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COLLABORATIVE INNOVATIVE SCENARIOS

*Effectiveness of collaborative innovation sessions and scenarios for
stimulating innovation*

MSc BA Master Thesis Strategy & Innovation

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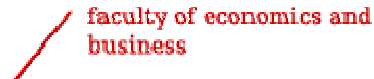
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PREFACE

For my Bachelor in Business Administration I wrote a thesis on The Protection of Successful Open Innovations. In this thesis I explored capturing value of innovations which come to existence through strategic alliances between two companies. In September 2007 I completed my Bachelor and the courses of the Master Strategy & Innovation. The elective I chose in the Master was Management Consultancy and for this course I wrote an article on consultancy and mental models. These two courses and papers are typical for my field of interest; consulting in order to stimulate innovation by stretching mental models. During the master courses of Strategy & Innovation I learned more about the concept of innovation. The more I learned on the subject, the more I became convinced that innovation is all about thinking out-of-the-box. To combine researching this suspicion and exploring my career ambition, I decided to combine writing my Master Thesis with an internship. I found an internship at De Ruijter Strategy, a small consulting firm specialised in scenario thinking and strategy development. De Ruijter Strategy aims at assisting people in organizations to prepare them for the future.

In the past year I have learned some valuable lessons. First, I found out that writing a thesis is not that easy as I initially thought. Second, I found out that tangible and measurable results do not by definition determine the success of a project. Finally, my career ambitions became much clearer and my internship resulted in my actual first job!

My acknowledgements go out to my supervisor Dr. Theo Postma. Thank you for your constructive criticism and willingness to give me personal and telephonic feedback when necessary. Also ideas and remarks from my second supervisor Dr. Thijs Broekhuizen were valuable input for this thesis. My gratitude goes out to Mr. Theo Koster for finding the time to answer my interview questions and provide me with information. I would also like to thank all the companies and their CEOs who took the time to answer my questions about a project performed four years ago. Thank you also Mr. Marcel van Assen for informing me about previous research on this case. Major thanks to my colleagues at De Ruijter Strategy for providing me with feedback on my thesis and helping me to keep the thesis-spirit alive. My final but not least acknowledgements go out to my family and friends for motivating me to finalize this thesis.

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Lineke Botterhuis

ABSTRACT

This thesis explores the effectiveness of collaborative innovation sessions and scenario thinking for stimulating innovation of small and medium sized enterprises. The study is focused on the Dutch subcontracting industry. The main research question of this thesis is: *‘Do collaborative innovation sessions stimulate innovation of small and medium sized enterprises and how effective is scenario thinking as a tool in this process?’*

This research builds on existing literature as well as on a case example to explore the effectiveness of both methods in reality.

Different methods have been used to collect data in this case study research. A questionnaire was sent to a number of companies that participated in the project, interviews were held and desk research into archives has been performed. The main findings of this study show that scenario thinking does stimulate out-of-the-box thinking, stretches and aligns mental models and creates trust among the participants. In collaborative innovation sessions, it appears to be important that both existing networks and new relationships are present. The combination of these methods resulted in slightly increased willingness to share knowledge, possibilities and assets, new and enforced relationships and a collective mental model about the Dutch subcontracting industry. It also resulted in awareness of possible innovative business opportunities within the industry, but not in actual (collaborative) innovation.

Findings of this study lead to two propositions that could be used as input for further research. Another interesting field of further research are factors that inhibit the conversion of awareness of possible innovative business opportunities within the industry to actual (collaborative) innovations.

Keywords: *innovation, scenario thinking, collaborative innovation session, Dutch subcontracting industry*

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1 INTRODUCTION

In the past years, innovation has become increasingly important. Small and medium enterprises often struggle to manage in dynamic environments. They try to keep up with evolving markets and maintain their competitive advantage. Governments, trade organizations and umbrella organizations want to encourage innovation by subsidizing and stimulating innovation projects. In the Netherlands, the Innovation Platform¹ is a good example of a governmental initiative for stimulating innovation. The Innovation Platform aims to critically examine how knowledge and innovation systems function and facilitate breakthroughs. By connecting entrepreneurs and creating the optimal conditions, innovation in companies is being encouraged. Joining resources becomes a more common way for companies to innovate. This is sometimes facilitated by actually bringing entrepreneurs from related industries together and stimulate them to discuss their dynamic (future) environments. A tool to discuss future developments is scenario thinking. These two approaches, organizing collaborative innovation sessions and scenario thinking exercises, are sometimes combined.

Many of these projects are not being evaluated which means that the actual results of these sessions and of scenario thinking exercises are often unknown. In this thesis the effectiveness of collaborative sessions on innovation of small and medium enterprises and the effectiveness of scenario thinking in this process are being examined. This is a Thesis for the Master of Science *Business Administration - Strategy & Innovation* at the University of Groningen. In my view, both are important approaches to challenge decision makers to think out-of-the-box to stimulate innovation. To find out what kind of results collaborative innovation and scenario thinking yields I decided to combine writing my Master Thesis with an internship. An internship at De Ruijter Strategy² would give me access to information about working with scenarios and information about performed projects. These performed projects could provide me with insights in the results of collaborative innovation and scenario thinking. This way I would be able to find out if collaborative innovation processes facilitated by scenario thinking indeed stretch mental models and stimulate innovation.

The future is uncertain, which gives rise to dilemmas confronting the organization and leads to conflicting views on the best way to move forward. De Ruijter Strategy is a small consulting firm that developed creative strategies to deal with these uncertainties. Various tools and methodologies make it possible to explore the future in a structured way, discover new options for moving forward, bring hidden assumptions into the open and resolve dilemmas. Scenario thinking, system thinking and creativity techniques are the most important methods used. They are applied in processes where key stakeholders interact together.

¹ www.innovatieplatform.nl

² www.deruijter.net

The scenario thinking approach of De Ruijter Strategy is based on Shell's use of scenario thinking. Shell was one of the first companies to use scenario thinking in business. De Ruijter Strategy uses this foundation in consulting and facilitating future thinking, but their main competence is to guide clients through the process of future planning. De Ruijter Strategy fits my research very well because this company works with scenario thinking. Besides that, they have applied collaborative innovation sessions aimed at innovation. De Ruijter Strategy is employed to facilitate these processes because of their relevant expertise in scenario thinking and in facilitating sessions aimed at innovation.

In this thesis the effects of collaborative innovation sessions as an enabler to stimulate innovation in small and medium enterprises and the effectiveness of scenario thinking as a tool in these processes are explored. This research includes performing desk research and a case study. I perform desk research into different theories of the concept of innovation, collaborative innovation sessions and scenario thinking. With the result of this a theoretical framework can be drawn up. To test implications resulting from the desk research I perform a case study. The case is a large scale project performed by De Ruijter Strategy. The particular case suits this research very well because both a collaborative innovation session and scenario thinking were used in the process. Another advantage is that this project is very well documented and therefore much useful data is available. Moreover, the project has been studied before. The results of that study will be used as starting point for this thesis.

OBJECTIVE

Explore the effectiveness of collaborative innovation sessions and scenario thinking on innovation of small and medium sized enterprises.

To attain this objective, the following research question needs to be answered.

MAIN RESEARCH QUESTION

Do collaborative innovation sessions stimulate innovation of small and medium sized enterprises and how effective is scenario thinking as a tool in this process?

SUB QUESTIONS

To find an answer to the main research question different concepts have to be studied. Therefore, the main research question is divided in three parts: the process (A), the results of the process (B) and the effectiveness of the tools used during the process (C). For these three parts I am stating the following sub questions.

To explore the process I have to find out what happened during the project. Therefore, I would like to start with the first sub questions:

A1 What was the goal of the project?

A2 What happened during the process of the project?

After exploring the goal and the process of the project I want to know if the goal of the project is attained. This way I can test the effectiveness of the process. The initiator and participants may perceive results differently. Also, shortly after the project is being performed, results might be perceived differently than a few years later. Besides, innovation does not occur over night. The next sub question is:

B1 What are the perceived long-term results of the participants?

In spite of the satisfaction of the initiator, results of scenario projects may not align with the initial goal. The following sub question is stated to find out if objectives of the projects are attained:

B2 Do the results of the project align with the initial goal?

To answer the main research question, I need to find out in what way the two methods used contributed to the perceived results. Answering the following sub questions will provide insights on the effectiveness of both approaches:

C1 In what way did the collaborative innovation session stimulate innovation of the companies of interest?

C2 In what way did scenario thinking stimulate innovation of the companies of interest?

OUTLINE

To find an answer to the main research question and the sub questions, this thesis starts with proposing a theoretical framework (chapter 2). This framework contains different subjects, based on several definitions of the concepts this thesis is dealing with. The theoretical framework starts with defining the concept of innovation by presenting the way different researchers have proposed several aspects of innovation. This explains why collaborative innovation is increasingly popular in current markets. Pros and cons of collaborative innovation like sharing resources, trust issues and risky business are discussed in the following. After elaborating on issues of collaborative innovation, scenario thinking is introduced as a method in collaborative innovation sessions. To explore theory, a NEVAT project is worked out as a case study. Various cases were available, but a project in which collaborative

innovation sessions and scenarios come together is hard to find. However, after drawing up selection criteria the NEVAT case was the most suitable. This study builds on a research of RSM Erasmus University of Mr. Van Assen and Mr. Van Hezewijk. This research was performed during and shortly after the project took place. In this study I will explore the long-term effects of the methods used on a longer term.

Different methods are used to answer the sub questions. First desk research is performed to learn more about the organizations involved and the project. After that questionnaires are sent to participating companies to collect some quantitative data on effects of the methods being used. Finally, four of these companies are addressed for in-depth interviews to collect qualitative data on reasons for these effects. In chapter 3, the research methodology of this study is explained. After that, in chapter 4 results of the research performed are described. In the final chapter conclusions can be drawn up by comparing theory to reality. Limitations of the research will also be discussed in chapter 5.

2 THEORETICAL FRAMEWORK

To explore how collaborative innovation sessions stimulate innovation in small and medium enterprises and how effective scenario thinking is as a tool to support this process, various elements of both methods shall be discussed. The importance of innovation within current markets shall be introduced by discussing the role of resources, capabilities and competitive advantage.

2.1 IMPORTANCE OF INNOVATION WITHIN CURRENT MARKETS

In traditional markets competitive advantage depends on economies of scale and production efficiency. Nowadays, markets are becoming increasingly dynamic (Jacobs, 2007) and innovation becomes more important to gain competitive advantage. Even in the context of a congruent strategy, there needs to be a capacity for ongoing innovation (Aaker, 2005); through innovation, through the introduction of something new or an adapted and improved version of something else, organizations can distinguish themselves from competitors (Shipton et al., 2005). To hold on to that competitive advantage, change is an essential part of organizational life, because a competitor will eventually find a way to emulate the essence of the competency (Van der Heijden, 1996). Innovation becomes a way of surviving within dynamic ecosystems. To innovate, one has to identify a unique combination between the capabilities one has access to and a customer need (Verloop, 2007). Apparently, innovation is an important capability for companies to manage competitive advantage in increasingly dynamic markets.

