are applied to every single opportunity to categorize them in a homogeneous way.
Usually the groups use four criteria that allow them to define the dimension and the position of the opportunities in the radar:

I. *Market potential*: calculation of the highest amount of potential sales of the opportunity analysed in a specific time period (5 years). The evaluation is carried out on an ordinal scale, being able to evaluate from 1 to 100 in four possible intervals: Limited (0-25), Moderate (26-50), High (51-75), Very high (76-100).

II. *Disruption Potential*: capacity of the opportunity to be a radical change entering in an existing market or creating a new one. The evaluation is carried out on an ordinal scale, being able to evaluate from 1 to 100 in four possible intervals: Not New (0-25), Small (26-50), Moderate (51-75), Game changer (76-100).

III. *Technological Maturity*: assessment of the degree of maturity of a technology and of the timing required to enter the market. The evaluation is carried out on an ordinal scale, being able to evaluate from 1 to 100 in four possible intervals: Concept (0-25), Proof of concept (26-50), Prototype (51-75), Market entry (76-100).

IV. Market Readiness: ability of the current market to accept the entry of a new product, it depends on the customers' interest and the regulations needed. The evaluation is carried out on an ordinal scale, being able to evaluate from 1 to 100 in four possible intervals: By 2020 (0-25), By 2025 (26-50), By 2030 (51-75), After 2030 (76-100).

And one generic criteria that summarises the previous:

V. Overall Impression: it is a subjective judgment, based on personal knowledge, concerning the interest of each partner towards the opportunity in analysis. The evaluation is carried out on a numerical scale, being able to evaluate from 1 to 100 the opportunity.

During the workshop, the rating is based on previous knowledge of the participants, without doing any deep analysis that will be done in the second phase of this approach. The reason

behind this decision is that the aim is to create a first version of the radar, that most likely resemble the reality, to start working on it.

The radar that is expected to be developed at the end of this milestone is similar to the one shown in picture (Figure 4-5: M1 radar). The ideas (blue hexagons, Figure 4-3: Initial Radar) left to let the opportunities come. They could be divided in four categories to which is associated a different shape:

1. New market: circle;
2. New solution: square;
3. Enhanced solution: rhombus;
4. Cost advantaged: triangle.

The opportunities have different dimensions based on their market size.
Thanks to this radar is possible to redirect the future phases research and give priority to the opportunities that have a bigger attractive market size.

The radar will follow the project for all its duration and, as it is explained in the next section, with the progress of research it will change, it will slowly hide the unattainable or unattractive opportunities until it will find those ones that can concretely become new products/services to be launch on the market.

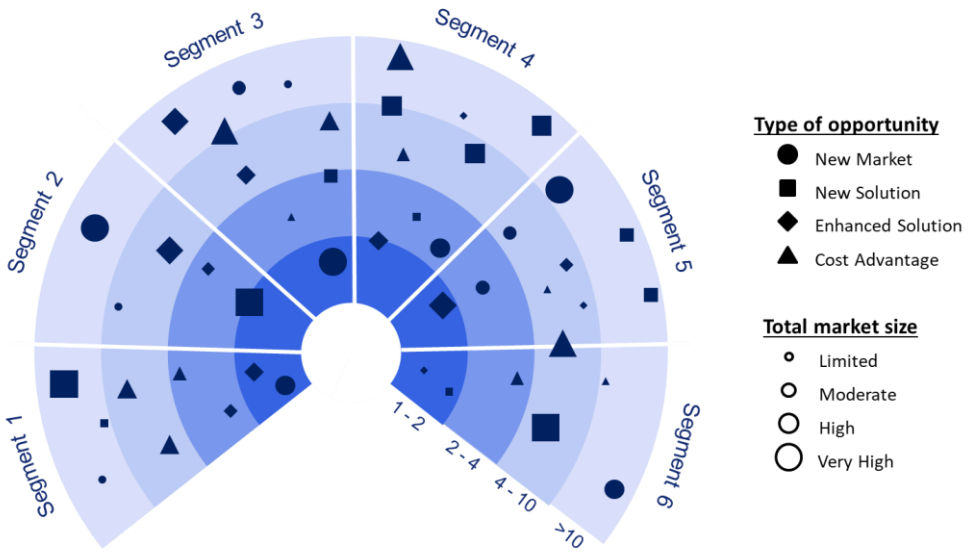



*Figure 4-5: $M_1$ radar*

## 4.5. 2nd PHASE: Development

At the end of the previous phase, the first radar has been obtained, which allows an overview of possible business opportunities to be implemented in the diverse segment.

The purpose of the second phase is dual:

- Objectively quantifying the opportunities found and discarding those ones are not profitable or not feasible;
- Adding into the radar the opportunities that have been found later, in this way all partners has the chance to improve and to rate them.

As can be seen in the schematization of the second phase, in Figure 4-1: Methodological approach, it is possible to identify three steps before reaching the second milestone:

I. In the initial step, represented in Figure 4-1: Methodological approach, the Cluster Organizations and the Research Group are equally involved.
   The first one has to review the work carried out during the workshop by consulting the related networks in order to improve the description of the opportunities and to add innovative ones that are missed. It is a fundamental moment because the partners, inspired by the work done collectively, have the opportunity to present it to their network, repeating the workshop internally, with the purpose to identify and propose opportunities related to their business activities or especially projects that require multiple backgrounds.
   At the same time, the Research Group is also involved in improving the description of opportunities through the consultation of reports and design standardized questionnaires to be distributed among the partners to be used in the evaluation phase.
   This phase ends when all the partners have consulted their networks and no longer have any opportunity to add.
   The opportunities at this point in the approach are not definitive, they can change completely, be merged or separated in accord to the evidence found in their original segment.

II. The second step, represented in Figure 4-1: Methodological approach, is the rating phase in which is required a greater effort to the Cluster Organizations: to evaluate objectively the opportunities present in the radar.

To have the knowledge to do this, partners can:

- participate in specific events and conferences of the analysed segment;
- interview experts of their network in a capillary way.
  The people interviewed are not only technical or production experts, who can provide details related to the creation of the product, but also managers, sales and marketing staff, who can provide important information related to the needs of customers and the changings of market;
- carry out feasibility studies for some already well-articulated ideas.

III. In the third step, represented in Figure 4-1: Methodological approach, the most involved is the Research Group. Which must re-elaborate all the information gathered in the previous step and reorganize them in a more homogeneous way. This procedure is very important to reaching the second milestone, which will be explained in the next chapter.
At the end of this procedure the main actors of the approach will meet again in a few workshop days to discuss the results obtained and to improve them.

These three steps if necessary can be repeated. If during the workshop the actors realize that the information found are not sufficient or if some parts still missing, they can decide to restart the steps: reformulating and adding opportunities, deepening them and homogenizing the results in the radar.

In parallel to the activities of the Cluster Organizations and the Research Group, the Leading Group is less involved than in the first phase, in fact it mainly deals with monitoring the actions of the other two actors, making itself available in case of need and stimulating them to respect the defined times.

Moreover, the Leading Group must also carry out secondary activities, which do not however require its continuous attention:

- Keep the partners informed on the work done by the other members of the network. This facilitates the progress of the work because it prevents situation in which work has been repeated, for instance, and it makes possible to use the most of its resources;
- Search for other members who can share the goals of the network and actively contribute to achieving results;

- Look for funds that can be interested in the opportunities identified. At the beginning they will be used to develop them and to support the prototyping phase;

- In the event that the network is showed to stakeholders, the group has to create an appropriate marketing campaign that sponsors its objectives and the methodologies applied to achieve the results.

### 2.4.2. Methods

In this section I briefly describe the methods used in the second phase to improve the description of the opportunities and to get a classification of them.

- **Interview**: is a conversation between two or more people where questions are asked by an interviewer and answers are given by interviewee. Usually the interview is between two people but in this case, could be also between an interviewer and a group because it is important following the flow of thinking and the suggestions of other expert to get the best results.
  In our approach the interviewer is a partner (commonly belonging to the Cluster Organizations, or sometimes from the Leading Group) and the interviewee is a member of the partners network or related to the. The interviewee could be an expert or a group of people with different background.
  The interviewer usually only asks questions, but in our case, he also involves the interviewees in activities as brainstorming and focus group. The purpose is to facilitate the transfer of information from interviewees to interviewer, the interviewer can actively participate to the debate between the interviewees if he has enough knowledges.
  In this case is preferable that the interview take place in person to facilitate the interaction between people, but in case of necessity or geographically distance it is also possible enables conversation through internet making videoconferences or calls. The interview could be written down and send by messages or mails, but it preferable avoid it because we will lose lots of information correlated with the interaction between people.
  To ensure homogeneity of the data collected, the Cluster Organization will use a structured sequence of questions (that depends on the typology of the segment). It is not compulsory following the path, it is important following the flow of the conversation in case of relevant detours.

- **Events**: are a vast category. They include all the possible occasions to learn about a specific segment or an analysed opportunity or to discuss with market experts.
  For example, they could be: conferences, workshops, expositions and trade shows.
  They could be organized both by the network's partners or by third parties and they can be private or open access.
  It is common that partner organise some events for other members during this period because in this way they can be updated about their breakthroughs and discuss about their uncertainties. This is a good practice because permits to solve more quickly problems and reach the results sooner.

- **Feasibility studies**: they aim to discover the value of a business opportunity in an objective and rational way and help to make the decision when it is not certain the value of the opportunities.
  To determine its value, it is useful to carry out an analysis through the 5 Porter forces: to define who are the direct competitors, what is the power of the suppliers, who are the customers interested in the new business, what are products substitutes and which are the threats of new entrants in the sector.
  This analysis allows us to have an overview of the environment in which we want to develop the new business opportunity.
  To get a complete overview of the potential of the opportunity, it is useful to carry out a SWOT (strengths, weaknesses, opportunities and threats) analysis that allows to highlight the strengths and weaknesses of an opportunity, the openings that have not yet been exploited and the threats that risk the success of the product.
  To these analyses we can add others that can allow the network to reach objectively determine the prospects of success.
  Feasibility studies usually precede technical development and project implementation.
  They have to establish the costs, that must be supported, the profit, that will be obtained with the realization, and the timing of realization of the work.
  Perceived objectivity is a crucial factor for the credibility of the study for potential investors and lenders.
  It is important that the final information are as objective as possible. For this reason, both the benefits that would be achieved and the risks that could be incurred need to be defined. It is essential having a clear situation of the risks from to understand the methods that can be applied to mitigate or eliminate them.

- **Scenario planning**: it is distinguished by its ability to capture a whole range of possibilities in detail. It identifies basic trends and uncertainties, in order to build a series of scenarios that will help the Cluster Organizations to avoid the most common mistakes in decision making, such as overconfidence and tunnel vision.
  This is possible because it reworks the multitude of data and summarizes it in a limited number of possible scenarios.
  Each one represents a plausible future that could evolve from the combination of the characteristics of the opportunity and modifying the conditions of their application.
  If the relationships among the elements can be formalized, quantitative models can be developed that would allow each scenario for internal consistency and plausibility to be analysed.
  This tool aims to capture the multitude of different possibilities, stimulating decision makers to consider unexpected change and overcoming their decision biases.
  This tool is particularly useful when there are lot of data available because it organizes them into descriptions that are easier to grasp and use.

These methods are used to realize to describe the opportunities in innovative field and to assess them by managing their risks for potential launch in the market.

## 4.6. $M_2$: HLRG - High Level Reference Groups

The second phase is dedicated to the in-depth analysis of the opportunities found during the first phase. The Leading Group and the Research Group have defined in detail the characteristics of each individual opportunity and have found the information necessary to evaluate them.

The evaluation was always made using the criteria of the previous phase:

I. **Market potential**: ordinal scale with the possibility of evaluating from 1 to 100 in four possible intervals: Limited (0-25), Moderate (26-50), High (51-75), Very high (76-100).

II. **Disruption Potential**: Ordinal scale with the possibility of evaluating from 1 to 100 in four possible ranges: Not New (0-25), Small (26-50), Moderate (51-75), Game changer (76-100).

III. **Technological Maturity**: ordinal scale with the possibility of evaluating from 1 to 100 in four possible intervals: Concept (0-25), Proof of concept (26-50), Prototype (51-75), Market entry (76-100).

IV. **Market Readiness**: ordinal scale with the possibility of evaluating from 1 to 100 in four possible intervals: By 2020 (0-25), By 2025 (26-50), By 2030 (51-75), After 2030 (76-100).

In this case, however, the data entered must be supported by evidences originated either by experts established in the sector or by studies closely related to the assessed opportunity.

The fifth criterion, **Overall Impression**, is the only one, by definition, to remain subjective. Anyway, even in this case the assessment is more aware. In fact, with the research carried out each partner has understood the real potential for each opportunity and he is aware of their added value and the benefits for the network and the community.

Once all the evaluations have been updated, the radar has changed its appearances, Figure 4-6: M2 radar. The number of opportunities has been reduced, in fact those ones without a concrete value or in which partners are not interested in have been eliminated. Moreover, some opportunities changed their form, size and position in the radar because, in the first version the evaluations were based on partners suppositions, instead now they are more objective based on researches and analysis.

It may also happen that the radar segments vary. With the research carried out and eliminating opportunities, it may happen that some segments have changed or disappeared. For this reason, in the radar it may happen that were introduced new segments or that some initial ones were merged.