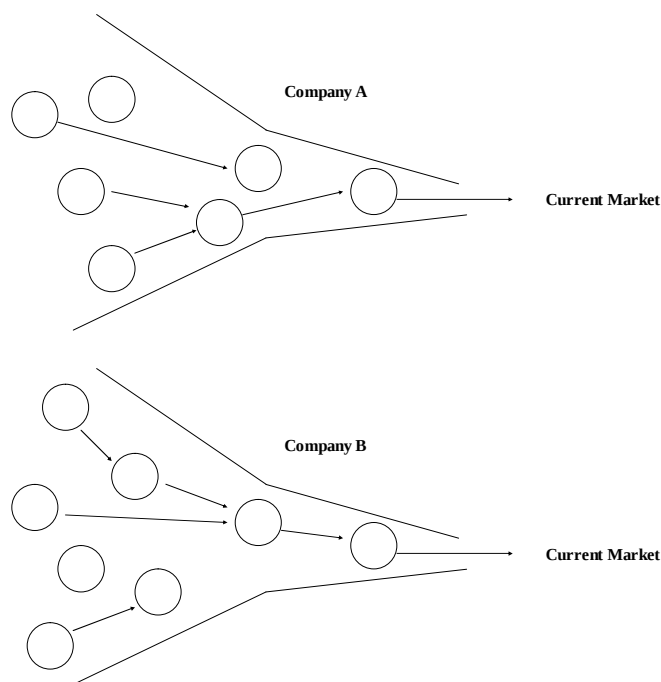
Firms are seen as historically determined collections of resources, assets and capabilities tied semi-permanently to the firm's management to maximize the value of the firm (Jacobs, 2007). To obtain and maintain competitive advantage, a firm needs to be aware of available resources. The role of resources within an organization is extensively discussed by Barney (1991) in the resource-based view. The assumption of the resource-based view is that when firms have resources that are valuable, rare, non-imitable and nonsubstitutable, they will achieve sustainable competitive advantage when implementing strategy. The knowledge-based view is derived from the resource-based view and considers knowledge as the most strategically important firm's resource (Grant, 1996). In this view, firms integrate specialist knowledge; markets are unable to coordinate present knowledge because of the immobility of tacit knowledge and risk of appropriation of explicit knowledge. Sharpe and Van der Heijden (2007) mention that gaining competitive advantage is all about developing the craft, knowing the tools, and having the guts to get on with it however tough the challenge. A business which has failed might have had really good ideas – in fact it might be beaten by something not as good that just seems to have been the right thing in the right place at the right time.

Resources can be a source of competitive advantage, but just having them is not enough; they have to be used well. Dynamic capabilities reflect an organization's ability to achieve new and innovative

forms of competitive advantage. Dynamic capabilities are the antecedent organizational and strategic routines by which managers alter their resource base, acquire and shed resources, integrate them and recombine them to generate new value creating strategies (Eisenhardt and Martin, 2000). An example of a dynamic capability that is important for firms that operate in dynamic markets is absorptive capacity. The absorptive capacity is the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). This is a critical competence to use external knowledge in order to increase innovation within a firm.

For decades, the innovation process was managed inside the organization. Companies generated their own ideas and then developed, built, marketed, distributed, serviced, financed, and supported them on their own. Chesbrough (2003) called this way of managing R&D closed innovation: a view which implies that successful innovation requires control. To explain what these traditional markets look like, Chesbrough (2003) shows the knowledge landscape in closed innovation in figure 2.1.

FIGURE 2.1 - *The Knowledge Landscape in Closed Innovation (Chesbrough, 2003)*



The innovativeness of a single company can be limited because of lack of knowledge, skills, time and money. For smaller companies to compete in dynamic markets in which resources are important, it is a great challenge to survive. No company can keep pace in the large variety of assets and competences which need to be accessed (Teece, 1986). This is why more companies are outsourcing R&D and forming partnerships with other organizations to share the works and spoils of innovation (Economist Intelligence Unit, 2007). Dyer and Singh (1998) look at competences, knowledge and resources through the relational view. This view assumes that productivity gains in the value chain are possible

when trading partners are willing to make relation-specific investments and combine resources in unique ways. A firm's critical resources may span firm boundaries and may be embedded in interfirm routines and processes.

These interfirm relations can come to existence in collaborative innovation sessions. Collaborative innovation sessions bring different companies together to encourage participants to explore possibilities for cooperation. In some cases, scenario thinking has been used to accelerate this process. In the remaining of this chapter, the concept of innovation is being explained as well as the concept of collaborative innovation and the method of scenario thinking.

2.2 INNOVATION

2.2.1 Definitions of innovation

Through the years, many authors have defined the concept of innovation and stressed its importance (Shipton et al., 2005, Jacobs, 2007) and in this part I will discuss some of them. Theories of innovation in business have stemmed mainly from the work of economist Schumpeter (1939). He viewed innovation as distinctly different from invention, which he held occurred in isolation of innovation. Schumpeter (1939) defined innovation as: a discontinuous event characterized by, 1) construction of new plants and equipment, 2) introduction of new firms and 3) the rise to leadership of new men. Garcia and Calantone (2002) take into account the environment, and define innovation as an iterative process initiated by the perception of a new market and/or new service opportunity for a technology based invention which leads to development, production, and marketing tasks striving for the commercial success of the invention. For Aaker (2005) the environment is important as well, he defines innovation as the ability to create new or improved products or processes and enter new markets.

Within this market it is important to know who decides what valuable is and Rogers (1962) refers to innovation as an idea perceived as new by the individual. Wijnberg (2004) support that and defines innovation as something new which is presented in such a way that the value will be determined by the selectors. The selectors Wijnberg (2004) refers to are the groups of people that contribute value to the product or service; these will be discussed later on.

For this research, I propose to adopt another definition of Schumpeter (1934). He has also defined innovation as the carrying out of new combinations, which covers:

1. The introduction of a new good, that is one with which consumers are not familiar yet, or a new quality of good

2. The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means to be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially.
3. The opening of a new market, that is a market into which the country in question has not previously entered, whether or not this market has existed before.
4. The conquest of new sources of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created
5. The carrying out of the new organization of any industry, like the creation of a monopoly position or the breaking up of a monopoly position.

I chose to adopt the first four of this definition, because they comprise the elements of innovation that are relevant for this research; introducing a new product, using a new production method, entering a new market and use new materials. I would like to add to the first point: the introduction of a new service. The last point is very radical so I would like to refine and rephrase in: ‘making small changes in the business model in order to improve the position of the company in the market’.

Different authors have made distinctions in types of innovation. Jacobs (2007) makes the distinction between technical and non-technical innovations. The first is related to new technological findings which lead to new technical applications or technical innovations. The latter refers to elements such as style, the development of new concepts or the introduction of new forms of organizations. Next to this distinction, Jacobs (2007) divides innovations into three basic forms:

- *product innovation*; new products or services; not just technical improvements, but also totally new concepts
- *process innovation*; new production processes, new techniques and new organizational forms
- *transaction innovation*; bringing to attention of consumers and a new way of selling products

In the end, the development of new products and services – product innovation – is the most important form of innovation, because without product innovation process and transaction innovations finally miss a purpose (Jacobs, 2007). Next to product and service innovation, Tidd et al (2005) distinguish position and paradigm innovation. *Position innovation* is repositioning or relaunching a product or service in a new market and *paradigm innovation* concerns a change in mental models of consumers by introducing a new product or service.

2.2.2 Business Model

In the definition of innovation I chose to adopt for this research, I have added ‘making small changes in the business model in order to improve the position of the company in the market’. The business model is a conceptual tool that contains a large set of organizational elements and their relationships. It allows expressing the core business logic of a specific firm. It describes the value a company offers to one or several segments of customers and the architecture of the firm. It is also a description of the

firm's network of partners for creating, marketing and delivering this value and relationship capital, to generate profitable and sustainable revenue streams (Osterwalder et al., 2005). According to Weill and Vitale (2001) the business model is a description of the roles and relationships among a firm's consumers, customers, allies and suppliers and it identifies the major flows of the product, information, and money, as well as the major benefits to participants.

Chesbrough (2003) emphasizes the role of the business model in innovation. The business model utilizes both external and internal sources to create value. Another aspect of the business model that it also has value in understanding how companies of all sizes can convert technological potential into economic value. Technology by itself has no objective value, but it needs to be commercialized through an appropriate business model. The business model is a useful framework to link internal technical decisions to economic outcomes: a mediocre technology pursued within a great business model may be more valuable than a great technology in a mediocre business model (Chesbrough, 2003).

2.2.3 Selection systems

An aspect of the definition of innovation I chose is the (new) market in which an innovation is introduced. Wijnberg (2004) looks at characteristics of the market and the way it influences the success of innovations. Earlier in this section I mentioned that the definition of innovation of Wijnberg (2004) involves 'selectors'. He argues that within the framework of selection systems, the case in which consumers select and producers are being selected is only one of three possible ideal typical variants of selection systems. The first is market-selection, this refers to the traditional selection system in which consumers are the selectors and producers are selected. The second type is peer selection where the group of selectors and the group of those to be selected are essentially the same; other producers determine the outcome of the competitive process. The third is expert selection, where the opinions of the people who are neither consumer nor producer but to whom particular knowledge or expertise is ascribed.

2.2.4 Diffusion

To consider the advance of an innovation that is introduced in the explored (future) market, the concept of diffusion is relevant. Rogers (1962) discusses diffusion of innovation; he classifies adopters of innovations into various categories, based on the idea that certain individuals are inevitably more open to adaptation than others. He distinguishes four crucial factors that are involved in the diffusion process: the innovation itself; the communication concerning the innovation from one individual to another; the social system in which the innovation is diffused; and the time dimension of the process. The adoption process is a mental decision-making process involving several stages, sequentially the awareness, interest, evaluation, trial and adoption stage. The adoption stage needs to be reached as

soon as possible, because imitators move quickly into new markets. Nooteboom (2000) argues that diffusion is being enhanced by building customer demand and inter-firm networks.

Building customer demand in most newly developed markets often takes years; an important aspect of the innovation is how new the product really is (Tellis and Golder, 1996) or the radicalness of the innovation (Garcia and Calantone, 2002). Different degrees of innovations can be distinguished; three kinds of innovation are defined by Garcia and Calantone (2002); radical innovations, really new innovations and incremental innovations. Radical innovations are products at the early stages of diffusion and adoption. Incremental innovations are products at the advanced stages of the product life cycle. Nooteboom (2000) describes that an incremental product innovation entails a novel feature of an existing product, while a radical product innovation entails a novel user-practice. Jacobs (2005) sees it as being a continuum, from radical to incremental innovations, on which an innovation can be placed. Radical innovations are considered the most risky (Tidd et al, 2005) and incremental innovations are focused on continuous organizational improvement and competitiveness within current markets or industries³.

Garcia and Calantone (2002) make the distinction between the macro and micro perspective at which an innovation can be viewed. At macro level the concern is measuring how the characteristics of product innovation are new to the world, the market or an industry. At micro level product innovativeness is identified as new to the firm or to the customer.

In general, successful radical innovations generate more profits, but radical innovation is a problem for many companies (Birkinshaw et al., 2007) because:

1. Uncertainty about the actual results of the innovation and the actual time until results of the innovation become clear
2. It is hard for companies to get rid of the existing success formula, because it is embedded within the business model
3. Reluctance towards change is present in the whole network of the organization

2.2.5 Summary

Many characteristics of innovation have been discussed in this section to explore the concept extensively. I chose the definition of Schumpeter (1934) to explain the way innovation is perceived in this research. This definition comprises introducing a new product or service, using a new production method, entering a new market and using new materials. I proposed to add 'making small changes in the business model'. These aspects are being studied on the degree of incremental to radical innovation. Radical innovation is a problem for companies because of (financial) uncertainty,

³ http://www.1000ventures.com/business_guide/innovation_radical_vs_incr.html

perceived risk and reluctance to change the business model. Companies should also take into account the selection system in the market in which they operate, because this influences the success of an innovation. Next to these different characteristics of innovation there are different ways to increase the innovativeness of a company. In the next section I will discuss collaborative innovation as a method to stimulate the discussed forms of innovation.

2.3 COLLABORATIVE INNOVATION

2.3.1 Closed versus open innovation

As mentioned earlier, closed innovation was usually the way companies innovated; innovation activities occurred within the barriers of the company. Money and time invested in R&D projects resulted in many technologies of which only some of them were marketable. Innovation has become a way to survive in complex and dynamic markets and firms are exploring all options to improve the innovation process. Verloop (2007) compares innovation to happiness: it seems easy when it just happens, but it is difficult to achieve continuous success in a planned and structured way. Since the 90s, the innovation process is becoming increasingly market driven (Van Assen and Van Hezewijk, 2007) which encourages companies to look outside the borders of their own organization to innovate. Innovation networks become more complex and consumers are more involved in the innovation process (Van Assen and Van Hezewijk, 2007); the innovation process opens up and closed innovation is according to Chesbrough (2003) no longer sustainable.

Successful innovations are increasingly a result of some form of collaboration. The previous section discussed the different approaches of the concept of innovation and the importance of interaction within dynamic markets. Firms can gain available knowledge within these markets, share risks and resources with potential partners and acquire access to unentered markets. To innovate, companies can choose to cooperate with suppliers, b2b-companies and consumers to bring added credibility (Teece, 1986) and to profit from other company's assets, possibilities and knowledge (Nooteboom, 2006). According to Nooteboom (2006) a successful collaboration can yield many advantages, especially for innovation. Companies have to be able to respond flexible and fast to changes in markets and technologies. Therefore, they have to cooperate with others (Nooteboom, 2006), which explains the current trend of open innovation.

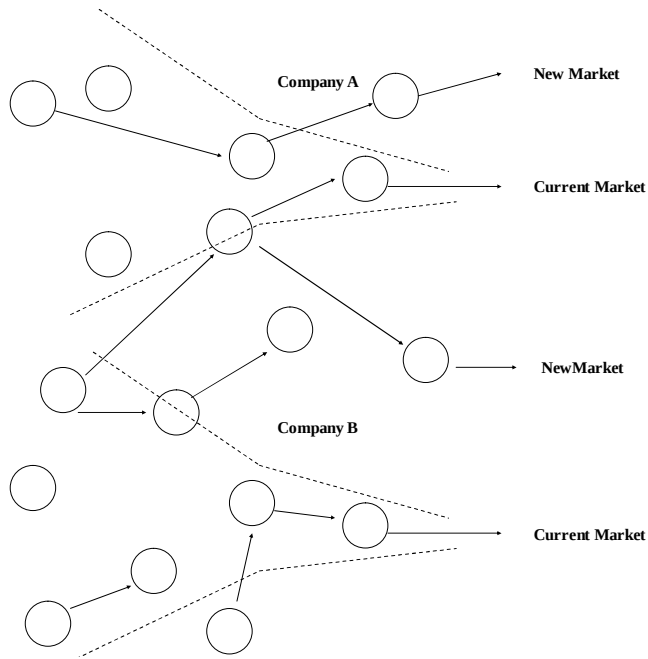
An emergent view in the literature addresses that innovations arise, in particular, from interactions between firms (Nooteboom, 2006). The 'nonsustainable' concept of closed innovation (Chesbrough, 2003) was introduced in the previous section and in table 2.1, the principles of closed and open innovation are shown.

TABLE 2.1 - *Contrasting Principles of Closed and Open Innovation (Chesbrough, 2003 page xxvi)*

Closed Innovation Principles	Open innovation Principles
The smart people in our field work for us	Not all the smart people work for us. We need to work with smart people inside and outside our company
To profit from R&D, we must discover it, develop it, and ship it ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it ourselves, we will get to market first	We don't have to originate the research to profit from it
The company that gets an innovation to market first will win	Building a better business model is better than getting to market first
If we create the most and the best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win
We should control our IP, so that our competitors don't profit from our ideas	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model

Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology (Chesbrough, 2003). Chesbrough (2003) defines open innovation as an environment in which ideas are allowed to flow outside their originating organization, to wherever they can be most efficiently handled at each stage of the R&D process. Some ideas may flow back again to be scaled up and marketed, some may turn into joint ventures and some may simply be licensed (The Economist Intelligence Unit, 2007). All should reach their market more quickly and more efficiently than would otherwise be possible, because joining forces increases the access to markets. The knowledge landscape in the open innovation paradigm is shown in figure 2.2.

FIGURE 2.2 - The Knowledge Landscape in the Open Innovation Paradigm (Chesbrough, 2003)



2.3.2 Importance of networks

Figure 2.2 shows that the open innovation knowledge landscape is about relationships, networks and combining the available knowledge and resources within the environment. All available resources are used to improve dynamic capabilities to gain competitive advantage. Open innovation companies need to combine internal research with external ideas and then need to deploy those ideas both within their own business and also through other companies' businesses. Chesbrough (2003) explains that the key for these companies is to figure out what necessary missing pieces should be internally supplied and how to integrate both internal and external pieces together into systems and architectures. To link these internal and external pieces it is useful to explore their business model.

March (1991) discusses the relation between the exploration of new possibilities and the exploitation of old uncertainties. Too much exploration will lead to firms finding that they suffer the costs of experimentation without gaining many of its benefits: too many undeveloped new ideas and too little distinctive competence. Too much focus on exploitation however, will lead to firms finding themselves trapped in suboptimal stable equilibria. Finding the right balance between improving existing capabilities and discovering new opportunities is also important in open innovation; keep improving existing business, but do not close your eyes for new opportunities.

In the article of Van Assen and Van Hezewijk (2007) about open innovation the central role of networks in this process is being discussed. They define open innovation as the process of

collaborative exploration and exploitation of new ideas through joint parties in networks. De Ruijter (2007) also explains the importance of relationships and networks of the organization for collaborative innovation. Networks give access to information that was not available in the existing closed innovation landscapes. According to Gulati (1998) the firm's portfolio of alliances and its network position in an industry can have profound influence on its overall performance. Long-term and close relations can stimulate incremental innovation, but the power of a current network can inhibit change as well. A new network can gain important insights, competences and relations for the firm to see through changes within the branch (Birkinshaw et al., 2007).

Just being in a network will not deliver a competitive advantage; companies have to invest in their new and existing relationships. Birkinshaw et al. (2007) present four challenges in profiting from existing and new networks:

1. Keep your network updated and involved – the latent value (the ability of network to act when necessary) is particularly large
2. Work on trust and reciprocity in the entire network – companies realize that they receive more when they give more
3. See through your own position within the network – does not have to be a directing one; networks can become more valuable when they can evolve freely
4. Learn to let go – sometimes companies have to get rid of old habits and traditional competences

One of the advantages of joint networks is that they generate social capital. Social capital is the set of resources, tangible or virtual, that accrue to an organization through social structure, facilitating the attainment of goals (Leenders and Gabbay, 1993). In creating social capital, competence and knowledge are exchanged, shared and created between firms with different capabilities and absorptive capacities (Cohen and Levinthal, 1990). The concept of absorptive capacity as an important dynamic capability for the innovativeness of a firm was already discussed in the introduction of this chapter. The absorptive capacity of a firm is based on prior related knowledge and is one of the factors that have an influence on the technical knowledge within an organization (Cohen and Levinthal, 1990).

2.3.3 Sharing resources

In alliances, companies not only profit from the partner; they have to share some of their own assets, possibilities and knowledge as well. Sharing resources with other firms can be a risky business. A remark for companies that consider open innovation is to make sure that mission-critical activities that have a strong IP-generation potential are not being outsourced (Economist Intelligence Unit, 2007). In collaborative innovation companies should use internal mechanisms to claim some portion of the value created (Chesbrough, 2003). Teece (1986) warns about the euphoria over 'strategic partnering';

the advantages are being stressed without a balanced presentation of costs and risks. There is a risk that the partner won't perform according to the innovator's perception of what the contract requires; there is the added danger that the partner may imitate the innovator's technology and attempt to compete with the innovator. This is one of the issues in collaborating and sharing knowledge with other companies: spill-over. Spill-over is the *unintended* flow of information and knowledge to competitors (Nooteboom, 2000; Teece, 1986). On the other hand, Cohen and Levinthal (1990) present in their article a way to profit from the spill-over of competitors. Together with extraindustry knowledge, own R&D and the absorptive capacity it increases the technical knowledge within a firm.

2.3.4 Reduce risk and create trust

The advantages of a contractual solution for companies are that the innovator will not have to make upfront capital expenditures needed to build or buy the assets in question; this reduces risks as well as cash requirements (Teece, 1986). To reduce the risk for both partners, important issues in alliances with other firms are uncertainty and trust. Nooteboom (2000) distinguishes between trust in competence, trust in intentions and confidence in external conditions. Are partners able to follow through on a deal, do they intend to do so to the best of their ability, and will their endeavor not be thwarted by unforeseen and uncontrollable conditions? The distinction between competence trust and intentional trust, the controllable conditions is important because they both ask for another action when breaking down. If competence fails, one may give support to improve it. If intentions fail, one may improve incentives or give threats. For new relationships the main issue is intentional trust, narrowly defined as the expectation that damage will not be caused even though there is both an opportunity and an incentive for the partner to cause damage (Nooteboom, 2000).

There are methods to reduce uncertainties and create trust among partners. Van der Heijden (1996) calls a scenario process a strategic conversation. An effective strategic conversation requires a balance between integration of mental models, to enable the organization to come to a shared conclusion and move forward, and differentiation of mental models, to ensure that a wide range of weak signals in the environment are perceived, understood and brought into the system to enter the conversation and be acted upon. A strategic conversation is an effective one to reduce uncertainties concerning the future with participants and increase common trust (Van Assen and Van Hezewijk, 2007); it can stimulate open innovation because of openness concerning knowledge and information. People perceive, interpret and evaluate the world according to mental categories (frames, mental models) which they have developed in interaction with their physical and social/institutional environment (Nooteboom, 2000). A strategic conversation can align mental models of managers which can increase trust and reduce uncertainty among them.

2.3.5 Collaborative Innovation Sessions

Nooteboom (2000) discusses the importance of coordinating people's thoughts within partner firms in order to achieve a specific joint goal. Organizations need to reduce cognitive distance, i.e. achieve a sufficient alignment of mental categories, to understand each other, utilize complementary capabilities and achieve a common goal. Successes happen through institutional learning; the process whereby management teams change their shared mental models of their company, their markets, and their competitors (De Geus, 1988). Collective learning in networks can only take place based on a collective mental model. The less uncertainty there is in that collective mental model, the more effective the learning process (Van Assen and Van Hezewijk, 2007). On the other hand, too little uncertainty may lead to groupthink: the mode of thinking that people engage in when they are deeply involved in a cohesive in-group (Janis, 1982).

To actually develop opportunities, business models of potential partners have to be explored and internal resources of the participants have to be used optimally. One of the tools that will be explored in this research is a collaborative innovation session. In collaborative innovation sessions, firms with various backgrounds are brought together in a workshop to think about possible innovation in their (future) environments. By letting firms jointly explore their shared external future environments they might discover possible shared elements in these futures, from which collaborative innovations might be derived.

Companies from the same industry have the same external environment and are dealing with the same uncertainties concerning that environment (De Ruijter and Lassche, 2006). This is why different companies from the same industry can be brought together to explore their future. These companies have the same external environment, but might have another point of view on things. In collaborative innovation sessions, firms are exploring each other's business models and finding out what could be interesting joint business opportunities in their future. During the workshops participants are usually divided in small groups with various backgrounds. They are instructed to brainstorm about future trends which might influence their business model.

In a collaborative innovation session there is a facilitator involved. Although the role of the facilitator is not being considered as crucial for the success of the project, the role of the facilitator is being explained shortly. Ideally the facilitator running the process is neutral and does not intervene in the debate on content. The participants should have confidence in the facilitator and not view him or her as a competitor. As a process facilitator one cannot be an expert in all businesses. How much do you actually need to know? According to Van der Heijden (lecture, 2007) it is enough to understand and

speak the language (know the jargon and abbreviations); knowing too much can be disadvantageous for the objectivity of the facilitator.