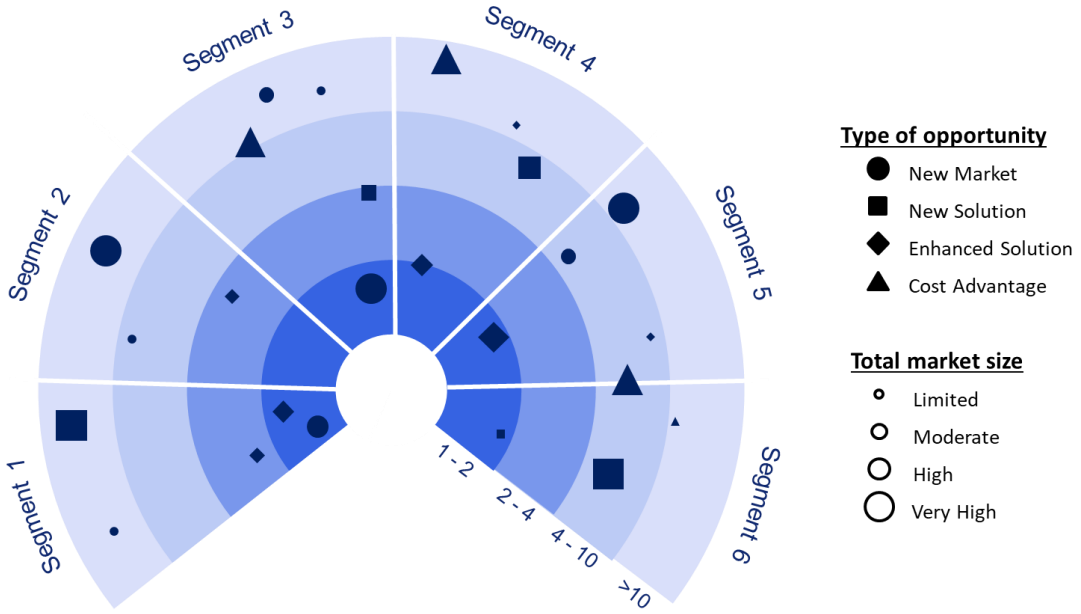



*Figure 4-6: $M_2$ radar*

As in the previous phase, the milestone coincides with the holding of a workshop among network partners.
The structure of the event, as the others, is characterize by two main moments. The discussion has as starting point the second version of the radar.

The two principal activities are:

1. A **comparison** among partners of the results achieved: a brief session in which members quickly review the opportunities entered in the radar and highlight any doubts or problems related to specific opportunities.
   Indeed, it may happen that some theoretical opportunities, for which in the first phase only a generic idea had been drafted, still be not completely clear. Indeed, it may happen that some theoretical opportunities, for which in the first phase only a generic idea had been drafted, still be not completely clear. They will continue to be studied and explored, remaining in the second phase, until they will be completely described and supported by reliable data.

2. An achievement of **HLRG Graph** - High Level Reference Group. The network members have now to evaluate opportunities in accord to *Profitability* and *Readiness*.
   The first one is evaluated thanks to their experience and to the data obtained regarding the market size, the development costs and the price that can be attributed to the service or product in the market.
   The goal is to try to quantify future net profits. This feature is chosen because it greatly influences the decision whether to start or not the production of the opportunity in question.
   The second one corresponds to a mix of information related to two criteria used to build the radar: Market Readiness and Technological Maturity.
   In fact, in order to fix this characteristic, it is necessary to consider the maximum time required to have the opportunity ready to enter in the market and to have customers interested in and ready to buy.

Profitability and Readiness represent the axes of HLRG Graph, the tools representative of the second milestone.
This, in fact, consists of a graph, as shown in the following figure (Figure 4-7: HLRG), having on the abscissa axis the Readiness and on that of the ordinates the Profitability.
For both there is a gradation that goes from low (fixed in the origin) to high.
**Profitability** has a clear meaning: in case it is low there is a low gain expected and vice versa if it is high it is expected a high one.
As far as **Readiness** definition: in case it is high, the opportunity requires a brief period to be ready to enter in the market, vice versa if it is low, the development will require a long one.

In this diagram the radar's opportunities are inserted having as their coordinates the respective Profitability (y) and Readiness (x).

The chart area is divided into three sections that correspond to as much actions:

I. **Ignore**: a band that includes opportunities with both low Profitability and low Readiness.
   These opportunities will not be considered in the next phase and they will be eliminated from the analysis. It is clear that they will not be realized because the timing required is too high and the expected profit too low.

II. **Monitor**: a band that includes the opportunities with averages both Profitability and Readiness.

These opportunities will not be directly involved in the third phase of the approach, but they will be take in considerations in case that some parameters will change enough to permit to the opportunity to pass in the third band.

III. **Action**: a band that includes opportunities that have at least one between Profitability and Readiness high.
These opportunities are very interesting because they will guarantee at least either a fast realization or a good profitability, in the best case they have both.
The partners will usually prefer activities that guarantee high profits: they are circled in yellow in the top part of the graph.
These opportunities will be studied in the third and last phase of the approach.

This graph is a schematization that allows to prioritize the opportunities and, at the same time, to have a clear representation of the typologies of opportunities identified. It is easier for the partners decide which ones should be developed/produced, monitored or abandoned.

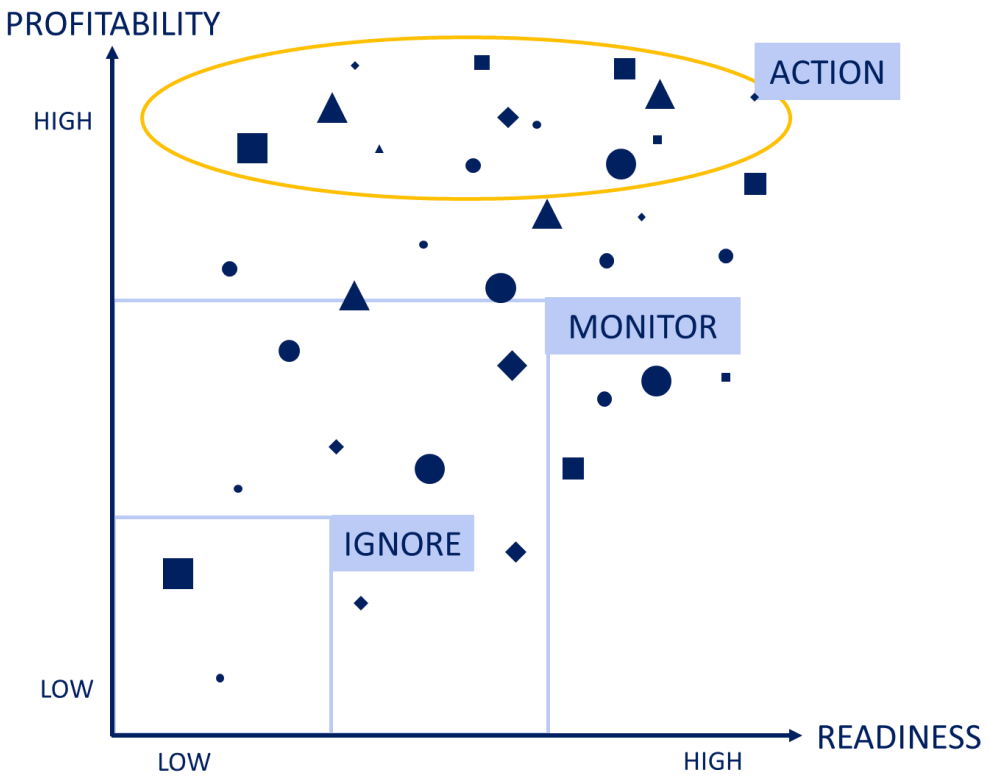



*Figure 4-7: HLRG*

## 4.7. 3rd PHASE: Launch

The third and final phase aims to define in detail the development of the opportunities selected by the HLRG (High Level Reference Groups) graph with the purpose to launch them in the market.

The task of the Cluster Organizations, supported by the Research Group, is to effectively verify the potential of the opportunities by writing a business plan for each of them, which will also be used for the official request for funding.

The Cluster Organizations will mainly focus on obtaining missing information and testing the opportunities to be launched.
At the same time, the Research Group will be engaged in the compiling of business plans, taking particular care of the formal form, they have to prepare them to be used by the Leading Group for the funding request.

At this point of the approach, mainly there are two typologies of opportunities to deal with:

- **Opportunities ready to be developed:** group formed by those that are well detailed. For them, it is easy to find information related to the initial market, to the type of customers involved, to the procedures to costs of implementation and to the timing necessary to launch them.
  It will be more immediate to draw up the final business plan, to define the road map for the development and for the launch on the market.
  It is possible to define them in detail because, both in the case of technologies or products and services, they have been already tested and the economic advantages has been verified.
  They must only be refined to enter in the market.

- **Opportunities lacking:** they need more studies and analysis.
  Unlike the previous ones, these businesses are not ready to be placed on the market. They can be at various stages of development: some ideas will still be at the concept level, others will be at the proof of concept level and others will be prototypes to be tested.
  For all them, there is still an important level of risk associated to their business. The partner will not afford these risks and they will wait to complete before the launch in the market.

These opportunities will remain within the third phase longer: the time needed to be tested and to allow to the partners to objectively decide if they are profitable enough to justify the investment.
However, it is possible to start to draw up a business plan for them, especially if some of them require investments to be developed. It will be not final version of business plan, but it will evolve together with the progresses of the realization.

At the same time, the Leading Group will be very engaged in the search for investments, especially if the network does not have sufficient internal funds to finance the opportunities ready to enter in the market. It will also manage the network finance dividing them in the diverse projects, prioritizing the most valuable.
There are several sources of funding, and thanks to the economic digitization there are more accessible forms than in the past did not existed[40], the main ones are described below:

- **Banking Loans:** usually banks do not fully lend the sums necessary to subsidize the development of a business opportunity. The main reason is the uncertainty on the future success of the opportunity. The amount granted depends on the creditworthiness of the company or of the group.
  Normally banks are not the first choice for subsidizing an innovative idea.

- **Business angel:** is an informal investor in venture capital who is interested in the business opportunity. They finance and support it as well as with their capital, with their own experience and with their network. The business angels invest their own resources and the reason for their choice is not always financial.
  For projects that require more funds, syndications can be formed in order to distribute the risk: they invest each one small portions of the final amount allowing to reach it and limiting the risks.
  Business angels usually intervene in the early stage of development and they can invest from a minimum of 5-10 thousand euros up to 100-200 thousand euros or more.
  Investments of angel companies generally do not exceed € 500 thousand[41].

[40] Corriere della sera, Massimiliano Del Barba, (2017), http://corriereinnovazione.corriere.it/2017/03/24/fondi-angel-club-investitori-ecco-come-far-nascere-startup-54cbc734-1095-11e7-8dd1-8f54527580f3.shtml?refresh_ce-cp

[41] Startup business, (2016), https://www.startupbusiness.it/cose-un-business-angel-e-come-puo-finanziare-la-startup/88557/

- **Venture Capital**, or Venture Capital fund, is a form of high risk investment that usually guarantees high returns.
  They finance start-ups and innovative ideas even if the risk of failure is high, the economic returns of a winning idea make it possible to cover the losses of failures. Venture capital is constituted by raising capital, addressing mainly institutional funds, such as bank foundations, social security institutions, local public bodies, insurance companies and banks.
  Once their collection target is reached the underwriters have to provide the funds established. It represents the formal commitment and they begin to operate, respecting the scope of investment. The selection of the ideas could have several types of borders: areas of interest, phase of life of the society in which they intervene (seed, early-stage, growth, etc.); or maximum (or minimum) amount of capital that can be disbursed in the single deal[42].

- **Crowdfunding**: it is a collective funding that, exploiting the potential of the Internet, allows to subsidize business opportunities through specific online platforms that allow to access third-party financial resources.
  The beneficiary of the fund offers to the supporters financial or non-financial rewards[43]. The main financier of this typology, as the name implies, is the crowd: each individual can invest the amount that he can afford and the multitude of individuals who participate in this collection allows to reach considerable amounts. The idea must be presented in the platform and adequately described to convince of its value.
  There are several types of crowdfunding, the most common are:

    - Equity crowdfunding: deposit funds to subsidize the project in exchange of company shares;

    - Lending crowdfunding: loan of funds in exchange for interest and repayment of capital;

    - Invoice trading: sale of invoices at the most competitive price on the market, after having established the minimum selling price. In this way, the burden

[42] Startup business, (2016) https://www.startupbusiness.it/cose-il-venture-capital/88667/
[43] European crowdfunding network, Irene, (2012), http://eurocrowd.org/2012/10/26/about-crowdfunding-2/

of payment and the possible recovery of the credit are transferred to the purchaser;

- Donation: payment of funds without the need for a reward;
- Reward: payment of funds in exchanged of a non-monetary reward.

- **European funds:** they are organized into thematic programs related to specific topics (for example health, environmental, culture, etc).
  Each program is associated with one or more funds and for each of them are issued calls, which define the deadlines for the presentation of the application and the characteristics of the projects that will be financed.
  European funds are divided into two main groups: direct funds, granted and managed directly by the European Community, and structural funds (or indirect funds), always provided by the European Community but managed by the member countries through the National Operational Programs and the Regional Operative Plans[44].

### 2.4.3. Methods

In the last phase the main strategic tool used is business plan, supported by scenario plans developed in the previous phase. Once they are completed for each opportunity, road maps are also drawn, defining the timing of development and the market entry.

This tool is chosen because it is a document that summarizes the contents and the characteristics of a project/business opportunity.
It is used both for internal planning and for external communication, in particular towards potential financiers or investors[45]

The Business Plan, or economic-financial plan, is a document that allows to define and summarize the project's characteristics, the strategic lines, the objectives, the planning of the balance sheet and the planning of economic and financial to realize the opportunity.

[44] https://europa.eu/european-union/about-eu/funding-grants_it
[45] Il Sole 24 ore,
http://www.ilsole24ore.com/pdf2010/SoleOnLine5/_Oggetti_Correlati/Documenti/Norme%20e%20Tributi/2011/06/guida-mettersi-in-proprio/domanda/business-plan.pdf

There are several functions of business plan, the main ones are briefly presented below:

- Understanding of **environment** in which the opportunity will be launch: defines the market, the competitors, the strategies and the competitive positioning;
- Definition of long-term **vision** of the project and of the goals that have to be pursued;
- Analysis of the possible **financing sources** and the terms to access to them;
- Analysis of the **financial feasibility** and economic attractiveness. It is important have clear the typology of the investment required either it is an extension of an existing activity or a new initiative;
- Planning of **strategies** and setting of the management of the operating environment for the fulfilment of the project's vision;
- Definition of an efficient **organizational structure** that is consistent with the partner' goals and that univocally defines the tasks and responsibilities of the members involved.