2.3.6 Summary

In this section, the increasing trend of collaborative innovation is being explained. Companies used to innovate all by themselves to profit from their innovations, but the innovation process has opened up. By sharing resources, assets and knowledge companies are joining forces to increase the level of innovation within both companies. This trend is being encouraged by the sense that collaborative innovation reduces the risk of innovation. Companies are exploring their existing networks and expand into new networks in order to find appropriate partners for this innovation process. In both existing and new relationships trust is an important prerequisite, because one has to be aware of the competences and intentions of its potential partner. After all, you do not share your good ideas with someone you do not trust! A collaborative innovation session is a tool to bring companies together to let them explore their joint future possibilities. For this exploration process, goals and mental models need to be aligned to some extent. During these sessions existing and new relationships are being explored, innovative ideas can come to existence and new ideas can be developed. This process is usually being facilitated by an objective external company.

In collaborative innovation sessions, scenario thinking is sometimes used as an additional method to open up and align the mental models of participants. In the next section I will discuss scenario thinking as an approach to stimulate innovation.

2.4 SCENARIO THINKING

To survive and grow in an era of continuous change, companies need to identify upcoming opportunities and threats and address them in their strategic planning. Scenario thinking is a method to describe alternative future developments and therefore it seems a very suitable method for stimulating innovation in companies (e.g. Van Assen and Van Hezewijk, 2007; Van der Heijden, 1996; Verloop, 2007). But before discussing the suitability of strategic conversation and scenarios as a tool for stimulating innovation, I will introduce scenario thinking by elaborating on its history.

2.4.1 History of scenario thinking

Scenarios have their roots in the military, where they were used in war games by the U.S. Air Force. During and after WWII scenario thinking moved to the civil domain by RAND corporation and was further developed by the Hudson Institute. This institute was established by Herman Kahn, after he resigned from RAND. Kahn reworked scenarios as a method for business strategy in his book on scenarios, *The Year 2000* (1967). From the 1960's onwards scenario thinking took off in the corporate world. Pierre Wack introduced scenarios at Shell. In the 60's Shell was one of the first corporations that started and continued to use scenario thinking. Kees van der Heijden played an important part in

the development of scenario thinking at Shell and later in science. He wrote different books, but the most important one is *Scenarios – The Art of Strategic Conversation* (1996). Out of Group Planning in Shell an international think-tank and consultancy firm originated: Global Business Network (GBN). One of the leading people of GBN is Peter Schwartz, he wrote a number of books on the topic including *Art of the Longview* (1991). GBN is a network of what they call ‘remarkable people’. Its purpose is to establish a “highly focused and filtered information flow and reorganize members’ perceptions about alternative futures through the scenario method” (Schwartz, 1996).

During the last decades, several authors developed scenario thinking. Most originate from Shell and the GBN. The founder of De Ruijter Strategie BV, Paul de Ruijter had his internship at Shell and was a member of GBN. The methods used by De Ruijter Strategie BV are based on this background.

2.4.2 Functions of scenario thinking

In the introduction, I have discussed the ongoing evolution of dynamic markets. One of the questions in this research is what methods companies can use to guide decisions that may have far-reaching impact on success, and even survival, when they must look far beyond the familiar and knowable conditions of their current daily business? Many organizations have been using the practice of scenario thinking to help them to explore strategic questions of future direction and policy design (Sharpe and Van der Heijden, 2007).

Scenarios are a method to help us to take a long view in this world of great uncertainty. Scenario thinking is viewed as a cognitive skill that helps us to hold in creative tension many opposing ways of future thinking, and integrates them into one overall methodology: reducing unmanageable confusion to a more structured uncertainty (Sharpe and Van der Heijden, 2007). Scenarios are no predictions about the future, but they help to perceive different futures in the present (Schwartz, 1996). Scenario thinking does not attempt to predict what is unpredictable, and for this reason considers multiple, equally plausible futures (Van der Heijden, 1996). Schwartz’s (1996) definition of the scenario method is: a tool for ordering one’s perception about alternative future environments in which one’s decisions might be played out. Alternatively: a set of organized ways for us to dream effectively about our future.

Scenarios deal with two worlds: the world of facts and the world of perceptions (Bood & Postma, 1997). Scenarios have to be consistent and plausible and should not diverge too much from the mental models of decision makers. On the other hand they have to challenge decision makers to stretch their current state of mind. Sharing multiple stories about the future makes the organization more perceptive about its environment, and forces reflection on experience and adjustment of mental theories (Van der Heijden, 1996). Scenarios are the most powerful vehicles for challenging our ‘mental models’ about

the world, and lifting the ‘blindness’ that limit our creativity and resourcefulness (Schwartz, 1996). Scenario thinking is a method to make the organization a more skilful observer of its business environment (Van der Heijden, 1996). Organizations become more flexible and capable of adapting to their environments. This can lead to good strategic management.

According to Bood & Postma (1997) scenarios have six functions:

1. Evaluation and selection of strategies: scenarios can serve as a background by providing a framework for effective and easy judgment
2. Integration of various kinds of future-oriented data: better than any other future-oriented tool, scenarios offer the possibility to integrate both qualitative and quantitative data in a consistent manner
3. Exploration of the future and identification of future possibilities: what might possibly happen and how can an organization act or react upon future developments. By exploring and anticipating the future, scenarios can help to identify major changes and strategic problems an organization will be facing in the future as well as to generate strategic options to effectively deal with them
4. Making managers aware of environmental uncertainties: scenarios confront managers with fundamentally different future states which brings uncertainty into the management process
5. Stretching of managers’ mental models: by explicitly confronting them with their own biased viewpoints. Mental models are the personal descriptions of situations formulated in abstract terms as opposed to concrete descriptions of specific situations. Scenarios aim at challenging managers’ existing mental models and entrenched corporate convictions.
6. Triggering and accelerating processes of organizational learning: scenarios as representations of the real world can serve as ‘transitional objects’ with which managers can ‘play’ and in doing so learn considerably faster (De Geus, 1988)

The first three consider methodological functions, the latter three concern the mental models of managers (Bood & Postma, 1997). Scenarios offer these managers the possibility to re-perceive the world around him/her (Wack, 1985), which is an important aspect of the scenario process in this research.

2.4.3 Steps of the scenario process

To successfully develop scenarios, authors have defined steps to go through the process. In appendix 1, the steps of Schwartz (1996) and the steps of Bood & Postma (1997) are described to illustrate that there are different ways to approach a scenario process. Important to emphasize is that theory does not always fit reality. The steps are being adapted for every individual case. Scenario thinking is a dynamic process that is adapted to clients and situations. De Ruijter Strategy puts the scenario method into practice. They roughly distinguish the following five phases of the scenario method (De Ruijter

and Lassche, 2006). Every step consists of a few phases that provide support in developing scenarios well.

Step 1: Preparing the project

The first phase of a scenario process is preparing the project. This is a remarkable difference with the steps of other authors. De Ruijter and Lassche (2006) do not presume that a scenario process starts with a problem, but that exploring the future is important for every organization. Having a problem does not have to be the starting point of a scenario process. To structure the preparation De Ruijter and Lassche (2006) present four questions that need to be answered during the first phase:

1. What is the main subject of the scenarios?
The reach of the scenarios is important for the entire process. Do they concern the entire industry, or just a small subject?
2. What is the time horizon for the exploration of the environment?
Scenario projects concern long-term uncertainties, not changes that come up within a few months.
3. Which parties are being involved in the process and what will be their role?
With a small group of internal experts involved, the process will be substantially shorter than with many external parties involved. This does not only have an influence on the time span, but on the significance of future strategy as well.
4. How, when and to whom will the scenarios be presented?
The choice of presentation determines the duration of the process as well. The larger the group of people that need to be informed on the scenarios, the more important its presentation.

Step 2: Exploring the environment

After preparing the project companies need to explore their environment. This step also has four elements (De Ruijter and Lassche, 2006):

1. Define the external environment
What is the external environment and what do we want to know about it?
2. Define trends, developments and main uncertainties in the environment
Trends, developments and uncertainties are things in the external environment that the organization cannot have influence. Therefore, participants have to have a broad view. There are four techniques to define these elements: performing deskresearch, interviewing stakeholders, observing environments and exploring them in workshops.
3. Cluster and work out external developments
By clustering trends, developments and uncertainties into overarching themes connections between them become more clear.

4. Determine connections and relationships between clusters

For participants it is crucial to see the overall picture. Therefore, the relationships between clusters of external developments are important to analyze.

Step 3: Writing the scenarios

In the third step, the actual scenarios are written. This step contains of two parts (De Ruijter and Lassche, 2006):

1. Choose the core uncertainties

One chooses the clusters from the previous step that are expected to have the highest impact and at the same time, the highest level of uncertainty. These clusters can be combined, which leads to different scenarios. A common way of dealing with the core uncertainties is working with a matrix.

2. Model the scenarios

After choosing the scenarios, companies have to model the stories. One can describe the end of the time horizon as realistic as possible. Logical steps within the scenario from now until the future make sure that the story is plausible, relevant and surprising. The trends from step 2 will be used as input. The stories should be written by the participants of the workshop, because they explored trends and are familiar with developments within the industry. Companies can also choose to work out scenarios more creatively: make a short video or presentation.

In general, the trends from the previous step are converted into stories – the scenarios. The scenarios are ideally created by small groups of participants. After the workshop, the stories might be collected and worked out by an external party. Important for the scenarios is that they are consistent and plausible and do not diverge too much of the mental models of the decision makers (Van der Heijden, 1996). However, they should also be surprising to stretch manager's current state of mind.

Step 4: Generating new business options

The previous steps will already contribute to new insights and useful knowledge, this step is to start working with the scenarios. Companies have to generate new business options. Three parts are important in this step (De Ruijter and Lassche, 2006):

1. Determine the implications of the scenarios

By making scenarios, companies can prepare themselves for future developments. Companies have to own the scenario, and determine what consequences each scenarios has for the industry.

2. Brainstorm about optional actions

Scenarios concern the external environment, but options for possible action concern the organization in question. Options are optional actions for companies to stay competitive in the

different possible future scenarios defined in the previous phases. Options can be generated by letting participants in a scenario workshop imagine themselves in the situation sketched in the scenario. Different techniques can be used. One of them is to ask participants specific solutions for problems described in the scenarios, another is to ask them what they would do differently in a specific scenario compares to current business.

3. Evaluate the options.

Options in this realm is a collective noun for policy formulation, policy instruments and other actions necessary to prepare the company for implication of possible scenarios. Evaluation is to judge options on success and feasibility in different social, political and economic circumstances.

Step 5: Making an action plan

Writing scenarios and generating options are not the ultimate goal of a scenario process. The actual goal is to make it work for the participants. In the previous steps, managers were encouraged to think out of the box and stretch their mental models. In this step they have to wonder what explicit results this process could have for the future. They have to look at their existing policies and strategies to explore the options that have emerged from the process. This means the companies need fundamental ideas on which they can build. Therefore, companies have to develop an action plan based on the scenarios and options. The action plan has to be a dynamic one. Having a dynamic policy gives companies the opportunity to make adjustments and be flexible when the external environment is changing (De Ruijter and Lassche, 2006). Firms do have to follow external developments closely to make adjustments on time. When the scenario process is well developed companies should not have to expect big surprises.

2.4.4 Scenarios and innovation

In the introduction I have explained the importance of innovation. To be effective, innovation requires an efficient business process with the right people and resources at the right stage. Verloop (2007) explains the most effective way to increase the rate of innovation is to remove the obstacles in the 'innovation funnel', reduce the risks in the process and create an incentive pull at the end of it. Innovation, and especially radical innovation, affects the business model of a company. Here, scenarios can provide the right backdrop for assessing innovation (Verloop, 2007). Scenarios can improve decision making by creating the right framework in the minds of the managers for answering the question whether they would like to play a new game in the future. Innovation is usually accompanied with change in the organization, which can mean a change in the business model. Another effect of innovation is that it makes a company more aware of and resilient to external change (Verloop, 2007). Openness to the world outside and readiness to change are important factors for continuity in a business. Scenarios offer managers the realm in which strategic decisions concerning

innovation can be made (Van Assen and Van Hezewijk, 2007). Scenarios can trigger innovative ideas in the minds of managers and innovators readiness for the necessary change (Verloop, 2007).

Next to analyzing uncertainty scenarios are about change, which makes a tool of choice for innovation. Change is the object for both innovation and scenarios; for innovation it is creating change and for scenarios it is preparing for change (Verloop, 2007). Scenario analysis is useful for analyzing structural uncertainty, where possible future events are unique, lacking any basis for a probability assessment, but where the possibility of the event presents itself through a cause / effect line of reasoning (Van der Heijden, 1996). The essential role of scenarios is not to take decisions, but shape decisions to alert the manager and open his mind for possible changes in the business environment (Verloop, 2007).

2.4.5 Scenarios in practice

Although scenario thinking seems the solution to dealing with uncertainty, Sharpe and Van der Heijden (2007) emphasize that even the best scenario practice does not always result in entirely satisfied strategists. In this realm, they reveal three key requirements for the effective use of scenarios in strategy, relating to the context in which they are used, their content, and the process by which managers are engaged in using them:

- *A productive, innovative context for use* – willingness on the part of the decision makers to open up their thinking to the possibility of strategic change in their organization.
- *A focus on prototyping the future* – use scenarios to create specific models of the organization linked to the imagined futures; seeing this as essentially a design task, the requirement is to support a highly interactive, and iterative, business prototyping process.
- *An embedded learning process* – people who make decisions must be deeply engaged with the strategic scenario practice as a continuing process of entrepreneurial learning and adoption, using the scenario insights to develop their appreciation of the environment around them, and, through this, of their own organization.

Practices like scenario projects are only effective if they are turned into action. In a lecture on scenario thinking (VU, 2007), Kees van der Heijden made the difference between a scenario project and a scenario intervention. A scenario project is described on paper, all the steps are followed. A scenario intervention is not just doing the things on paper, but advice and consult the situation of the client; the client has a problem and you need to respond to that need. Van der Heijden emphasized that it is not about following the steps, but about listening to your client. So, one of the requirements for effective use of scenarios is active involvement at every level in the client-organization; the powerful built-in reinforcement of the current patterns by which things get done in the present must be overcome (Sharpe and Van der Heijden, 2007). Experience learns that most intended strategies get side-tracked, and are replaced with what the organization as a whole considers to be sensible and useful action in

the real world. In the literature this is called emergent strategy; most strategies are not rationally developed but reflect a retroactive interpretation of actions already taken in line with the accepted majority view (Sharpe and Van der Heijden, 2007).

Before using scenario thinking as a management tool, decision makers need to engage a 'strategic conversation' with their organization. This concept was discussed in the previous section as an effective tool to reduce uncertainties concerning the future with participants and increase common trust (Van Assen and Van Hezewijk, 2007). Decision makers have to understand how people think, individually, in groups and in organizations, and the relationships between tools, techniques, facilitation, and the essentially unpredictable nature of insight (Sharpe and Van der Heijden, 2007). Scenarios are a way to harness the power of systemic insights into the continuous unfolding of strategic action. According to Verloop (2007), insight is the key to success in innovation, because insight is required to understand how a customer need can be met in a novel way.

2.4.6 Summary

In this section, I have explained scenario thinking as an approach to explore future developments, deal with uncertainties and guide strategic decision making. The steps of the scenario process relevant for this study have been made explicit to make clear what happens in practice during a process. In practice, the client-organization is the central part of the process. Effective use of scenarios is effective involvement of the company in question. Scenario thinking is described as an appropriate method to encourage innovation in organizations because scenarios trigger in the minds of managers and innovators a readiness for the necessary changes. In collaborative innovation sessions, scenarios could be an additional trigger to discuss innovative options for participating companies. Scenarios are a method to challenge and/or align mental models, which creates trust between partners. By exploring future developments, out-of-the-box thinking is being encouraged.

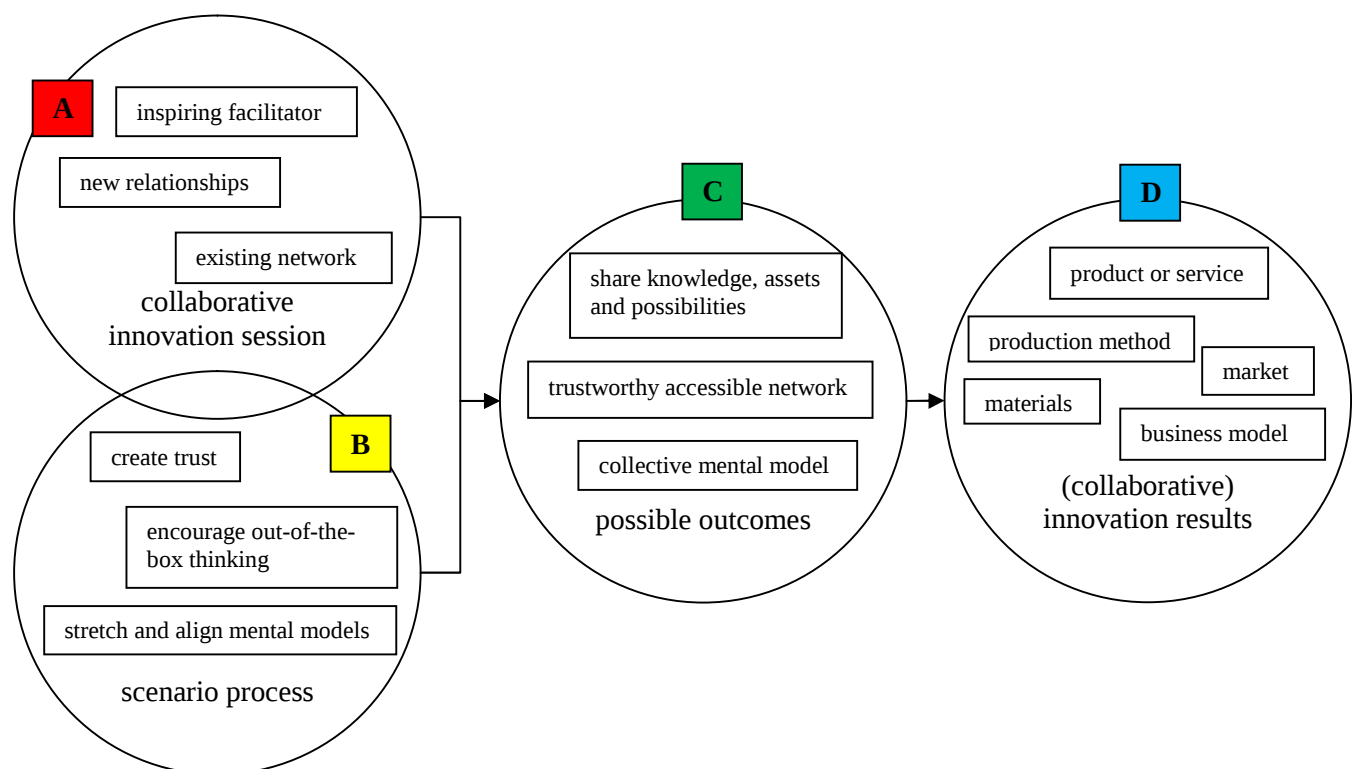
2.5 SUMMARY THEORETICAL FRAMEWORK AND CONCEPTUAL MODEL

In this chapter I have elaborated on the different concepts that are subject for this study. The definition of innovation that has been adopted for this study is of Schumpeter (1934). This definition comprises in short: introducing a new product or service, using a new production method, entering a new market and using new materials. I proposed to add 'making small changes in the business model'. The many characteristics of innovation have also been discussed and I have explained the different degrees of innovation. Radical innovation turned out to be difficult for firms because of (financial) uncertainty, perceived risk and reluctance to change the business model. Therefore, two methods have been introduced. Collaborative innovation sessions connect existing networks and expand new relationships. This process is being guided by a facilitator who encourages the group to think about possible (collaborative) innovation. The other method that has been discussed is scenario thinking. The key of scenario thinking is encouraging out-of-the-box thinking by structurally exploring the

future to be able to anticipate on alternative future environments. By bringing together different companies from the same industry to explore their joint future environment common interest, language and trust is being created among participants and mental models of the participants are being aligned and stretched. This might encourage participating companies to innovate.

In collaborative innovation sessions existing relationships are being explored and networks are being extended with new relationships, guided by a facilitator (A). Scenario processes help create trust between participants, encourages out-of-the-box thinking and stretch and align mental models (B). By combining the two tools, some of the separate results (C) might positively influence innovation within companies (D)). This is being illustrated in figure 2.3.

FIGURE 2.3 – Conceptual Model A

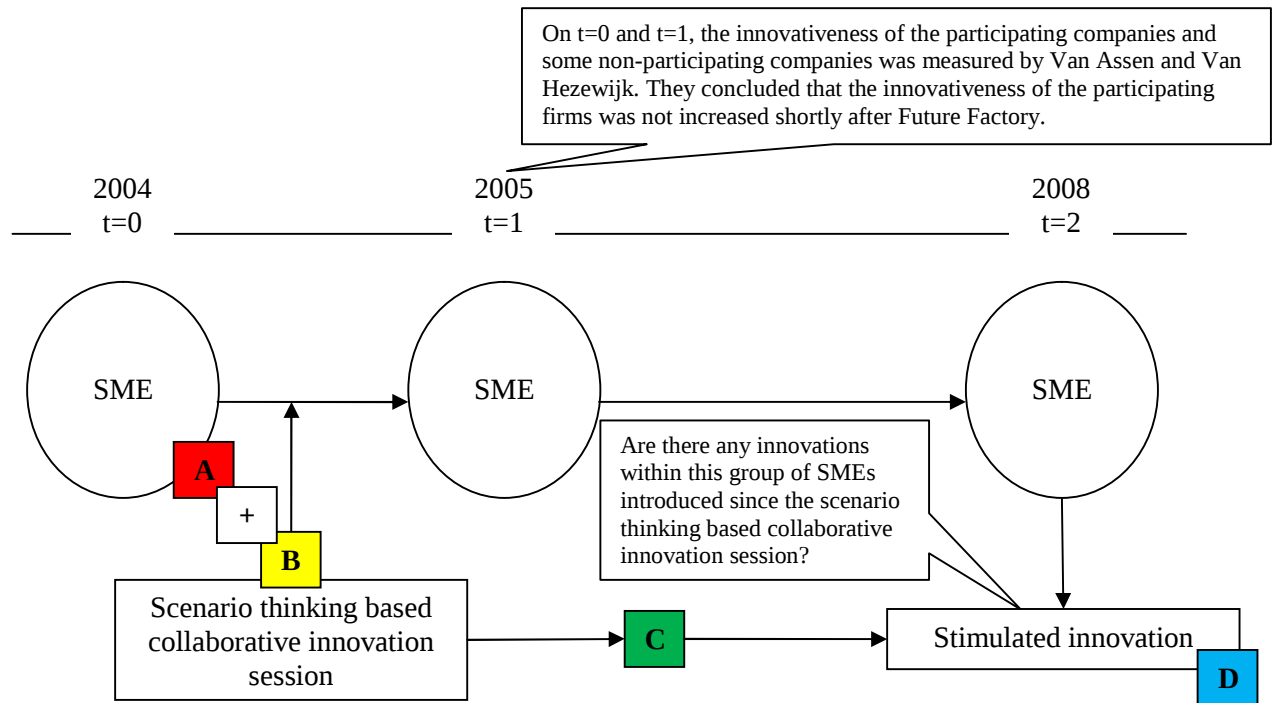


With this model I will answer the questions stated in chapter 1. The methodology for answering the questions is explained in chapter 3.