Therefore, the business plan has an internal function, to inform and guide decision-making processes among the members involved in the development of the opportunity. Within the network, is the basis for strategic planning (3-5 years) to develop new products/services.

It has also an external one: the presentation of the project to third parties.
In fact, the business plan turns out to be the tool with which the Core Group will present the opportunities to economic operators, unrelated to the network.

The business plan in both an overview for the short term that make it possible to determine the degree of economic attractiveness and financial feasibility of the initiative, and a coherent entrepreneurial vision in the long run.

The preparation of the business plan is complex because it involves multiple actors and a series of phases. It is logical that the structure of the business plan is highly influenced by the purposes for which it is drawn up.

In general, in every business plan there have to be the possibility of:

- evaluate the validity of the idea, including without misunderstanding the purpose of the project;

- evaluate the request of financing to ask to funders, which in this case are represented by credit institutions, supranational, national and local administrations;

- evaluate the commercial and innovative potential of the project by promoters of innovation.

There is no pre-established template for the preparation of the business plan, but it is useful to complete the business model canvas before proceeding to write it.
However, it is possible to identify the minimum requirements of form and content which it better includes.
These are some simple rules that make the reading easier and more interesting.

In the initial part of the business plan, it is recommended an executive summary, that is a brief description of the document that includes the initiative, the objectives, the strategies, the costs and the use planned for them. This summary aims to stimulate the whole reading highlighting the positive aspects of the project and hooking the readers.

Furthermore, the entire plan must be detailed but never exceed fifty pages.
Usually it is possible to identify two macro-areas of work: one descriptive and one containing the economic-financial data.
The descriptive part, in addition to the presentation of the partners and the project, includes the analysis and studies necessary for a correct understanding of the market, of the competition, of the offered product/service and of the strategic and operational plan.
The financial part, provides a tool that interprets the data found in the field, elaborates them with the hypothesis previously presented and places them in a series of statements that guide the reader in the evaluation of the project.

## 4.8. $M_3$: Deep dives

The third phase is dedicated to the writing of the business plans of the opportunities belonging to the "action" group of the HLRG graph.

A funnel is associated with this last milestone, as the one represented in the Figure 4-8: Opportunities funnel). In this occasion, unlike the other figures presented previously, it has not a technical utility but has a symbolic meaning: the end of the selection process and the identification of a limited number of highly potential opportunities.
It also represents the process of the initial ideas, symbolized by the hexagons, that went through to become concrete business opportunities, represented in red.
The process is composed by three sections, representing the three milestones, which the opportunities had to overcome.

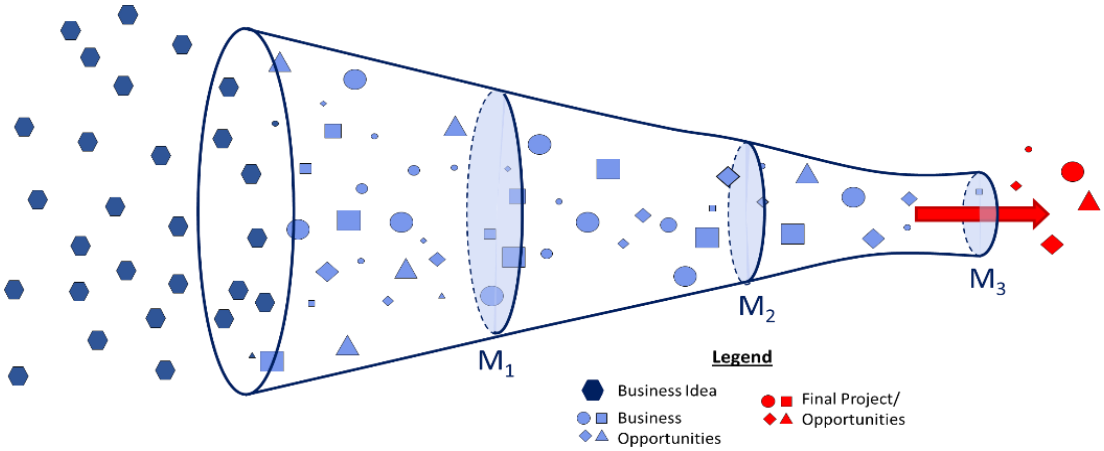



*Figure 4-8: Opportunities funnel*

In this milestone, the goal is to select the business plans related to the business opportunities that have concretely the chance to be successfully launched in the market.
As it is showed in the Figure 4-9: M3 radar, at the end of the approach the number of opportunities ready to be developed (in red) is limited compared to those present since the beginning; in white are represented those discarded at the end of the third phase.

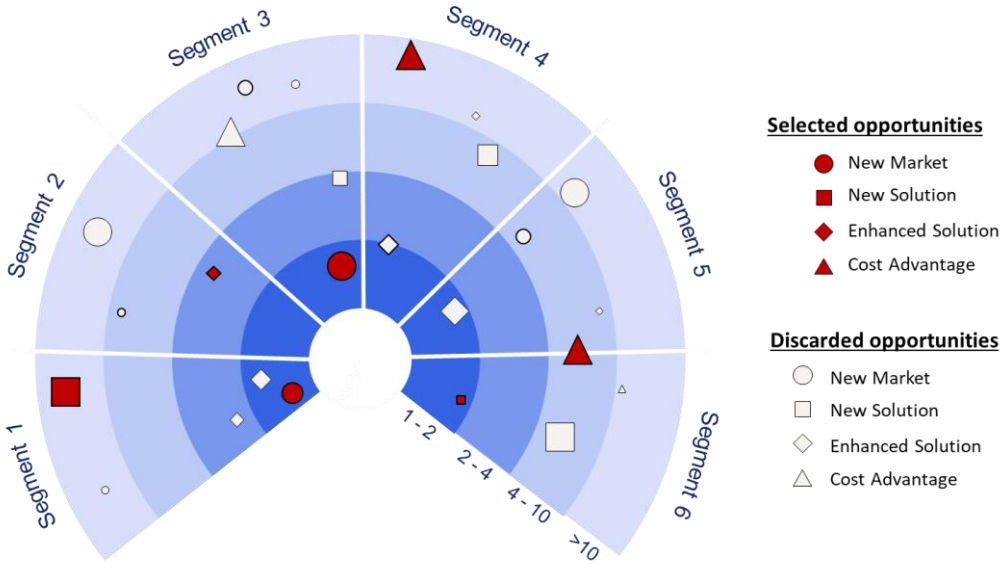



*Figure 4-9: $M_3$ radar*

However, at the end of the business plans building, the achievable opportunities will be more than those developable by the network. For this reason, it is necessary to further select those to be launched. In this case it is difficult to define the guidelines that can be applied to each case, as the decision is very influenced by the type of project, by the possibility to obtain funds and by the partners involved in the development.

In the following list we tried to outline the most common choices that drive the selection of the opportunities to launch in the market:

- A first factor that makes it possible the choice between various business plans is the combination of profit expected and development risks.
  Those with high potential profits and minimum risks are usually the ones that are preferred because they are the ones in which the partners reach more easily their interests.

- A second factor, common to other situations, is the financial liquidity that can be made available.
  Some business opportunities are not considered for the large amounts of money needed to be implemented. The reasons of the impossibility to find the necessary funds can be the most varied, such as the network's will to maintain 100% of profits and of know-how. In the case of networks, in which several companies are involved, the reason for profit sharing is a sensitive issue.

- A third factor is the intrinsic innovation of the project. In some cases, business opportunities are preferred to others if embrace market trends and try to anticipate future ones. In fact, an investor looks above all at the possibilities of growth and future way outs of the project.

- A fourth factor, if the purpose is to get European calls, is to develop and present the business opportunities that best reflects the requirements of the tender notice.

- A fifth factor is to develop the opportunity with which most partners will benefit from or in which the largest number of partners will be involved. Usually these kinds of opportunities are ambitious projects and they often embody the reason that drives the various partners to join to the network.

The exclusion of opportunities that come to the end does not coincide with their loss.
In fact, depending on the capabilities of the network, it is possible to develop a strict number of opportunities, depending on their size and requirement of resources and money. However, the ones set aside should be developed with a second round of investments, when the first ones are almost completed.

Usually the partners are satisfied if they can start with a first round of five opportunities and/or two vast projects.

With the term project I refer to complex business opportunities whose realization requires a multidisciplinary intervention, that involve more actors with diverse backgrounds. A single company would not have the skills and resources to complete it.

Vice versa, with the term business opportunity I refer to a product or service that can be developed even by a single company or few of them.

Normally, the opportunities and projects resulting from this approach have as main characteristic the capacity of bringing benefits to several network partners at the same time.

## 4.9. Outcomes

In this section I will summarize the results achieved through the approach.
Mainly there are identified two outcomes: the ability to identify and develop concrete business opportunities to be launched in the market, starting from innovative ideas, and to create a network that can fully exploit the synergy between the various members.

### 2.4.4. Summarization of how to get the final results

The following figure (Figure 4-10: Outcome) shows the steps that have been conducted in the approach and the respective results obtained.
The figure consists of two parts: the upper part that metaphorically represents the selection process. It is represented by a funnel through which the initial ideas, filtered by three membranes, first become opportunities and then real business to be launched in the market. Instead, in the lower part are represented the four stages of the radar depicting the evolution and selection of the final opportunities, accompanied by a brief description that we will analyse below.

The first phase consists of **creative scanning**.
Mainly the Research Group, analysing reports and taking into account the megatrends of the sector, identifies a series of ideas that could become future business in specific sectors.
These ideas are presented during workshops to the partners network. They have the task of identifying new ones together with their networks and communicating them to the Core Group, within an established deadline.
During this first step many ideas, between 60 and 100, are identified. They can be concrete, if achievable in the short term, or theoretical, if related to long-term projects or that present uncertainties in the realization (for example: development of the technology, need for new energy sources, changes in regulations, etc). Both types of ideas can represent emerging technologies, respond to new customers' needs (trying to anticipate the unexpressed ones) or follow the changes of the society following the emerging needs.

The second phase consists of the **first scan** itself.
In this step the Cluster Organizations and the Research Group are equally involved as they both have the task of validating the ideas and making them become plausible business opportunities. To complete them, they have to rationalize as much as possible the description and evaluate them with respect to four main criteria: Market potential, Disruption Potential, Technological Maturity and Market Readiness.

This first evaluation is done only based on the knowledge and background of the partners. It will then be deeply reviewed in the next phase.
In addition to the previous ones, it is used also a subjective criteria "Overall impression" that measures the level of interest of the single partner for the specific opportunity.
Thanks to this first classification, completely unattainable ideas are eliminated and are kept the opportunities either with an attractive market size, or high to very high adaptability or powerful driving factors. Usually after this selection remain circa 40 and 60 opportunities.

The third phase consists of the **research**.
In this step especially, the Cluster Organization has the goal to objectively evaluate the remaining opportunities, looking for data on the field that can be used to better define them. The Cluster organizations will make interviews and participate to workshops and conferences. They will involve their networks and will exploit their position in the sector to obtain information useful to rate the four filters.
In parallel to the data gathered in the field, the Research Group is responsible for writing feasibility studies and scenario plans, which will facilitate network partners to objectively understand the potential of each opportunity.
Once the data are obtained, the partners filter the opportunities with the five criteria, this time with an objective basis, and then they classify the opportunities in the HLRG's graph. The High Level Referenced Group graph has readiness (x) and profitability (y) as coordinates. The chart identifies three areas that correspond to specific actions: ignore, monitor and action, in which both readiness and profitability gradually increase.
At the end of this procedure the opportunities presented in the “action” area are selected, because they at least have either a high profitability or a high readiness or both.
The number of possible opportunities has been reduced between 25 and 15.

The last phase consists of the **deep study**.
The goal is to select the business opportunities that will actually be realized. The starting point is the group of opportunities that have a high economic potential or a short period of development.
In this step they must be validated by the Cluster Organizations who will test and check the feasibility in the field and by the Research Group who will be responsible for drafting the Business Plans.
This is an iterative phase: because the opportunities cannot proceed with the same speed of analysis, there will be opportunities that will be easily validated and that will have all the information for completing the business plan, there will be others (for example the new technologies) that will take a long time to be prototyped, tested and launched in the market.

Business plans must be drawn up carefully because they will be used for the investment request, which will be carried out by the Leading Group.
During this process, some opportunities can still be discarded or merged.
Usually the final that can opportunity ready to enter in the market are between 5 and 10. Among them there are some very ambitious projects, that include multiple market's segments (involving a large number of partners for the implementation).
A few projects, such as the last mentioned, because of their complexity of development will be launched: 1 or 2 at most.

In the figure (Figure 4-10: Outcome) four steps were represented instead of the three phases used during the approach, with the purpose to give to the reader a complete overview of the evolution of the radar and of the selection process.
To create a parallel with the steps of the approach, the elements of the figure should be reassembled as follows:

- Creative scanning, corresponds to the beginning of the first phase "Front Loading".
- First scan, corresponds to the end of the first phase "Front Loading" and to the first milestone.
- Research, corresponds to the second phase "Development" and to the second milestone.
- Deep study, corresponds to the third phase "Launch" and to the third milestone.

Finally, I would like to underline that the approach, being built with the design science research, is iterative. Since the ideas are rarely discarded and forgotten, usually they remain within the network database and more often they are reused as basis for new business ideas. They will follow the entire cycle and perhaps become concrete business opportunities able to be launched in the market.