To explore the effectiveness of the methods being used, results of the methods after a few years will be studied. It could be that results of the intervention show later, because for example, building trust takes time and ideas may have emerged or executed later on. Diffusion is important here as well, there is uncertainty about the time-lapse actual results of innovation to show. The case I chose for this study was used for research before. Short-term results among participating small and medium sized enterprises (SMEs) were studied during and shortly after the project. For this study, I am interested in

long-term results. The concepts of figure 2.3 are integrated in 2.4 to combine the timeline of the process and the relations with the methods and their presumed effects.

FIGURE 2.4 – Conceptual Model B



3 RESEARCH METHODOLOGY

This chapter describes how this study finds answers to the main research question and the sub questions from the previous chapter. Methodological choices for research are being justified and methods are being explained. The chapter provides information on the chosen research method, data collection method and analyzing data methods.

3.1 RESEARCH METHOD

3.1.1 Case Study Research

The research design one chooses depends on the research question, the matter of control over the actual behaviour events and the focus on contemporary as opposed to historical phenomena (Yin, 2003). This study is a typical empirical study: Research which bases its findings on direct or indirect observation as its test of reality (Swanborn, 1996). Empirical research occurs in many forms, e.g. experiments, case studies and questionnaires. The researcher has to choose the right kind of research for his or her research question by comparing characteristics of research strategies available (Yin, 2003). For this case study, I choose to perform case study research, because of the following reasons. The research question of a case study is characterized by a focus on ‘how’ or ‘why’. Furthermore, a case study research is preferred when the investigator had little control over events, and when the focus is on the contemporary phenomenon within some real-life context (Yin, 2003). The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events. And it focuses on understanding the dynamics present within single settings (Eisenhardt, 1989). Since the research question of this study is a ‘how’ question, case study research seems appropriate. The other conditions are met as well; it is not needed to have control over behavioural aspects and the focus is on contemporary phenomena. For case studies, theory development as part of the design phase is essential, whether the ensuing case study’s purpose is to develop or test theory (Yin, 2003). In case study research, statistical generalization is impossible, so the mode of generalization is ‘analytic generalization’, in which a previously developed theory is used as a template with which to compare the empirical results of the case study. In this study, one case is being studied, but if two or more cases are shown to support the same theory, replication may be claimed (Yin, 2003)

Case studies typically combine data collection methods such as archives, interviews, questionnaires, and observations. This is the unique strength of case study research (Yin, 2003). The evidence may be qualitative, quantitative, or both (Eisenhardt, 1989). The qualitative data are useful for understanding the rationale or theory underlying relationships revealed in the quantitative data or may suggest directly theory which can be strengthened by quantitative support (Eisenhardt, 1989). In this research, quantitative and qualitative data are being combined as well.

3.1.2 Number of cases

The choice for case study research has been explained, now further decisions have to be made. In this section the number of cases is being selected. I have chosen to use a single case study to address the research question for several reasons. First, in this study a very specific set of circumstances is tested. To confirm, challenge, or extend theory, a single case may meet all of the conditions for testing theory (Yin, 2003). Another related reason is that the case can be considered a typical case. The theory described does not meet many cases. Therefore, the case selected involves many participants and various parties so this research will still have a wide angle.

3.1.3 Case selection

Taking into account the specific tools of research, not many cases qualify for potential selection. Many cases were available, but criteria for this study left only one. Case selection often occurs based on simple criteria like distance to residence of university, interest and complicity, and accidental contacts or relations of the researcher. This kind of selection is known as ‘convenience selection’ (Swanborn, 1996). A ‘convenience’ selection criterion for this study was that I chose a project performed by De Ruijter Strategy. Another ‘convenience’ selection criterion is that the project has to be well documented. Next to ‘convenience selection’ researchers select cases on characteristics of the case. This kind of selection is called ‘content selection’ (Swanborn, 1996). Since this study explores two specific methods, the selection process is based on ‘content selection’. Both scenario thinking and collaborative innovation session had to be part of the project. Collaborative innovation session is a method in which multiple companies are involved, as noticed in the previous. This ensures the research has a wide angle. Another important content criterion is that the goal of the project is to inspire participants towards innovation. Taking into account these criteria I selected a project of NEVAT that was facilitated by De Ruijter Strategy. In the following section I will give a summarized description of this particular case.

3.1.4 Case description

The case selected for this study is of NEVAT. In chapter 5 the process will be described extensively, but here the case is introduced briefly. NEVAT⁴, the Dutch Association of Subcontracting Industries, existed 25 years in 2004 and decided to celebrate this with her 250 member companies from the subcontracting industry. Instead of looking back on successes of the past, they wanted to prepare their members for the future. Individual companies try to keep up with technological developments within their industry, but science is moving fast. NEVAT wanted to offer their member companies the opportunity to anticipate on possible changes instead of following. NEVAT wants their companies to be innovators instead of imitators (De Ruijter and Lassche, 2006).

⁴ NEVAT – Nederlandse Vereniging Algemene Toelevering (Dutch)

Therefore, NEVAT decided to explore the future environment of the subcontracting industry with many stakeholders. Not just member companies were invited, but other experts from the industry joined in as well to contribute additional knowledge and information.

Rabobank Nederland supported the project and Syntens⁵ was present during the process to connect participants with innovative ideas. De Ruijter Strategy facilitated the project in different phases.

This particular case has been chosen because it is a project from De Ruijter Strategy that is very well documented. The case has been studied before and therefore much information is available. Above all, in this case both the methods scenario thinking and collaborative innovation sessions are being used. The goal of the project was to stimulate member companies to explore future developments and stimulate innovation.

3.2 DATA COLLECTION METHODS

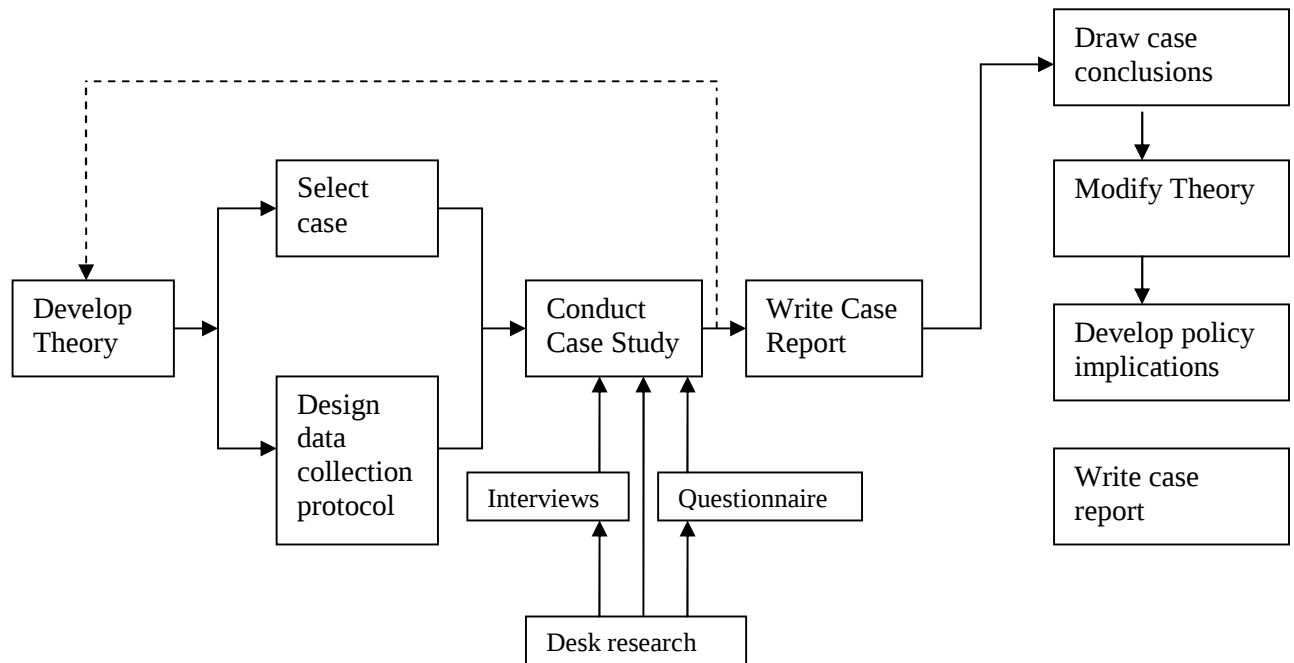
3.2.1 Principles of data collection

A major strength of case study research is that it provides the opportunity to use many different sources of evidence. Next to ‘using multiple sources of evidence’, Yin (2003) presents two additional principles of data collection: ‘create a case study database’ and ‘maintain a chain of evidence’. Firstly, Yin (2003) argues that any finding or conclusion in a case study is more convincing and accurate if it is based on several different sources of information. The use of multiple sources of evidence in case studies allows an investigator to address a broader range of historical, attitudinal, and behavioural issues. The focus in this research is on different data drawn from primary and secondary data sources to increase validity of the research. Examples of sources are: archival records, open-ended interviews, focus interviews, structured interviews and questionnaires, observations (direct and participant), documents. The second principle has to do with the way of organizing and documenting the data collected for case studies. Every case study project should strive to develop a formal, presentable database, so that other investigators can review the evidence directly and not be limited to the written case study report (Yin, 2003). A case study database increases the reliability of the entire case study. In this research, case study notes, case study documents, tabular materials and narratives are collected and many of them are enclosed in appendices. The final principle of case study research is to maintain a chain of evidence to increase the reliability of the information in a case study. This principle is to allow an external observer to follow the derivation of any evidence. This means that all the implications made in the conclusion have to be traced back through the report. The incorporation of these three principles into a case study investigation will increase its quality substantially (Yin, 2003).

⁵ Innovation network for entrepreneurs

In the following, I will present the methods used for this case study in this section. The process of this research is presented in figure 4.1, based on the case study method of Yin (2003).

FIGURE 3.1 - Case Study Method (based on Yin, 2003: p. 50)



During the first phase of this study theory has been developed, which has resulted in propositions and conceptual model. The theory discussed in chapter 2 is based on secondary data sources like academic journals and primary sources like academic lectures⁶ and consults of experts⁷. The second phase of this study comprises the case selection and the design of the data collection protocol. After that the case will actually be researched with the help of several data collection methods.

3.2.2 Desk Research

For desk research I will make use of existing data: documents, data records, audio-visual material and objects (Braster, 2000). For this research, the first three are used as sources of information. Documents like websites, notes, and archival records from De Ruijter Strategy will be useful for background information on the company and the project. One of the main advantages of the Future Factory case is that it has been used for research before. The data records of this research will be used as a source of

⁶ The lectures that are used for the theoretical framework are from Kees van der Heijden, Dany Jacobs and Theo Postma

⁷ Experts that are consulted for the theoretical framework are Paul de Ruijter and Renate Kenter.

information as well. Marcel van Assen and Bart van Hezewijk have been exploring several aspects of the case during the project and shortly after it⁸. The last source of information is audio-visual material. The project resulted in a DVD from the scenarios, images of interviews with participants and images of the project. Another result is a book with worked out ideas for the company members of NEVAT.