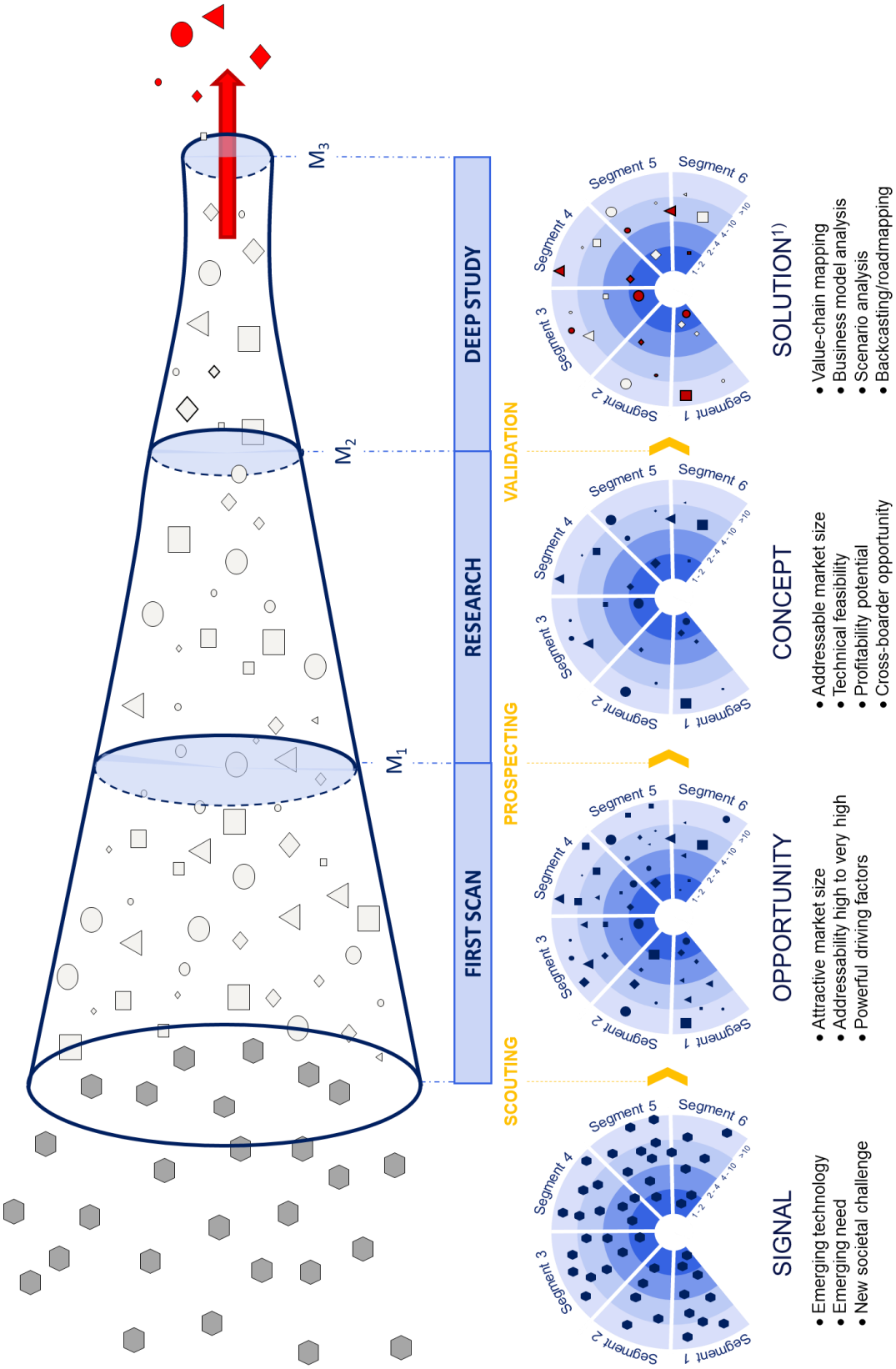



*Figure 4-10: Outcome*

### 2.4.5. Importance of group forming

A key aspect of this approach is the network, the group of partners that has joined with a common purpose: to find new business opportunities.
As mentioned above, there are three main players: Leading Group, Cluster Organizations and Research Group. For each of them, representatives have been selected who made up the Core Group, this is especially necessary for the Cluster Organizations in case they are composed by numerous companies and their networks. The leader of the Core Group will be a member of the Leading Group and he will have to monitor the progress of the work of all the teams and incite them to do their best.

The Core Group is usually composed by strangers and for this reason it I important that it follows the training process.
The training process takes time and, according to the psychologist Bruce Tuckman, consists of five phases, that commonly all teams pass through. The model's name is given by the phases, "Forming, Storming, Norming and Performing".
In the following paragraphs I will analyse them briefly[46]:

I. **Forming:** initial phase in which the team members are enthusiastic and anxious, at the same time, of the work that they are going to do in coming months. In this phase the role of the leader is fundamental because he will have to reassure, define the deliverables of each partner and guide the team to the final goal.
This first step will last until the members start to know and trust each other.

II. **Storming:** phase in which the first problems begin inside the team. They can be of various kinds: incompatibility of the work style of the diverse partners, dissatisfaction of the results achieved or the work done by the other members, inconsistencies with the method used and loss of the path of the project vision. It is a very delicate phase which, if it is not overcome, it is the cause of the failure of the project.

III. **Norming:** phase in which the situation of normality is re-established, and cohesion is created within the group. The divergences and uncertainties of the previous phase are smoothed out and the team becomes cohesive, bonds are established between the partners, a relationship of mutual trust is established, and work is done with the support of the team taking advantage of each member's strengths. It is during this

[46] Tuckman, B. & Jensen, M. (1977) Stages of Small Group Development. Group and Organizational Studies, 2, 419-427

stage of development that members begin to feel a sense of group belonging. The share of ideas and creativity is high.

The speed with which the team moves from one phase to another depends on the skills of the leader to create bonds within the team.
The storming phase may reoccur during the project, especially if the execution will be changed.

IV. **Performing:** the fourth phase is characterized by interdependence in personal relationships and in the ability to problem solve to reach the common goal. The group is more productive and individual members have become self-confident. There are not free-riders and each member works hard to perform well and aim to the team's goal. The leader has set efficacious structures and processes.

V. **Adjourning:** it is a fifth phase, later added to the model. It is used only if the project is temporary. It is the phase of dissolution or restructuring of the team.

Within the group it is essential to maintain a high level of commitment and engagement of the partners. The factors that can damage them are multiple, for example: the lack of a shared vision, the impossibility of expressing individual opinions, the lack of trust, the lack of accountability, an unclear definition of the goals to be achieved and the lack of empowerment.
These are just some examples that cause a malfunction within the team, the leader must try to prevent them from occurring and to prevent them he has some practices available[47]:

- Building a relationship of trust: setting achievable tasks to avoid that expectations are disappointed. Create an environment in which each member feels free to propose ideas and expose problems of any kind. Regarding the last ones, it is always important to face them, whatever their cause.

- Align all the members with the project vision: it is fundamental to be sure that everyone has clear what are the objectives of the project, to accept criticism and advice to improve them. Feedbacks from other members are essential for the leader to understand how to properly organize the work and create a collectively shared vision.

[47]Kristeen Bullwinkle, (2014), https://www.talentgear.com/learn/june-2014/achieving-team-commitment/

- Clarify roles and responsibilities: setting them by learning about the strengths and weaknesses of each member of the group.

- Promote group identity: ensure that all partners feel part of the group recognizing the results achieved, both at individual level and at team level. Using rewards or awards to encourage to obtain superior results. It could stimulate all the members to do their best.

- Accepting the failure: during the whole project the setbacks are taken into account and they must be exploited to learn how to improve. Reasoning on mistakes to avoid they repetition is a fundamental step to continue to progress as a team and to reach better results.

At the end, but not at least, it is important to take into consideration the "group dynamics"[48]. They describe the roles and behaviours that people have when they work in a group and their effects on the work environment and on the other team members.
The capability to influence other members should not be underestimated because, according to Kurt Lewin (a social psychologist and change management expert), if a relationship of trust is established, the partners work for the collective good and hold each other accountable for the achievement of the results.
This type of environment allows team members to work better. Some studies have shown that in a positive team partners can be about twice as creative as a medium group.

Trying to implement these precautions, a cohesive group can be created to achieve the established results.
Members act for the collective interest using creativity and their knowledge to complete the assigned activities. They are open to the dialogue and it is clear to everyone which will be the next steps and who holds the responsibility.
The group is not scare about the defeats, they accept and rationalise them to achieve the results in line with the project vision.

The leader is essential to keep the commitment both within the Core Group and inside the network. As him the representatives of the companies have to do the same with their own firms.

[48] Mind Tools, https://www.mindtools.com/pages/article/improving-group-dynamics.htm

## 4.10. PERISCOPE Project

PERISCOPE Project has the purpose to find "Blue growth opportunity". Its name describes the vision of the project, in fact as a periscope, an "optical instrument for viewing objects that are above the level of direct sight or in an otherwise obstructed field of vision[49]", the project has the scope to identify systematically potential business in the Marine industry of the North Sea areas.

At the beginning, in the project were involved 12 partners that constitute the Core Group: 7 belonging to the Marine and Maritime sector that represent the Cluster Organizations, 4 belonging to the academical and research area that represent the Research Group and 1 representing the Leading Group. They came from different areas around the North Se: Denmark, Germany, Norway, Netherland, Sweden and United Kingdom.

The project started on 31st of October and will last at least three years. Referring to the approach presented, the first phase was completed, and the second phase has just begun.

Now I will briefly present the results obtained by applying the approach.

### 2.4.6. 1st PHASE: Front Loading

The Leading Group, in the last months, has tried to create commitment within the Core Group because the majority of partners do not know each other. They have information of others only as actors in the same market.
To facilitate the creation of a relationship of trust, it immediately tried to involve the partners by making them participate in the decisions process and explaining the approaches used step by step. It was possible organizing meetings, both face to face and via conference calls.

In addition, the Leading Group immediately started to create a marketing campaign to sponsor the project and expand the network and it started to explore possible sources of funding. PERISCOPE is a European project, this is the reason way it focused mainly on the identification of tender notices that could become accessible by presenting the final opportunities.

[49] Dictionary.com http://www.dictionary.com/browse/periscope

Finally, together with the other members, it worked on the definition of the road map, consisting on tasks and short and long-term milestones, that it will be used to aim the final goal.

The Research Group was the one most involved in this first phase: as it is involved in structuring the sequences of forecasting methodologies and drawing up a list of future business ideas.To obtain the list, it was carried out an in-depth analysis of reports relating to the Marine and Maritime sector. The reports used were provided mostly by the other partners or found on the web.

The Research Group analysed about 45 reports that allowed to identify the mega trends and the trends of the market and get starting points for the creation of business ideas.

In this first phase, around 70 future business ideas were collected and they are related to the two typologies previously reported:

- **concrete ideas:** related to products and services based on known concepts or technologies close to the current ones.
  For example: Subsea Gardening. Balloon-like biospheres take advantage of the sea's natural properties to grow plants.
  The underwater temperatures are constant, and the shape of the greenhouses allows for water to constantly evaporate and replenish the plants. What's more, the high amounts of carbon dioxide act like steroids for the plants, making them grow at very rapid rates.

- **theoretical ideas:** related to futuristic products and services, which do not exist now on the market and are based on unknown concepts or non-existent technologies.
  For example: Underwater Cities. Create underwater colonies supporting up to 100 people – the few bunker-like habitats in operation today providing a blueprint. The oceans will form the most coveted frontier for urbanization.
  Think of giant, self-contained, undersea cities floating in the water column; not rooted to the sea floor like the sessile corals or sea lilies, they'll drift in the oceans like jellyfish, avoiding storms and seeking more congenial climates.

An important part of this phase was the organization of the collected data in a way that guaranteed that no information would not be lost or forget.

To guarantee the homogeneity of the exposure of the identified ideas, it was created a template, shown in the figure (Figure 4-11: Idea's template), in which it was possible group all the information found. The main parts were:

- Brief description of principal strengths of the business opportunity
- Motivation of the value of business opportunity for the North Sea
- Main stakeholders
- Relevant related activities, synergies that can be developed, etc.
- Trend Assessment: use to mark the total market potential, the technological maturity, the disrupt potential and the market readiness.

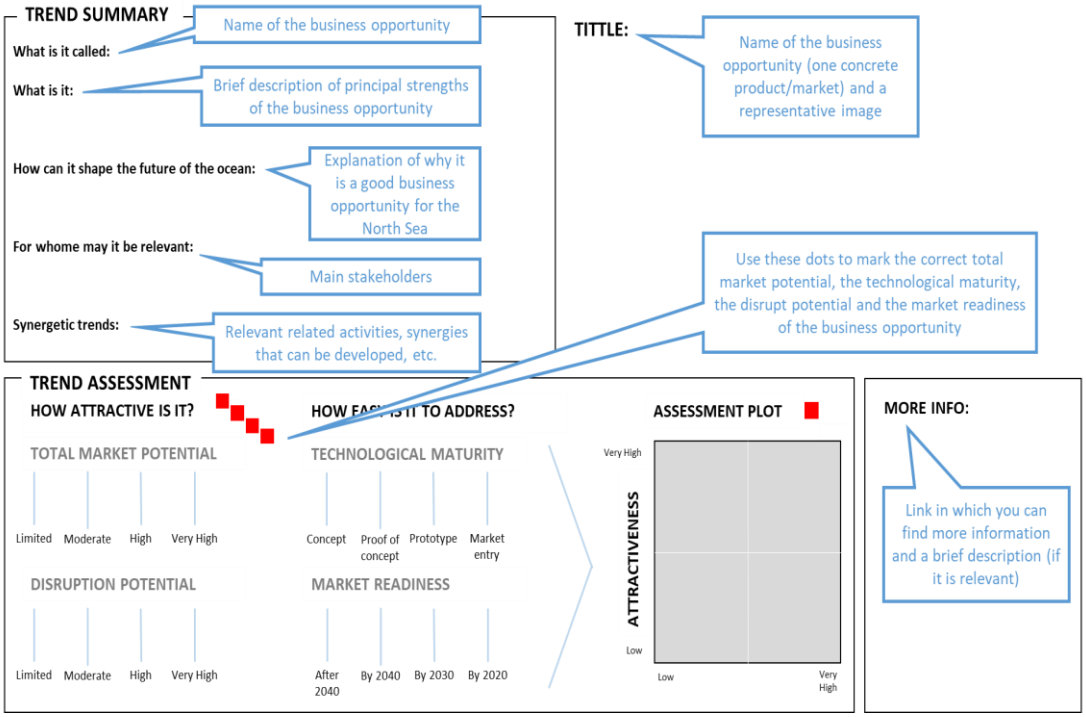



*Figure 4-11: Idea's template*

The template evolves in parallel with the progress of research. Initially the ideas have remained internal only to the Research Group that gradually added data, but the next step was to share them with the other groups.
This would inevitably have led to an increase in the data to be processed and the need for an instrument able to update itself in real time.