3.2.3 Questionnaire

The first technique that will be used to collect data is the questionnaire. The questionnaire's role in relation to other sources of evidence is different in case study research than in other kinds of research. In this study, it will be considered as one of the components of the overall assessment of the case. To make sure that all respondents return the questionnaire a few precautions are taken. Firstly, the questionnaire is short and secondly, answered by means of a Likert Scale. When responding to a Likert questionnaire, respondents give their level of agreement. Thirdly, the questionnaires will be sent on behalf of NEVAT, to make sure that the respondents take it seriously. The last question of the questionnaire inquires about the willingness of respondents to cooperate in a follow-up interview. This follow-up interview will go deeper into the subject to find out underlying reasons for answers given in the questionnaire. Thirteen questionnaires are sent by e-mail to participating companies.

3.2.4 Open ended interviews

The second interview technique that will be used is open-ended interviews. In open-ended interviews you can ask key respondents about the facts of a matter as well as their opinions about events (Yin, 2003). The open-ended character gives flexibility to the interviewer to elaborate on surprising themes that might come up during the interview. The construction of these interviews will be semi-structured. Semi-structured interviews have a clear direction towards collection the right data, but leave enough space for the respondent to elaborate on interesting issues. The interviewer will write down important information during the interview, to avoid misinterpretations. The interview with the CEO of NEVAT is face-to-face, the interviews with participating companies is telephonic.

3.3 ANALYZING CASE STUDY EVIDENCE

After collecting data with the data collection methods presented in the previous section, data needs to be analyzed. Analyzing case study evidence is difficult because strategies and techniques have not been well-defined and much depends on an investigator's own style of rigorous thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations (Yin, 2003). According to Yin (2003), tools to analyze can only be useful when you have a general analytic strategy. A strategy will help to treat evidence fairly, produce compelling analytic conclusions, and

⁸ Main research question of this study was: *What is the impact of strategic conversation in a platform provided by an industrial association on the exploration phase of innovation?*

rule out alternative interpretations. To answer the following sub questions, different strategies will be applied.

A1 What was the goal of the project?

A2 What happened during the process of the project?

To answer this sub questions, the process is being explored by a combination of the research methods discussed in the previous. Firstly, available documents about the company and the project are being studied. The research of Mr. Van Assen and Mr. Van Hezewijk is one of the main sources that will give much information, because they actually answered this sub question A2 in their research as well. Secondly, additional information will be extracted from interviews with NEVAT, four participating companies and De Ruijter Strategy.

B1 What are the perceived long-term results of the participants?

B2 Do the results of the project align with the initial goal?

These questions will be answered with a combination of the research methods as well. Question B1 will be explored by sending a questionnaire to participating companies of the project. The questions of the questionnaire are enclosed in appendix 7. Additional quantitative data are extracted from the results of the study of Mr. Van Assen and Mr. Van Hezewijk. They have studied short-term (during and directly after the process) results; this study however focuses on long-term (four years later) results of the project.

By means of conducting interviews with four participating companies, the initiating company (NEVAT) and the facilitator (De Ruijter Strategy) initial goals and results can be compared and question B2 will be answered. The interview scheme for the interviews with participating companies is enclosed in appendix 8.

C1 In what way did the collaborative innovation session stimulate innovation of the companies of interest?

C2 In what way did scenario thinking stimulate innovation of the companies of interest?

After answering the previous sub questions it is time to answer the questions that lead directly to answering the main research question. Answers to these questions will be found by making up results of the questionnaires and conducting open-ended interviews. The questionnaires give a quantitative impression of the results and the open-ended interview will give qualitative results. Through the open-ended interviews with the initiating company, four participating companies and facilitating company the underlying reasons for the results are explored. Opinions on both of the methods will be discussed separately during the interviews. Four participating companies are selected based on the results of the questionnaire. Two companies are randomly selected out of the group of companies that answered at

least one of the questions 3, 4, 5 with ‘yes’ or ‘to some extent’⁹. The other two responding companies are randomly selected out of the group that answered the questions 3, 4, 5 with ‘no’ or ‘nearly not’.

In the following chapter I will explain how these questions are answered in this study. First, a description of the branch organization NEVAT will be given and after that the project will be described to answer sub questions A1 and A2. Thereafter, sub questions B1 and B2 will be answered by means of drawing results from the interviews and performed desk research. Finally, sub question C1 and C2 are being answered. The following table presents the how the sub questions are answered.

TABLE 4.1 – *Data for the sub questions*

	Previous research	Archive De Ruijter Strategy / NEVAT	Interview NEVAT	Questionnaire	Interviews Participants
A1	✓	✓	✓		
A2	✓	✓	✓		
B1			✓	✓	✓
B2		✓		✓	✓
C1					✓
C2					✓

This project involving scenario thinking and collaborative innovation sessions will be evaluated to explore to what extent theory relates to reality

⁹ The questions of the questionnaire are enclosed in appendix 7

4 RESULTS

The case chosen for this study is a project of branch organization NEVAT. In this project, NEVAT invited some member-companies, public authorities, scientists and politicians to think about seven possible future developments in the subcontracting industry. This resulted in seven scenarios. To stimulate innovation among member-companies five collaborative innovation sessions were organized, in which the scenarios were used to generate options. In these sessions, participants collaboratively explored actual innovative business options. This study evaluates innovations which resulted from this project.

4.1 COMPANY DESCRIPTION

The project is initiated by NEVAT¹⁰ – the Dutch Association of Subcontracting Industries. NEVAT is an important network for industrial subcontractors in the Netherlands. It is a branch organization with about 250 members and it performs as spokesman for the Dutch subcontracting industry. A platform for exchanging experience and accommodate source of knowledge for suppliers and outsourcers at home and abroad. NEVAT accommodates a wide range of specialist companies in the metal work, plastic and electronic manufacturing industries. It represents almost all production techniques and technologies and covers both suppliers of simple parts, and companies that develop and produce customized high-quality modules and systems.

The mission of NEVAT is:

“NEVAT aims to make the Dutch market for subcontracting one of the best performing markets of Europe. From this position, members will be able to occupy key positions in key markets. Members will be informed FIRST and IN DEPTH, so that they are given a wide market headstart on non-members”.
(www.nevat.nl)

NEVAT wants to achieve this mission mainly by:

- The active **promotion** of the advantages of outsourcing with (potential) customers at home and abroad, in order to propagate the competencies of Dutch suppliers and thus increase the market;
- The fulfilling of a ‘**guide function**’ for members, through the early signalling of relevant strategic developments and trends in the market;
- The striving for **professionalism** among the suppliers;
- The promotion of **innovation** in product, process and organisation;
- The promotion of **co-operation** in the **supply chain** and the stimulation of mutual knowledge exchange between members in order to achieve innovation, cost reductions and economy of scale;
- The **protection** of the collective **interests** of member companies at national and international levels;

¹⁰ NEVAT – Nederlandse Vereniging Algemene Toelevering (Dutch)

- The propagation of the necessity of a consistent **industrial policy** at national and European levels, with or without related organisations;
- The bundling of forces to safeguard the long-term influx of **qualified employees**.

Within the area of supply and outsourcing there are distinct subdivisions. NEVAT had set up groups for specific sectors and platforms. Members with a common market, the same production processes or chain position can thus be effectively grouped. At present there seven independent sectors:

- Holland Automotive: suppliers to the automobile industry
- GPI: suppliers of sheet metal work
- PMT: moulds, stamping and prototypes
- Platform System Suppliers: system and module and sub module suppliers
- GVN: suppliers of machining techniques for processing heavy or large parts
- System Developers: combines the forces of independent engineering companies
- EMS: production of electronic parts

NEVAT is the negotiating partner for many organizations; authorities, employer's organizations, media and professional associations. Since modern subcontractors work objectively, their branch organization has to work objectively as well. They have to be familiar with their member companies and the market. This branch organization focuses on leading companies in the industry; not especially the largest companies, but the most innovative and strategic oriented ones. All activities of NEVAT are at the service of creating business result for the members. NEVAT aims at strengthening the market positions of its members in supply chains at home and abroad. This shows in the several projects NEVAT organizes, among which the project I chose for this thesis.

4.2 PROJECT DESCRIPTION

In this section the project chosen for this study is described. Sub questions A1 '*What was the goal of the project*' and A2 '*What happened during the process of the project?*' is answered in this section. The project had two phases: firstly, scenarios were made and secondly, multiple collaborative innovation sessions were held. In the following these two phases will be described. The information for this description is based on documents from the archive of De Ruijter Strategy, 'Vereniging met Toekomst'¹¹ (De Ruijter and Lassche, 2006), on an interviews with Theo Koster (current CEO of NEVAT¹²) as well as results of the research of Mr. Van Assen and Mr. Van Hezewijk.

¹¹ This book discusses scenarios and strategies for branch and professional organizations, among which the NEVAT-case.

¹² The result of the interview with Theo Koster, current CEO of NEVAT is enclosed in appendix 10

4.2.1 Scenarios

In the first phase, the first three steps of the scenario process of De Ruijter and Lassche (2007) were followed. The first step is *preparing the project*. In 2004, NEVAT wanted to celebrate its 25th anniversary by looking forward ten years. Important questions for NEVAT in 2004 were: what are the main themes for the Dutch subcontracting industry for the coming ten years? And: What will be the position of the industry in 2014? The Dutch subcontracting industry was flourishing. Does that mean that a branch organization might become superfluous? Are branch organizations only useful in bad weather? What is the role of a branch organization in more prosperous times?

The market in which member companies of NEVAT operate is complicated, because these companies are subcontractors. This means that they do not deliver end-products, but they supply to so-called OEMs (Original Equipment Manufacturers). Technology becomes increasingly important for these companies. Therefore, outsourcing technology to subcontractors becomes increasingly popular to keep up with competition. Consequently, technological innovation becomes increasingly important for member companies of NEVAT. NEVAT wants to help member companies with this upcoming importance of technological innovation and stimulate cooperation among member companies by encouraging them to share knowledge to bring technological developments at a higher level.

The initial goal was to help its members prepare themselves for future (technological) changes in the industry. Besides, the project was initiated to encourage entrepreneurs to think proactively about future challenges instead of focusing entirely on everyday business. NEVAT thinks that entrepreneurs should try to avoid being surprised by external developments, and suddenly become follower instead of leader in the branch. For SMEs it is difficult to extensively explore their futures, because they are lacking in resources, knowledge and time. Therefore, NEVAT wanted to offer its members a chance to escape from daily business and explore future developments to prepare themselves for the following ten years. They chose scenario thinking to do this with. The scenarios would not concern the environment of NEVAT, but that of their member companies, which is in line with their mission statement.

This project was initiated by Hans van der Spek (then CEO of NEVAT) and was facilitated by Paul de Ruijter (De Ruijter Strategy). The second step, *exploring the environment* started off slightly different than usual. In most scenario projects the subjects are generated by participants of a workshop, but NEVAT chose for another method. Van der Spek draw from his personal experience in the industry and performed additional desk research. This desk research involved thoroughly studying existing explorations of the future environment and relevant trend studies. He personally selected seven topics which he deemed important for the future of the Dutch subcontracting industry. These seven topics were translated into seven crucial questions concerning the Dutch subcontracting industry which

needed to be explored and worked out in seven scenarios for the future until 2014. The seven questions were the following.

What will be the consequences for the Dutch subcontracting industry if in 2014...

- *...freedom of trade between economic superpowers becomes impossible?*
- *...raw materials become scarce and recycling becomes increasingly attractive?*
- *...there will be fights over intellectual property rights (IPR)?*
- *...entrepreneurship in The Netherlands will be reassessed and the subcontracting industry becomes 'sexy' again?*
- *...the consumer plays a dominant role in the subcontracting industry?*
- *...the price of oil will increase tenfold?*
- *...technological innovations will catch up with human ability to cope with these developments?*

By defining these questions NEVAT could invite stakeholders and draw their attention with the content of these questions.