The template in ppt was not suitable for this second step, so we relied on an external consulting group that created a platform, showed in Figure 4-12: PERISCOPE's Platform. It has been used to collect business opportunities and to collaborate with the partners at the same time.

In the platform were implemented a lot of functions (such as the possibility to evaluate the opportunities and see the aggregate results in the radar) and additional elements to update the partners on all the topics examined (for example, reports on new technologies, articles related to new regulations, new market studies, etc.) that will be used in the following phases.

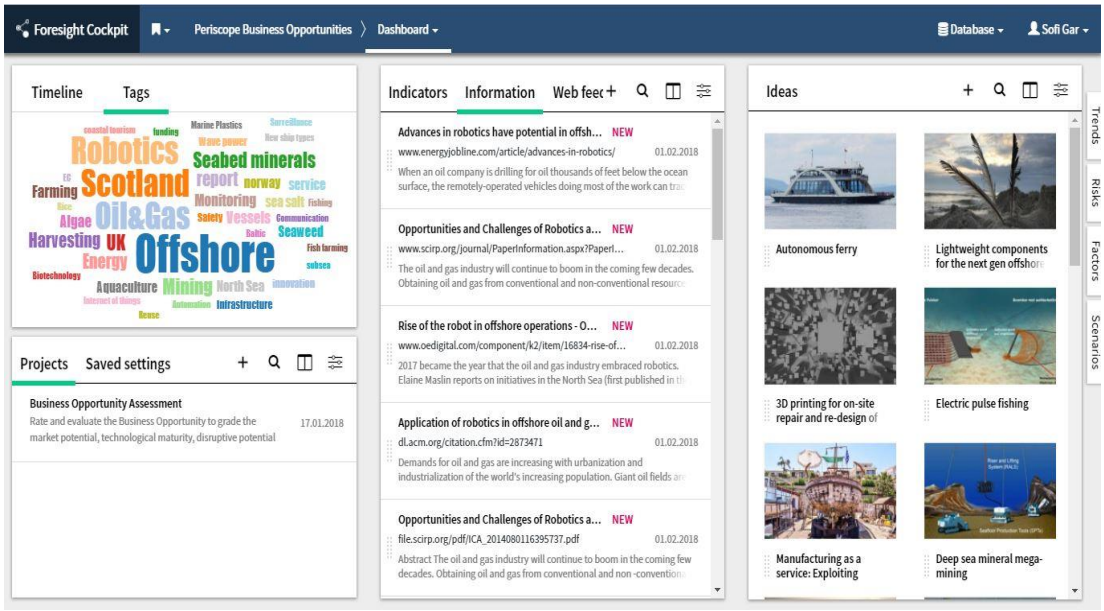



*Figure 4-12: PERISCOPE's Platform*

In parallel with the creation of the platform, it was also digitized the initial template and the ideas found were uploaded. The new template, shown in the figure (Figure 4-13: Opportunity template of the Platform), allowed to add the information of the old one, adding the possibility of numerous functions. The most important of these ones are:

- **Tags:** keywords that describe the analysed idea.
  These are links in the platform that allow to filter opportunities based on partner's interest and connect them together. The tags are summarized in the landing page and prioritized on the number of utilizations. They are represented graphically and this allows an immediate overview of the main topics covered.

- **Comments:** area in which the members of the platform can discuss about the opportunity analysed in real time.

- **Links:** area in which partners can add links both internal and external to the platform related with topics in which they are interested in or papers used to design an opportunity.
  Through this section it is possible link the analysed idea with the sources that inspired its creation, with relevant articles or with researches that support the potential of the opportunity**.**

- **Rate:** area that it became available when the first milestone will be reached.
  In this area it is possible to evaluate the opportunity with the five criteria, mentioned in the previous chapter, Market potential, Disruption Potential, Technological Maturity, Market Readiness and Overall Impression, and to access to the updated version of the radar.

At the same time, during the exploration and creation of the ideas, it was carried out a study of the megatrends and trends of the Marine & Maritime sector. Mega trends have different meanings and impacts for different industries, companies and individuals. Analysis of these mega trends and their implications establishes a solid base for future strategy, defines development and innovation process, and structures impacts product and technology planning.

During the reports analysis we reached out 12 mega trends that characterize these sectors. Comparing our results with the main trends of the other sectors, we understood that are two types of megatrends:

- The first group is made by the ones strictly correlated with Maritime and Marine industries and it is composed by 7 megatrends: Climate change, Technological change, Spatial planning, New experiences, Green energy, Transport and Harvesting.

- The second group is composed by 5 megatrends that are indirectly correlated with the Maritime and Marine industries: Communication, Connectivity, Big data, Urbanization and Service.

For each mega trend we articulated trends, that define better subgroups of the megatrend. Some of them are strictly connected with a specific megatrend but some other are shared among diverse megatrends.

The main trends individualise are: Dwindling Natural Resources, Reduce Concentration of Pollution, Pioneering Technologies, Shipbuilding, Smart and Unmanned Vehicles, Biomimicry, Human Augmentation, New Source of Food, Fishing, Aquaculture, Deep Sea Mining, Environmental Protection, Population, Affordability, Sustainability, Maintenance and Reuse, Policy Environment, Integration, Standardization, Customer Experience, Security.

During the initial phase the Cluster Organization has not been too much involved.
They participated in organizational meetings and provided the material to the Research Group, but they were not yet directly involved in the identification of the ideas.

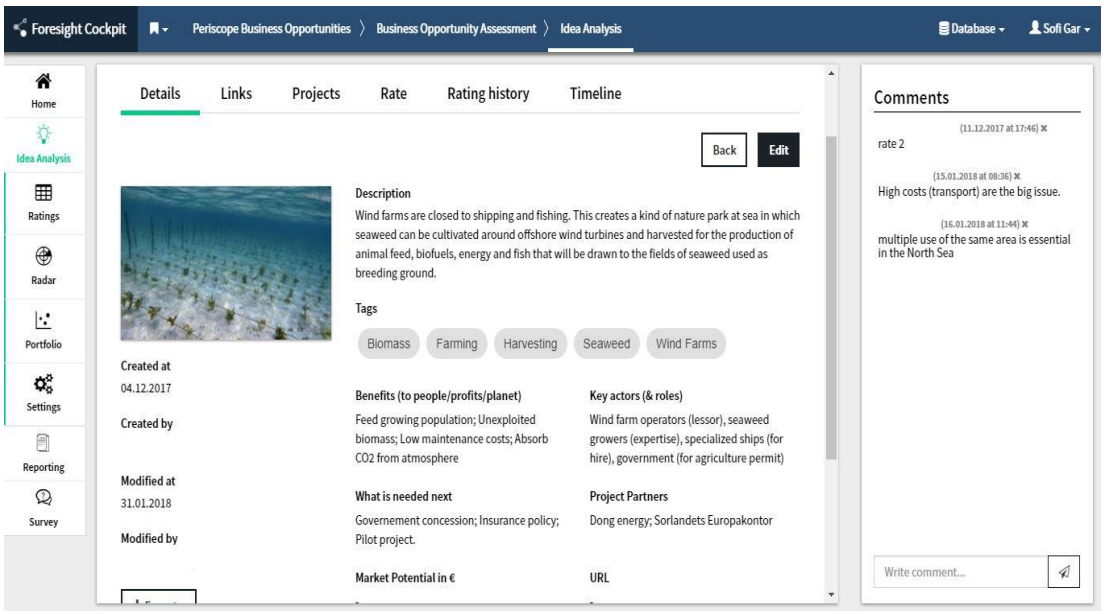



*Figure 4-13: Opportunity template of the Platform*

### 2.4.7. $M_1$: Radar

Once the first phase of the approach was completed, a two-day workshop was organized to update the partners of the results achieved during the first phase, to decide the next steps and to develop the first version of the radar.

All groups contributed to the realization of the contents of these days:

- The Leading Group presented the main European tender notices that could be accessible to the structured opportunities of the approach final phase. It also explained the next steps and the marketing plan to publicize the project.

- The Cluster Organizations have prepared conferences on diverse topics: Planning regional engagement, Ecosystem strategy and Entrepreneurial discovery process.

- The Research Group has prepared conferences about: Challenges and growth drivers in Maritime and Marine industries, Difficulties of the development in new fields and Methodologies to forecast future market size/potential.

The topics covered were essential to create a basic knowledge for the next phases of the approach.

Besides these theoretical moments there have been three practical and creative activities:

1. Workshop: Blue-sky activity to generate new ideas.
   The partners were divided in small groups of 4/5 people and they have to brainstorm about the Marine and Maritime Sector, taking into account of megatrends highlighted during the previous step, with the purpose to identify and describe at least a new business opportunity. At the end of the activity a member of each group presented the idea developed to the other participants with the purpose of reviewing the final works and discussing about the results.

2. Explanation of functionality of the platform and uploading of the business ideas found during the workshop.

3. Rating of the ideas previously uploaded in the platform and creation of the first version of the radar.
   This first evaluation of the business opportunities is made only with the knowledges of each partner. The results showed in the radar, Figure 4-14: Platform's M1

radar**Errore. L'origine riferimento non è stata trovata.**, will change during the next phases.

The radar in the platform has different settings: it is possible to associate different criteria (choosing between Market potential, Disruption Potential, Technological Maturity, Market Readiness and Overall Impression) to the centre and the segments of the radar and to the size, the colour and the shape of the blips.
This graphic representation facilitates the visualization of overall the opportunities in which the user is interested in, taking into consideration, at the same time, the diverse criteria.

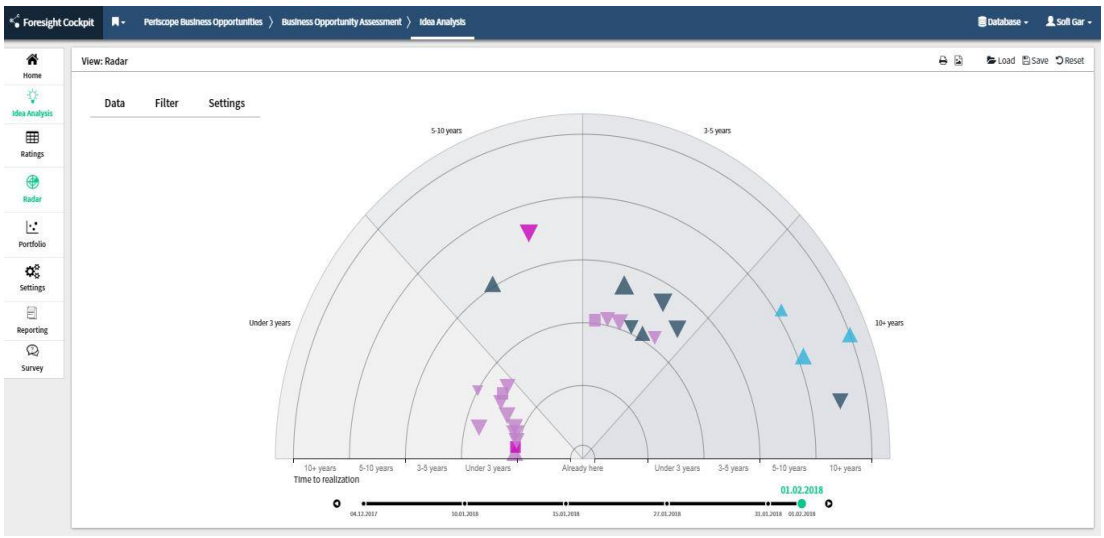



*Figure 4-14: Platform's $M_1$ radar*

# 5. CRITICAL REFLECTIONS

In this chapter I want to explain the connection between the New Approach, previously presented, and the 3P Method described in the literature, chapter 3.3 Strategic Foresight and Strategic Business Development.

Moreover, in the second part of the speech, I want to reflect and define the limits that the current version of the approach presents in order to put them as valid ideas for future studies.

## 5.1. Matching with previous literature

In the description of the approach the phases were intentionally called with different names compared to “Perceiving”, “Prospecting” and “Probing” of the 3P Method because the latter ones were abstract for non-academic user and not suitable for practical adoption.
The terms adopted during the creation of the approach, “Front Loading”, “Development” and “Launch”, were more immediately understandable even for future adopters. In fact, these terms are part of collective imagination: they are phases that are normally identified in the industrial context, therefore the users immediately understand their macro objectives and their applicability.
I can state this because, during the presentation of the approach to the PERISCOPE’s partners, we did not find remarkable difficulties to communicate them.

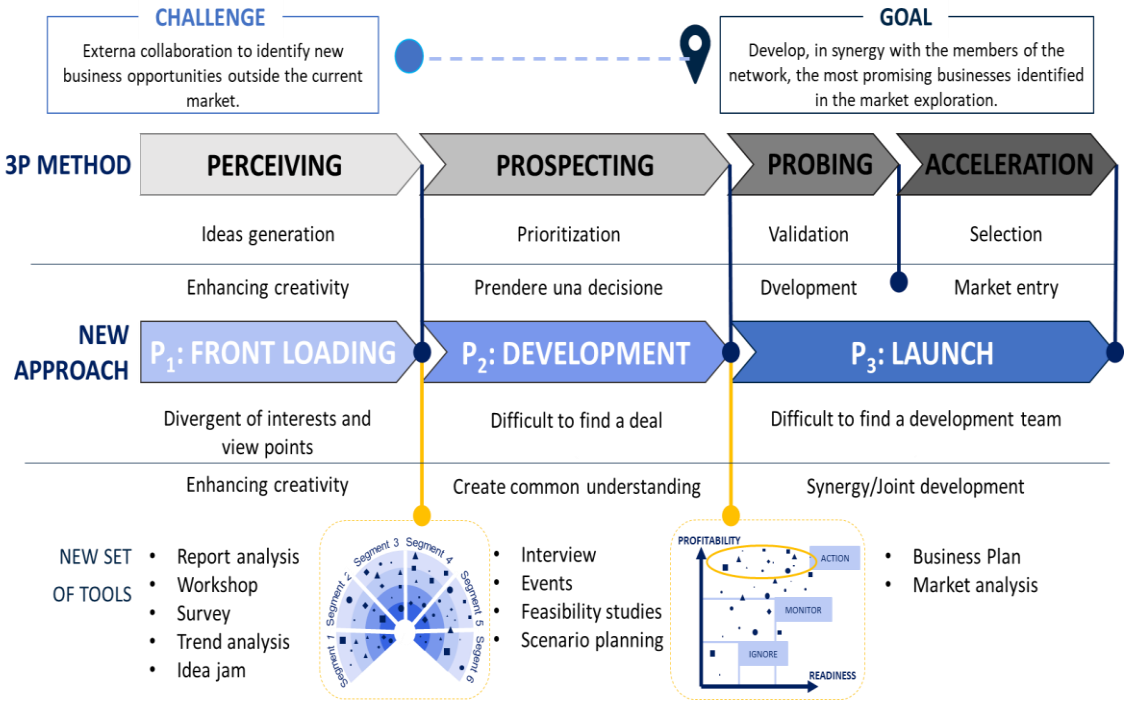
In the following figure,

Figure 5-1: 3P Method and New Approach matching, I created a parallel between 3P Method and the New Approach, to demonstrate that the results obtained have a concrete value and lay their foundations on previous and well-identified literature.

The size of the phases is only a graphical setting and it does not describe their real duration. In fact, it varies in accord to the complexity of the market explored and the size of the individual project.
Moreover, even though in most cases it is preferable, these phases do not necessarily have to follow a linear sequence, sometimes they are partially done in parallel and iterations are necessary to deepen and better articulate the contents.

As shown in the figure,

Figure 5-1: 3P Method and New Approach matching, the three phases of the New Approach do not correspond perfectly to those of the 3P Method, “Perceiving”, “Prospecting” and




“Probing”. It is necessary to completely describe the approach, in agreement with R. Rohrbeck, adding a fourth phase, "Acceleration", that describe its last part.

*Figure 5-1: 3P Method and New Approach matching*

In the following paragraphs, it is described the parallel between the 3P Method and the New Approach:

I. The first phase of 3P Method, “Perceiving”, is related to the exploration of the market and the identification of the main trends that characterize it.
In this phase the user has to deepen his knowledge of the market environment in which he is interested and to achieve a greater awareness of future customer expectations. At the end of the phase, the user is able to define plausible ideas for future business.
This description is strictly correlated with the first phase of the approach, "Front Loading", in which is settled almost the same objective: to define innovative ideas, that have the potential to become valuable business in the market analysed.
They could be both concrete, well-structured and defined in detail, and theoretical, sketched and specifications lacking.

Vecchiato and Roveda (2010) have highlighted the need to define a series of instruments suitable to understand future market trends. We identified a group of tools (such as Papers analysis, Workshop, Survey, Trend analysis and Idea jams) that used in parallel permit to obtain a deeper knowledge of the analysed market.
We also defined and applied a set of criteria to evaluate and categorize the emerged ideas. It's composed of five indexes: Market Potential, Disruption Potential, Technological Maturity, Technological Maturity and Overall Impression. Thanks to the evaluation with these criteria, a first version of the radar was built. The radar is an innovative foresight tool that allows to have an overview of all the possible opportunities compared to time: this permits to move up future market changings and to make more aware strategic decisions. The first version gives a rough interpretation of the market that has to be improved.

II. The second phase of the 3P Prospecting method, "Prospecting", has a similar purpose to the ones of the New Approach, "Development". In fact, in both the goal is a better understanding of the ideas identified, a more complete definition of both the steps necessaries to the realization and the business value. In 3P Method they are defined *insights*, whereas we simply defined them *opportunities*. They belong to diverse typologies and have different levels of uncertainty and feasibility.
To recognize their value, in accord to Gavetti and Menon 2016, we adopted specific methods: interview market's experts, participation to events about relevant arguments, scenario planning and feasibility studies.
They permit, in addition to the identification of their value, to reduce the level of uncertainty and define the necessary steps to develop them.
After this analysis we updated the radar, the new version allows to concretely have an overview of the future trends of the market and the value and timing of the diverse opportunities. In addition, we made a new categorization: HLRG graph (High Level Reference Groups). With this tool, the opportunities are represented as point in an oriented graph, on abscissa the Readiness and on ordinate the Profitability. We identified three groups of opportunities called "Ignore", "Monitor" and "Action". The last group is characterized either by a fast realization or by a good profitability or both and we decided to study them in depth in the final phase.

III. The third and final phase of the New Approach, "Launch", is described by two phases of the 3P Method: "Probing" and "Acceleration".
During the "Probing" phase, the users are involved in the field test to validate the identified opportunities, to prototype and test them. The network partners have to

do the same during the initial phase of “Launch”, additionally they have to create detailed business plan for each opportunity to understand adequately the future perspectives and the expectations of profitability.
To complete the third phase of the New Approach, it is necessary also a forth additional phase “Acceleration” because the approach has the goal to help the network to successfully place the opportunities on the market, in order to guarantee good execution and increase the chances of success. In the last phase, funds or sources of funding are sought to finance the development of the selected opportunities and a team of experts is created to support the development and management of new business. The goal is to help the partners, involved in the realization of the opportunity, to set a project management to maintain the collaborative relationship established and to grow the business profitably quickly.

In conclusion, the comparison between the new approach and the 3P Method highlights that it allows the achievement of the traditional challenges related to market exploration: the identification of ideas, the allocation of priorities to opportunities, their validation and the final selection of the most promising projects for the launch on the market. In fact, it sets up a series of activities that facilitate its achievement.

Moreover, the innovative approach represents a concrete solution to the main problems related to collaborative exploration. In fact, the challenges related to the network are strictly related to the coordination and effective exploitation of the resources and skills available. The structure of the approach in gates is a first factor that allows the achievement of each phase in an efficient manner, in fact if the partners do not get adequate results and shared by the majority of the network components, they have to iterate and find better results.

In the first phase the main problem is divergent of interests and viewpoints, the approach provides a sequence of group forming activities that allow a deep knowledge among the partners and a creation of a bond of trust.
In the second one the problem is to find a common agreement for all the partners to give priority to the identified opportunities. The approach, to solve it, makes objective assessments that allow to automatically divide the opportunities into groups of interest. This permit to define an objective priority that can be commonly shared. There may be cases of disagreement and for this reason workshops are set up in which the partners can work and compare directly.
In the last phase the main problem is to define the development teams for the opportunities to be launched in the market. The fear of the partners is to have participated in the project but to be excluded from the benefits related to the placing of the product on the market. At

the contract level, the network can guarantee a minimum number of activities in which it is involved. Moreover, the nature of the results, usually complex, requires the involvement of numerous partners in order to be concretely realized.

The second innovative characteristic of the approach is the precise definition of the tools for an effective market exploration in each phase. Furthermore, innovative tools have been introduced that simplify the understanding of the current state of the market and decision making: the radar and the HLRG diagram.

## 5.2. Limits

The version of the approach presented is among the first of its kind and it will require further revisions and improvements. The result obtained from our work has not yet been fully validated but can be considered highly efficient at a conceptual level.
It has been applied concretely to the PERISCOPE Project Interreg case study for the exploration of the Marine and Maritime market, the latter still in progress, will require two additional years to be completed. For this reason, quantitative data are not available, and we do not have quantitative evaluation of the results obtained. Moreover, to make such type of analysis, it would be necessary to apply the approach to several projects, in order to create a comparable database between them.

In this section I will therefore try to qualitatively show the critical aspects that we imagine can be presented in future applications. In most cases they could not be resolved due to time constraints, but some improvements are already underway.
The limits mentioned must be interpreted as starting points for future improvements to the approach and as challenges to which a solution must be found.

We have identified two critical issues that can influence the overall approach:

- **The strengths and actual capacities of the partners are hardly identifiable before the network creation**.
  Before the formation of the network, the respective members carry out in-depth analyses to understand the key characteristics of the future partners and participate in numerous meetings to personally meet the individuals with whom they will have to collaborate. Despite the efforts it remains unlikely to have the certainty of the actual skills of each one. This is not to be attributed to a superficial choice, but can be linked to several factors, some related to the human factor (such as the difficulty of trusting each other's, the fear of helping competition, etc.), others related to the intrinsic incapacity of the companies to evaluate themselves in an objective way.
  Regarding this last observation, it must be considered that companies can precisely draw up a list of their best practices and the results achieved, but they are unlikely to list their full potential. Furthermore, at the network level it is complex to understand verbally what competences of one partner can be complementary to those of another and what synergies can be created.
  Usually what is perceived, before the formation of the group, is only a limited percentage of the competences in play.

The approach presented, although it does not present a solution for a priori selection, has the potential to solve the problem. In fact, once the ideas of possible future business have been identified, the partners are called to confront and contribute not only to those relating to their core business but to all those identified. This requires an effort to imagine different applications of their resources /practices and brings out unexpressed secondary skills that otherwise would not be exploited.
A concrete example: a producer of steel's anchors, comparing with a wind company, realizes that the properties of its material can be the solution for the construction of wind blades more resistant to weather changes, allowing in this way to be installed in adverse environments.
The approach also, being constituted by gates, forces group forming in the sense that if the partners do not find a way to agree and collaborate, it does not to continue with the following phases. From the second phase the creation of conflicts is more likely, for example in the allocation of the development priority or in the subsequent choice of production. In this case, the approach obliges the comparison between the partners, through workshops and meetings, in order to find a solution in which objectively all the members benefit most from it.

- **Ownership of the identified opportunities is uncertain.**
  The partners involved in the exploration of the market invest funds, resources, time and knowledge in the network. The interest in obtaining valuable results is high. A concern, which sometimes limits involvement in the project, is linked to the certainty of effectively realizing the opportunities identified collectively before individuals behave like free riders and develop the idea independently.
  The limit mentioned is mitigated by the approach because, before the network is formed, all the partners are required to sign a contract that covers the Core Group of ownership of the results and the right to decide, by majority vote, the members who will be involved in the production of specific projects.
  Furthermore, further protection is intrinsic to the nature of the project: the opportunities identified are usually business involving actors from different segments and with different expertise, the synergies created and necessary for development are hardly replicable externally.
  However, it is suggested to carry out in-depth studies that improve the protection of ownership of the network results, keeping them accessible to all stakeholders who wish to contribute and collaborate.

Applying the approach for the first phase and the respective milestone, we identified specific limits that are presented in the list below:

- **The report analysis is sometimes biased**. They are written by people inside the sector and often involved in the production of the innovations presented. In some papers the descriptions of the innovations could be exaggerated to promote the purchases or the investments.
  However, they represent an important source of inspiration for further business opportunities. The approach explicitly advised to carry out reports analysis, interviews, experts' consultancy and to participate in conferences and workshops in parallel to obtain objective information and to overcome the reports gaps. These tools together allow the partner to be not trapped in bias and to get a clearer and more objective idea of the current market situation.

- **Definition of criteria**. We worked hardly to define the five indexes used to rank both the ideas and the opportunities. The goal was to find out criteria that were, at the same time, specific and valid for the case use project and general enough to be apply to every market.
  The five filters identified permit to categorize in a useful way the opportunities in the radar and to give to the adopters a clear overview of the diverse opportunities' positions.
  Otherwise, we retain that each time the approach is applied in a new project, the new network has to deeply analyse if the market is characterised by precise characteristics that could be better used to categorize the opportunities.

- **Partners involvement**. During the "Front Loading" phase the Research Group made an intense effort to identify the most innovative ideas and the Cluster Organization were involved only at the end of the phase.
  They were not aware of the results obtained and they took a while to have the correct mind set to contribute themselves to the identification of other businesses. This costed precious time during the brainstorm section of the workshop.
  We would recommend, for further applications, to set more meetings (for example idea jams and workshop) involving since the beginning all the partners. The team work will allow a better awareness of the findings and it will permit to maximize the synergy between them.
  Furthermore, it will accelerate the process of team forming: the partners will trust to each other sooner and the network will benefit earlier of the collaboration benefits.

# 6. CONCLUSION

I decided to develop this thesis with a specific expectation: defining an approach that could be used by networks, composed by companies with diverse background, to explore new business opportunities, to exploit their potential and to manage the resources and the capabilities of each partner as a structured single firm.

Together with R. Rohrbeck and M. Spaniol we developed a New Methodological Approach that reflects these initial expectations.

As a frame of reference, I used the 3P Method in which its three phases delineate a sequence of actions to be taken to achieve the results prefixed in a single firm.
Furthermore, we structured the approach using the Design Science Research methodology because, in a context with high uncertainty, it allowed to iterate the sequence of activities multiple time to improve and adjust the final results.

We obtain an approach that has three main key strengths:

I. **Be a guide of network building**. Initially are given some advices about the characteristics that partners should have. Then we specify some good practises for group forming. When group dynamics are triggered the network has the capability to act as a single firm focusing on the common goal: exploration of new market to identify long-term opportunities.

II. **Be a sequence of actions and milestones** that the partners could use to efficiently and efficaciously achieve their goal.
The approach initially helps to unlock barriers of innovation by enhancing creativity internally with the aim to identify ideas for future business.
It defines steps that permit to maintain the members focus on deeply and objectively studying of the characteristics of opportunities with the final purpose of identify the more valuable and innovative ones and launch in the market.

III. **Be a set of tools** that enhance the abilities to foresight and predict future changings, exploiting all the resources and the knowledges available internally in the network.
We introduced two innovative tools that facilitate decision-making and reduce gradually the level of uncertainties of future businesses.
The first one is the radar, a graphical overview of the future market's opportunities and their market size.

The second one is the HLRG graph (High Level Reference Groups), a graph with market readiness, on x-coordinate, and profitability, on y-coordinate, that permits to identify the most valuable opportunities with the aim to study them in depth in the final phase of the approach.

The development of the New Methodological Approach represents the starting point of many future researches.

My first recommendation is to carry out the validation of the method using the PERISCOPE project as a case of applicative study. As previously mentioned in chapter 5 "PROCESS MODEL", the version of the presented approach, although complete, has not been fully validated, but only the first phase of “Front Loading” and part of that of the “Development”, because the project used to gather feedbacks on the design, it is still in progress and it will be for at least another year and a half.

Another interesting study should be the evaluation of the applicability of the approach to other several projects. It could allow to definitely validate the approach identifying its weaknesses and improving it with feedbacks from diverse networks and markets.
After several validations, it could be interesting making a quantitative analysis, comparing the diverse projects, of the results achieved to finally define the real value of the approach.

Finally, referring to the limits of the previous chapter (5.2 - Limits), I would like to recommend a specific research to find out a more precise list of characteristics or attitudinal tests that can be used during the partners selection in the network forming.

I hope to have motivated a broader discussion on which networks are involved in market exploration with the purpose to identify, plan and develop synergetic innovations.
I strongly believe that the new approach described is a valid way to plan and execute joint initiatives and thus overcome the barriers that prevent to foresee the market changings and the future developments.

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# FIGURES INDEX

# I. APPENDIX

## I.I. Foresight historical evolution and most common methods

In this chapter I want to examine in depth the foresight's origins with the purpose to give to the reader an overview of the evolution of the diverse interpretations and the different methods used.
I also summarise the study made by R. Popper, (2008) because it highlights the methods mostly employed by managers of diverse sectors and it gives a satisfy classification of the vast majority of the existing methods used today.

Only during the past century Strategic Foresight was born and became a strategic topic. It has been developed rapidly and it became fundamental nowadays, in the following figure (Figure I-1: Strategic Foresight's evolution) is showed briefly the evolution of different thinking.

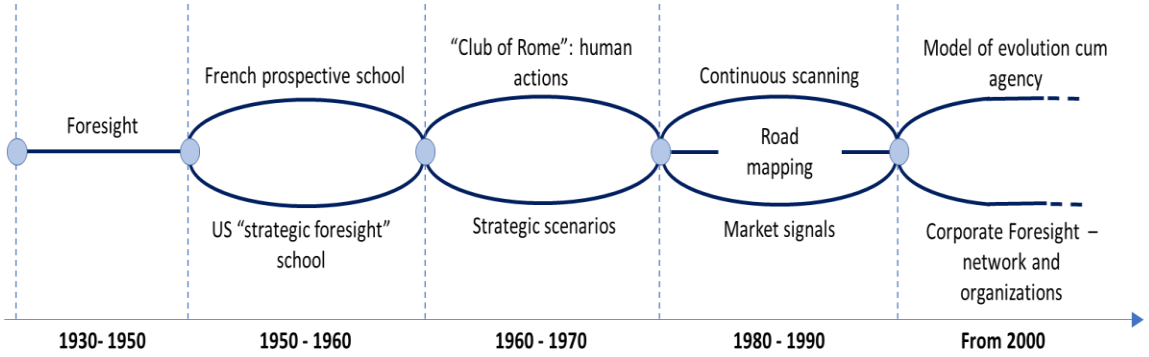


*Figure I-1: Strategic Foresight's evolution*

One of the first time in which it was introduced the term "foresight" was in 1931 by Alfred North Whitehead. Despite it is a very early observation it represented the core of the modern concept of Foresight. In fact, he introduced it highlighting the importance, for the years to come, to analyse deeply the society, that became day by day more complex, with the purpose to find the major factors that influence the customer's choice. This was mostly true for managers that had to develop new competencies, also in a collaborative environment, in order to satisfy new customers' needs and anticipate the changings[31].

In 1950 there were two schools of thought regarding Corporate Foresight.
The first one was French and was founded by Gaston Berger. He exposed the theory of collaborative systems thinking, he developed lot of methods that focused on organizational

issues and decision-making. The structure of these methods was similar to a workshop: it incentivized the collaboration and communication between key actors that manage and decide about the future of the firm.
The second was American and it was founded by Hermann Kahn. He focused on "strategic foresight" and foresee methods; one of its most famous was the Delphi technique, used to consolidate expert opinions[31].

In 1968 in Italy born a new school of thought called "Club of Rome" that concentrate on human actions. They argued that the creativity and the imagination of humans are more important than the quantitative analysis[31].

In the same period, between 1960 and 1970, started the era of scenarios.
The popularity of this methods increased especially by the Royal Dutch/Shell's adoption, using it to analyse the oil crisis, open a dialog on the possible scenarios and not to foresee new business opportunities. They were one of the first companies that understood that market's future has not a linear development and it will be necessary new forecasting tools to understand the complexity of the world. Many other firms adopted scenarios to foresee the future and managers became day by day more aware about their clients' necessities. Despite decade have passed Forecasting Scenarios remained one of the most used technique because it allowed an overview of all the plausible possibilities[31].

Between 1980 and 1990 the companies were not stable as in the past, the competitive rivalry increased because of the Globalization. Firms had to find out a way to innovate themselves and their business.
Strategic Foresight, usually used to support long term plan, was not enough anymore. New methods were introduced: road mapping, continuous scanning and the strategic foresight based on market signals (it interpreted the intensity of the different signals and it turned them in business opportunities)[31].

From 2000 the implementation of Strategic Foresight in the companies' process became routine. It simplified the understanding of the market and the opportunities' prevision, but it still remained lack in the interpretations of signals because the enormous willingness of data and the subjectivity of the interpretations. The analysis of data became a serious problem for the firms that could not manage entirely it, some companies gave the analysis partially or totally in outsource or some other used specific tools (specific algorithms) for the initial analysis. The Foresight's scope was to integrate this activity to use better and faster the results or help with interpretation during the process.

Nowadays the are two main focus[31]:

1. **Corporate Foresight** Corporate Foresight is an established foresee tool in the company routines because its purpose is helping the employees to develop an innovative way of thinking. Thanks to this method they became more proactive questioning about their companies' improvements and about solutions to keep up with times[50].One interesting emerging tool that help to have an overview especially about the development of new technologies is Cisco's Technology Radar: it allows people to understand future trends and changings in an analytic way and taking long-term decisions considering the observations made.
   An emerging issue is "**networked organizations**".
   In a world that change very quickly, there are innovative challenges, as the adoption of driver-less cars or solution to climate change or the replacement of oil with eco-friendly energies etc, that a single firm cannot tackle alone[51]. Networked organizations are a group of companies, also from different sectors, that shared their expertise to develop in synergy effective innovations.

2. Model of **evolution cum agency** is developed by Gavetti G. and Menon A. (2016)[29]. It is combination of three method that following are briefly described:

   a. The *Evolutionary View*. Foresight is described as a man that is making a puzzle whose doesn't know the final image. If the vast majority of pieces are already assembled it is easier or immediate understand the position of the lacking piece, but if there are only few pieces on the table finding the correct position of the piece in his hand it is almost impossible.
      This metaphor represents a strategist that foresee the future, he can make accurate foresight in the brief-term but not in the long-term one. This model affirms that with generic representations managers could only individuate short-term opportunities and if they find out a long-term one, without knowing the subsystems, is serendipitous[29].

   b. The *Cognitive View*. This model is based on analogy and on the statement that it could be precisely disciplined. A manager has to find out a solution

[50] Boe-Lillegraven, S., Monterde, S., 2015. Exploring the cognitive value of technology foresight: the case of the Cisco Technology Radar. Technol. Forecast. Soc. Chang. 101, 62–82.
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for a specific problem, SP, and he can remember only a finite number of cases, C, (situations which he had to solved with his knowledge) that he faced in his life: $C_1, \dots, C_n$. Each case it is described by three properties: P, the initial problem, S, the solution utilized, and R, the results: $C_i = \{P, S, R\}$. The managers remember all the problems in which they were involved or that he partially analysed and the results/ solutions. The solution S' for SP is founded in analogy with the actions taken, S, to reach the problem's P results: S' is an adaptation of S.

The analogical reasoning is strictly connected with the person who will analyse the problem because the solution that he will find out it will be correlated with his background, there can be great variation among different managers[29].

c. The *Economic View*. This view explores the regularities of the working of competitive processes. In this case better foresights are made improving exploring the competitive environments in which the companies want to entry or innovate. As faster the improvements are made by the Academics as faster it is easier understand the competitors. In this perspective the strategic is only a secondary figure, he is only a person that he has study to maximise profits rationally and he has to understand and cope with competition. The economic theories are the foundation of this view helping guide the managers in the competition[29].

The model of evolution cum agency merged the aspects of the previous three model finding some characteristics that could allow to managers to make a better and intelligent foresights. They must rely upon their experiences: if the new challenges are similar to situations that they already knew or that are correlated to them, they could easier understand the boundaries conditions to foresee correctly the signals and correctly interpret the economic potential of the opportunity analysed.

The first step is knowing accurately the theory of all the cases that could be correlated with the situation analysed because it can clarify the conditions under which the strategy is available. The second one is evaluating the feasibility of the opportunity analysed in the current market situation (analysing the environment, the competitors, the best practices, etc).

These steps could make the foresight approach more heterogenic, but it is important the models are correctly applied and merged.

The last two ways of interpreting Foresights are fundamental because represent the basis for the Foresight's interpretation showed in this thesis, that it will be exposed in the following chapters.

To complete the overview of the literature behind Strategic Foresight I will introduce the principal methods used to foresee new markets opportunities, nowadays commonly adopted.

Strategic Foresight is not a definite approach, in which there are fixed rules and unique tools, but exist different applications that differ one from another due to the combination of different methods (the tools of the strategist). These multiple approaches have the goal to understand futures business opportunities in relation to the company capabilities and market's probable future[52].

There are multiple and various methods used to foresee the market's future and they can be gathered together in three groups: qualitative, quantitative or semi-quantitative[53].

- **Qualitative** methods usually are used to give interpretations to events and perceptions. They are not based on analytics but on opinions, attitudes and judgments that are strongly influenced by the knowledge, the background and the creativity of the person consulted.
  Some most utilized methods are: scenarios, brainstorming, expert panels, interviews, literature review (LR), futures workshops, questionnaires/surveys, SWOT analysis, essays, etc.

- **Semi- quantitative** methods mixed the application of statistical analysis to quantify the subjective perceptions and opinions given by market's experts. The purpose is to objectively weight all the opinions to analyse them without influences.
  There are lots of these methods, for example: Delphi, key technologies, multi-criteria analysis, stakeholder mapping and (technology) road mapping, cross-impact/structural analysis

- **Quantitative** methods are based on trustworthy and effective data. They define indicator, measure variables and apply mathematical principles to analyse and obtain relevant results.

[52] Aalto University Executive Education, Panu Kause, (2016), https://www.aaltoee.com/aalto-leaders insight/2016/what-is-strategic-foresight-and-why-it-matters
[53] Rafael Popper, (2008),"How are foresight methods selected?", Foresight, Vol. 10 Iss 6 pp. 62 – 89

The most important techniques are trend extrapolation, bibliometrics and modelling/simulation.

All these methods have the same capabilities (expertise, evidence, creativity, interaction) but each one gives specific importance. For example, if we have to rate the mix with a scale from 1 to 100 for each method results different combination:

- Expert panels: 70 per cent expertise + 10 per cent evidence + 10 per cent creativity + 10 per cent interaction

- Brain storming: 10 per cent expertise + 10 per cent evidence + 10 per cent creativity + 70 per cent interaction

Following a brief description of the mentioned capabilities:

- **Expertise** refers to subjective knowledge of a person that has access to sensitive information and/or competencies grown in years of work in a specific segment of a market. It is fundamental for decision making and strategic recommendations, based on hypothesis and observations, (see also Kuusi, 1999; Scapolo and Miles, 2006)[53];

- **Evidence** refers to the ability to select the relevant data and papers, analyse them and explain particular events with the scope to foresee what comes next. It useful to understand the current situation of the market or of a development of an innovative product (see also Porter et al., 1980; Armstrong, 2006)[53];

- **Creativity** refers to the skill of some people to invent and create new product from a thought or a collective chat, as brain storming. It is necessary when a firm need to satisfy new customer's need and entry in the market with innovative product or service (see also Ansoff, 1975; Cassingena Harper and Pace, 2004)[53];

- **Interaction** is the discussion between people with different background or belonging to different sector of a firm. It is important analyse a problem under different points of view, taking into account as more opinion as possible. This capability is more effective in the non-hierarchical firm (see also Andersen and Jæger, 1999; Cuhls, 2003; Brummer et al., 2007).

These capabilities are the vertexes of the Foresight Diamond, showed in the following figure (Figure I-2: Foresight Diamond), nearby the vertex the attribute is stronger than in the centre. Each capability has an area of influence, coloured in the picture. Inside the

diamond there are the most utilised methods and there are highlighted the 25 preferred to the interviewees. The position of each method is defined by the combination of the attributes, as showed in the previous examples.

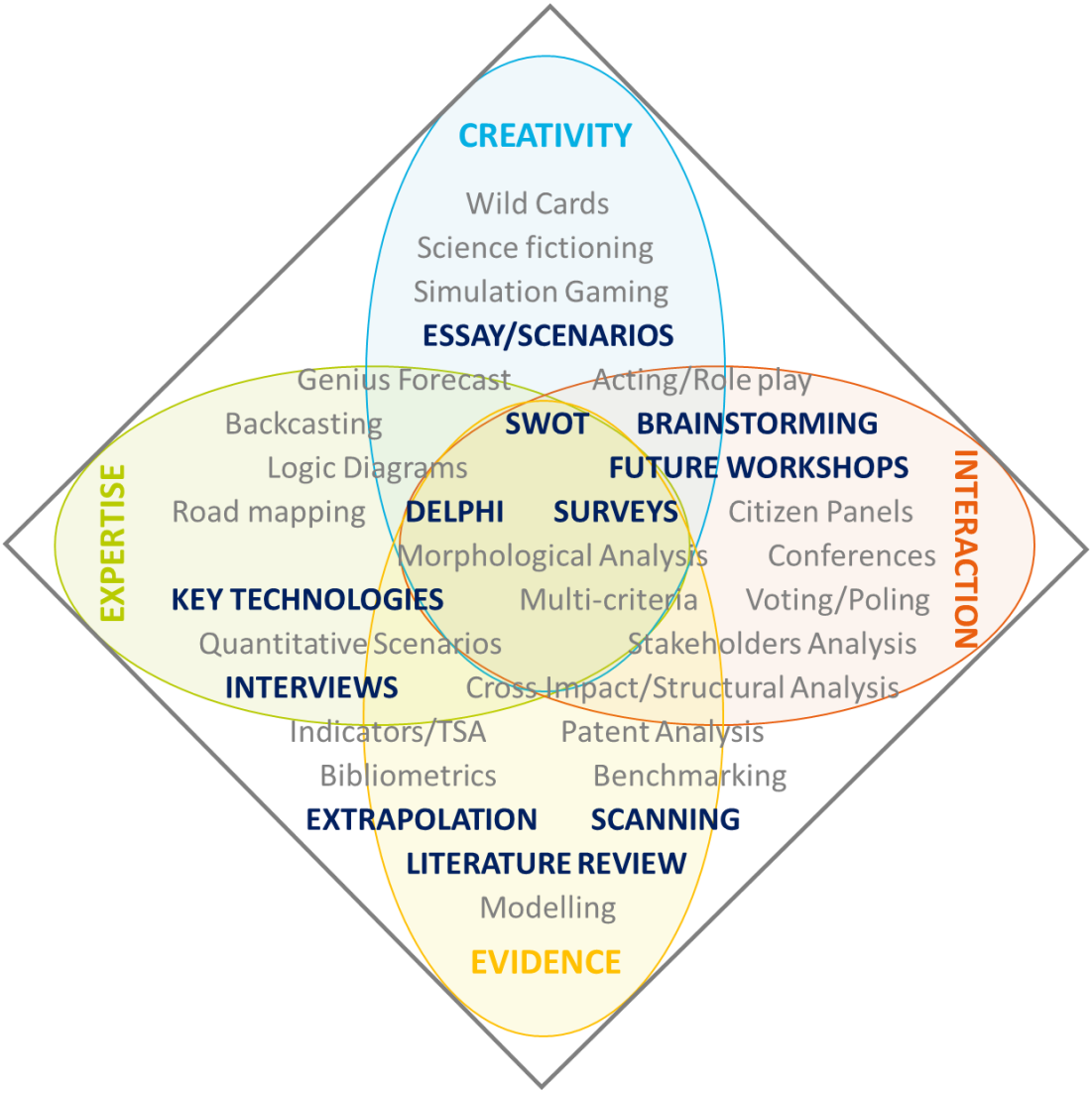


*Figure I-2: Foresight Diamond*

The Foresight Diamond is developed by Rafael Popper, (2008)[53], who analysed a sample of 886 foresight studies from all over the world, he uniformized the results and aggregated them to rank the diverse foresights methods.

In the other figure (Figure I-3: Level of use of foresight methods), Rafael Popper, (2008)[53], analysed the popularity of each method considering their level of use. In the red box are included the "Widely used", in which are included literature review, expert panels and

scenarios, and the "Commonly used", in which are included trend extrapolation/megatrends, futures workshops, brainstorming, other methods, interviews, Delphi, key technologies, questionnaire/survey, environmental scanning, essays and SWOT analysis. It is interesting to observe that majority of them (10/14) are qualitative. The qualitative attributes are evidently more popular than the others.

One reason that explain this preference could be strictly interconnected with the nature of the scope: to judge the reality and give opinions to foresee the future. It is important to be creative, to have subjective idea of the market and to have to find solutions for the changings and for the new market requests.

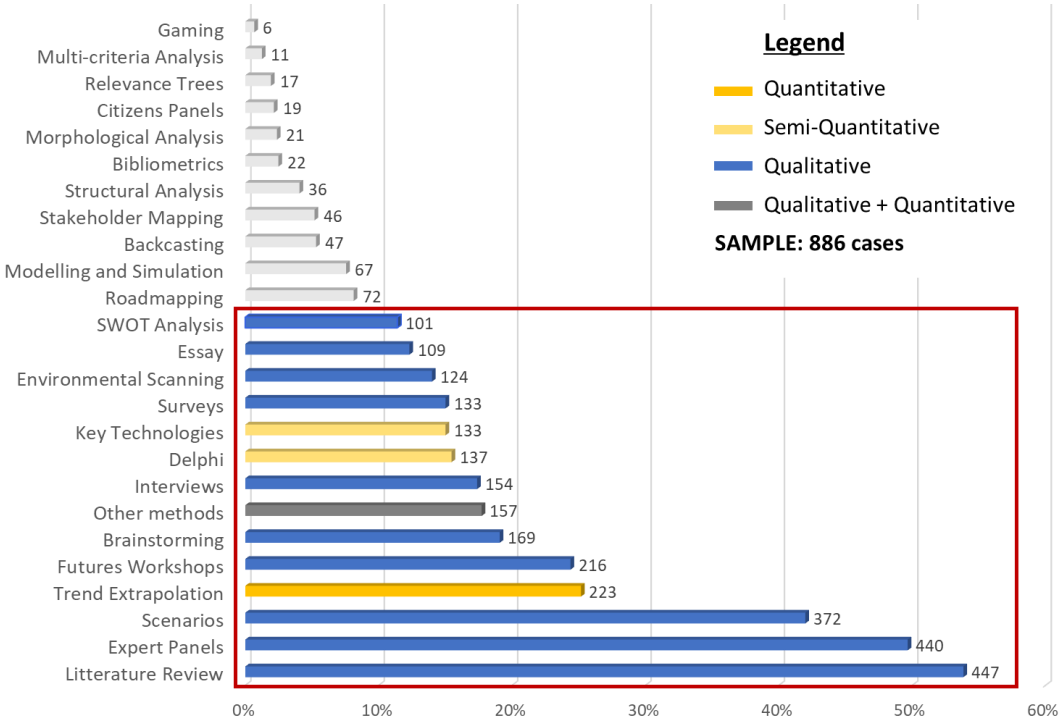


*Figure I-3: Level of use of foresight methods*

Another interesting observation is that, if we observe the 14 methods in the red box (Figure I-3: Level of use of foresight methods) inside the Foresight Diamond highlight in blue (Figure I-2: Foresight Diamond), the majority of the methods are polarized near the evidence and the expertise vertexes. That permit us to say that to make a good foresee of the future it is necessarily have a valid database/information and experienced people that could share their knowledges and expertise.

Rafael Popper, (2008)[53], analysed in his paper the occasions in which one method is preferred to another but the most interesting analysis is the "Methods mix" in which is highlight the correlation between the utilize of a method with another. He identified four categories of combination: Very High, High, Medium and Low and he created a matrix as showed in the following image (Figure I-4: Methods Combination Matrix).

**Frequency of use**
VH: Very High
H: High
M: Moderate
Time of uses in A sample of 886 cases

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Literature Review | Expert Panels | Scenarios | Trend extrapolations | Future workshops | Brainstorming | Other methods | Interviews | Delphi | Key Technologies | Surveys | Environmental Scanning | Essay | SWOT Analysis | Technology Road mapping | Modelling and Simulation | Backcasting | Stakeholder Mapping | Structural Analysis | Bibliometrics | Morphological Analysis | Citizens Panels | Relevance Trees | Multi-criteria Analysis | Gaming |
| 1 | Literature Review | 477 | H | H | H | M | M | M | M | | M | | | | | | | | | | | | | | | |
| 2 | Expert Panels | VH | 440 | M | M | M | M | | M | M | M | | | | | | | | | | | | | | | |
| 3 | Scenarios | H | H | 372 | H | M | M | M | | | | | | | | | | | | | | | | | | |
| 4 | Trend extrapolations | VH | VH | VH | 273 | M | M | M | M | | M | M | M | M | | | M | | | | | | | | | |
| 5 | Future workshops | VH | VH | H | M | 216 | M | M | | | M | | | | | | | | | | | | | | | |
| 6 | Brainstorming | VH | VH | H | M | H | 160 | H | M | M | M | M | M | | M | | | | | | | | | | | |
| 7 | Other methods | VH | H | H | M | H | H | 157 | M | M | M | M | M | | M | | | | | | | | | | | |
| 8 | Interviews | VH | VH | H | H | M | M | M | 154 | | | H | M | | M | | | | | | | | | | | |
| 9 | Delphi | VH | VH | M | M | M | H | M | | 137 | M | M | M | | | | | | | | | | | | | |
| 10 | Key Technologies | VH | VH | M | H | M | M | M | M | M | 133 | | M | | M | M | | | | | | | | | | |
| 11 | Surveys | H | VH | H | H | M | M | M | H | M | | 133 | M | | M | | | | | | | | | | | |
| 12 | Environmental Scanning | VH | VH | H | H | M | H | VH | M | M | M | M | 124 | M | M | | | | M | | | | | | | |
| 13 | Essay | H | H | H | H | M | M | M | M | | | | M | 108 | | | | | | | | | | | | |
| 14 | SWOT Analysis | VH | H | H | M | H | H | VH | M | M | M | M | M | | 101 | | | | M | M | | | | | | |
| 15 | Technology Road mapping | VH | VH | M | M | H | | | | | H | | | | | 72 | | | | | | | | | | |
| 16 | Modelling and Simulation | H | M | VH | VH | | | | | | | | | | | | 67 | | | | | | | | | |
| 17 | Backcasting | H | H | H | H | M | M | | M | | | | M | | | | M | 47 | | | | | | | | |
| 18 | Stakeholder Mapping | VH | VH | VH | VH | H | VH | VH | H | | M | M | VH | M | H | | | | 46 | M | M | M | | M | | |
| 19 | Structural Analysis | VH | VH | VH | VH | M | VH | VH | VH | M | | VH | VH | M | VH | | | | M | 36 | | M | | | | |
| 20 | Bibliometrics | VH | H | M | VH | M | H | VH | VH | | VH | H | VH | H | H | | | | H | | 22 | M | | M | | |
| 21 | Morphological Analysis | VH | VH | VH | H | H | VH | VH | VH | M | M | H | H | VH | M | | | M | H | H | M | 21 | | H | | |
| 22 | Citizens Panels | H | VH | H | M | VH | H | VH | H | M | | M | H | M | H | | | | M | M | | | 19 | | | |
| 23 | Relevance Trees | VH | VH | VH | VH | VH | VH | VH | VH | M | M | H | VH | VH | VH | | | | VH | M | M | H | | 17 | | |
| 24 | Multi-criteria Analysis | VH | M | | VH | M | M | M | M | | M | M | M | M | | | H | | | | | | | | 11 | |
| 25 | Gaming | VH | VH | VH | VH | VH | VH | | | M | | | H | | | | H | M | VH | M | | | | | | 6 |

*Figure I-4: Methods Combination Matrix*

The matrix has also been represented graphically, as showed in the below image (Figure I-5: Mapping tools of the Methods Combination Matrix). Each method has been linked to all the other with which has a bond. There are diverse types of lines that graded both in thickness and colour. The thickener and darkest lines represent the stronger connection. It is evident that there are only few lines of this type.

For examples: the one between expert panels and literature review, or between scenarios and expert panels, or between extrapolation of trends and megatrends and literature review etc.

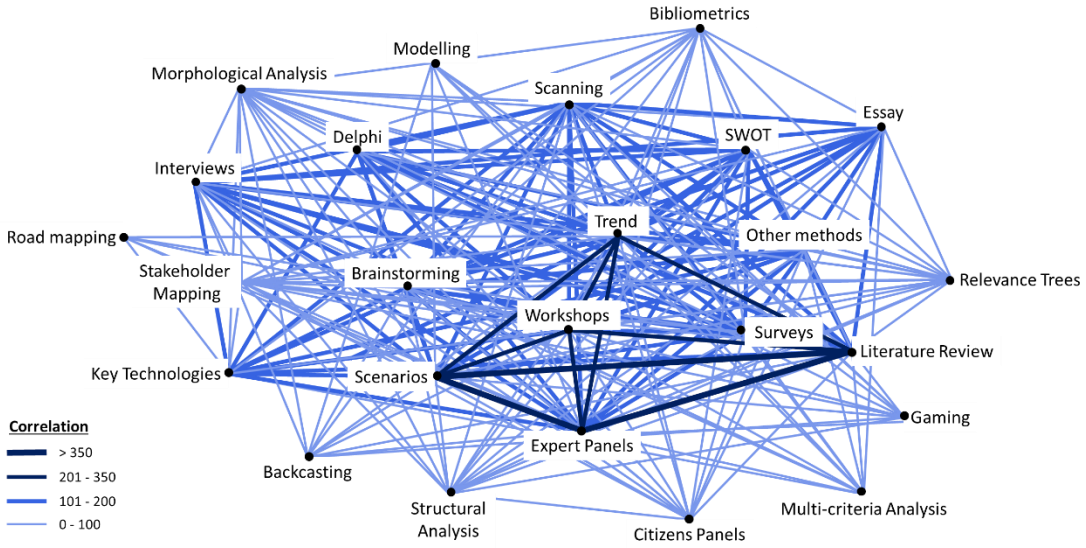


*Figure I-5: Mapping tools of the Methods Combination Matrix*

It is evident that the influence of the methods mix is very high, and it is mainly focused on the combination of four methods: literature review, expert panels, scenarios, future workshops and extrapolation of trends and megatrends.

Up to this paragraph we have described the most common method used to foresee the future market opportunities. These methods can be considered as tools of the strategist that he can utilize adapting them in different approaches.