To get going with these questions, NEVAT invited 'remarkable people' from the industry, science, politics and journalism to create scenarios for the future. By 'mobilizing' the collective intelligence of the experts from the industry aimed at creating well-substantiated stories. In a workshop on the 17th of June 2004 the group (about 60 people) was divided over seven tables. Together they defined trends, developments and uncertainties that would lead to one of the situations sketched beforehand. The groups were accompanied by employees of Rabobank as facilitators. Journalists were invited for the workshop to write down the stories that resulted from the separate tables. Next to writing down the stories nicely, this yielded additional media-attention for the future of the Dutch subcontracting industry. Using this particular working method, the third step – *writing the scenarios* – differs from the way it is defined by De Ruijter and Lassche (2007).

The workshop resulted in seven scenarios with each a main subject¹³:

- ❖ **Fort Europe** – Close
- ❖ **Re-manufacture** – Recycling
- ❖ **Patent Power** – Smart
- ❖ **NIC-Nederland** – Ambition
- ❖ **McProduct** – Fast
- ❖ **Lean Mobility** – Durability
- ❖ **Concorde** – Supply driven

¹³ The full versions of the scenarios are enclosed in appendix 2

The seven scenarios are based on proven trends, but also on breaks in trends, unexpected turns and fiction. NEVAT created a clear view of possible future developments. The next hurdle was to deliver this message to the member-companies. Van der Spek realized that an extensive report was not something busy entrepreneurs are waiting for. Therefore, he decided to make short movies of the scenarios and sent a DVD with these movies to the member companies (see appendix 3). The movies were presented on the annual meeting of NEVAT (2004)¹⁴. The DVD was a great success, not only among external participants and members of NEVAT. Educational institutions, the Ministry of Economic Affairs and other trade organizations were also very interested in the DVD, because it concerned their field of work as well. According to NEVAT, the seven future scenarios are a must for everybody who wants to know everything about opportunities and threats for the Dutch subcontracting industry.

Industrial companies could start working on their strategic plan themselves, using the scenarios with the help of a book which was provided with the DVD. This book gives instructions for working with scenarios in three steps: 1) prioritize the future, 2) explore threats and opportunities, and 3) prepare to avoid threats and seize opportunities. An important condition for these steps is that they are being used in a workshop with colleagues to create significance. Ultimately, Van der Spek found that just scenarios would be a bit general and that entrepreneurs needed more concrete handholds. He felt that the scenarios contained so many interesting ideas that it would be a waste to leave it at this. Therefore, a year after writing the scenarios (2005), they were used in Future Factory to extract concrete ideas from the scenarios for business.

4.2.2 Future Factory

After writing the scenarios and making the DVD, NEVAT decided the scenarios had to be used in order to reach all members of NEVAT. Step 4 of the scenario process had to be taken: *generating new business options*. NEVAT chose to generate these options with member companies and some guests from the industry. They wanted to encourage innovative ideas and collaborative innovation by bringing these entrepreneurs together. All their member organizations and some guests were invited to participate in Future Factory¹⁵. Future Factory was initially five sessions with varying subjects (scarcity, consumer power, technology & IPR, Image Industry and globalisation). Members of NEVAT could sign up for one or more of these sessions to participate in. Entrepreneurs were offered the opportunity to develop - under guidance of an expert - concrete ideas for optional business from one or two of the seven scenarios. This would offer them a chance to anticipate on opportunities and threats of each scenario to take the lead in the market. Together with other members they would

¹⁴ Algemene Ledenvergadering (Dutch)

¹⁵ The invitation for Future Factory is enclosed in appendix 4

generate options for the different scenarios. After generating options in groups, the ideas would be presented to share with each other.

In the end, four of the sessions actually took place and a total of about thirty people came to Future Factory and were interested to elaborate on the scenarios. On the day of the session, the goal and working method were being explained by Van der Spek and De Ruijter. One or two scenario-movies were shown and societal needs were derived from the scenarios. An anonymous computer-supported brainstorm was organized to generate as many options as possible for the Dutch subcontracting industry. Here, Rabobank had a task by facilitating a Group Decision Room (GDR). Syntens, as innovation network for entrepreneurs, was invited to act as owner of the generated ideas. This ownership originated to point out an idea-owner who would make the ideas work afterwards. After the brainstorm, there was a discussion and similar ideas were clustered and ranged. The feasibility of the most promising opportunities were analyzed and translated into a business proposition. Every session was attended by a different group of entrepreneurs, but they were all facilitated by the same people.

Step 5 of the process, *making an action plan* resulted in hundreds of ideas generated through GDR of Rabobank and a book with 52 worked out business-options (Future Factory Idea book). In this book (see appendix 5), the scenarios are divided in four chapters. Each chapter starts off with one or two scenarios and after that, the most promising opportunities are shown in three ways: business cases with a future, golden opportunities for tomorrow and flashes of the future. Next to these business opportunities, entrepreneurs tell about their innovative ideas to inspire other entrepreneurs to think about the future of their own company. Well over 5500 copies of the Idea Book were spread. Another tangible result are three animations that were made from the three best ideas of Future Factory. These animations were presented to member companies on the next annual meeting of NEVAT (2005). One of these is enclosed in appendix 6.

4.3 RESULTS OF THE PROJECT

For this study, I am exploring long-term results of this process. Therefore, I interviewed the CEO of NEVAT (Theo Koster). After that, a questionnaire was sent to member companies of NEVAT who participated in writing the scenarios and/or in Future Factory. Because of the passage of time, participating companies and especially representatives of the companies are hard to trace. NEVAT sent me a list with thirteen member companies that participated and were suited for questioning. Questionnaires were sent by e-mail¹⁶ to these 13 companies. 8 of them completed the questionnaire. In appendix 9, a list of interviewees is enclosed. To find out more about underlying opinions of the respondents, I decided to address four of them for an open-ended interview. In the questionnaire the

¹⁶ The email and questionnaire sent are enclosed in appendix 7

respondents were asked if they would be willing to contribute to this research by means of an in-depth interview. Five of the eight were willing to participate and I interviewed four of them in-depth. Two respondents are randomly selected out of the group of companies that answered at least one of the questions 3, 4, 5 with 'yes' or 'to some extent'¹⁷. The other two responding companies are randomly selected out of the group that answered the questions 3, 4, 5 with 'no' or 'nearly not'. In the following sections, answers to the sub questions are found by means of presenting data resulting from the questionnaires and the open-ended interviews.

In this section results of the open-ended interviews and questionnaires are being drawn up. All interviews were held in Dutch and translated into English. The Dutch interview results are available with the author. Quantitative data from the questionnaires are completed with qualitative data from the open-ended interviews with participants and initiator. But first, I will summarize the results of previous research on this case.

4.3.1 Results of previous research

The research of Mr. Van Assen and Mr. Van Hezewijk focused on the differences in innovativeness between participating and not-participating members of NEVAT. This study was mainly focused on the results of Future Factory. Their research question was answered using various research methods such as observations during the brainstorm sessions, a survey among participating NEVAT-members versus non-participating NEVAT-members and structured interviews after the closing of the strategic conversation. In this study, 68 member companies of NEVAT were questioned by means of a survey; 43 of those did not participate in Future Factory, 25 did participate in Future Factory. The survey was based on an Innovation Quick Scan (IQS). This is a tool to explore the innovative functions of a company.

One of their conclusions was that although Future Factory initially did not attract more innovative companies, participating companies did appear to make more extensive use of external sources for generating knowledge and ideas than companies that did not participate. The initial external orientation of the participants might have been an explanation for those companies participating in Future Factory. Another conclusion of that study is that the composition of the groups present in the sessions of Future Factory was not always as expected. For some participants, the number of entrepreneurs present was disappointing and fewer intermediaries should have been present (Van Assen, 2006).

¹⁷ The questions of the questionnaire are enclosed in appendix 7

Next to the questionnaires, Van Assen and Van Hezewijk interviewed some (exact number unknown) participants of Future Factory about the process by means of structured interviews. Some of their findings are also relevant for this study. In the following I will give an overview of the most relevant results of these interviews.

- According to participants of Future Factory, the sessions caused a certain consciousness about developing new business plans
- Respondents found the generated options not that innovative, although the sessions did contribute to stretching their mental models. Most participants left with some new ideas that resulted from the playful way of extracting options from possible reflections of the future environment. These ideas were individually as well as collectively.
- The scenarios stimulated out-of-the-box thinking.
- The sessions of Future Factory were found stimulating, challenging and beneficial for thinking out-of-the-box.
- The process would have been clearer when participants would have gone through all the seven scenarios instead of one or two.

One of the main conclusions of their research is that a strategic conversation is an effective tool to reduce uncertainty and creates trust among the participants of the strategic conversation.

4.3.2 What are the perceived long-term results of the participants?

Sub question B2 will be answered by extracting information from different sources. The interview with Theo Koster (CEO of NEVAT), the results of the questionnaire and interviews with the participants will be used.

Interview CEO of NEVAT

To find out more about the perception of NEVAT, I interviewed Theo Koster, current CEO of NEVAT. There are no certainties known about the results of the process, but Koster suspects that the scenarios resulted in:

- A shared perception of the future between the participants/member companies
- Insights in the value of the industry for Dutch society
- Attention for sustainability
- Attention for flexibility
- Attention for regionalization
- Attention for safety

These assumptions are derived from feedback of participating companies and his own experience.

Future Factory resulted in many good innovative ideas that were written down in the Idea Book, but Theo Koster (NEVAT) expects that not many of the ideas were actually executed. He expects that

collaborations between member companies did originate during the collaborative innovation sessions, because the bottleneck for these small and medium sized enterprises is money. Subcontractors do not have the budget to develop new products and put them on the market on their own. Besides, investment in innovations pays back after years, which makes it risky and therefore attractive to collaborate with other member companies.

This large-scale project went very far in offering member companies the occasion to collaboratively think of ideas and present them these ideas. Koster questioned to what extent NEVAT is responsible for stimulating member companies to actually execute innovations made up during Future Factory. When is it the responsibility of the entrepreneur to actually take the lead and the risk? Koster expects that companies are waiting for investors to actually be able to execute ideas that are obviously ready to be performed. The project did result in consciousness about the importance to think about future developments in the environments and the influence these developments have on the organization.

Questionnaires

Eight of the thirteen companies completed the questionnaire that was sent to them by e-mail. In table 4.2, answers to the questions of the questionnaire are drawn up¹⁸.

TABLE 4.2 – Results of the questionnaire

Respondent	Scenario (1)	FF (2)	Innovation? (3)	Inspired by other members? (4)	Collaboration? (5)
G.W. (Geert) Reitsma	Yes	No	No	No	No
Anonymous	No	Yes	Yes	No	No
L.A. (Lucas) Wintjes	Yes	Yes	Yes	Yes	Yes
Ton de Bruine	Yes	Yes	To some extent	No	No
J.H.F. (Johan) Hundscheid	Yes	No	Yes	No	To some extent
Dr. Ir. E.J. Sol	Yes	No	Yes	No	No
Geert van de Kerkhof	Yes	No	No	No	No
I. J.C.J. Schlösser	Yes	No	No	Nearly not	Nearly not
Result	7	3	5	2	3

¹⁸ The questions of the questionnaire are enclosed in appendix 7

Five of the respondents were merely involved in making the scenario, one of them was merely involved in Future Factory and two of the respondents were involved in both making the scenarios and Future Factory. Five of the eight companies confirmed that innovation resulted from the scenarios and/or Future Factory. However, only two of them were to some extent inspired by meeting with other member companies. Three of the eight companies that completed the questionnaire indicated that collaboration originated from the project.

A question in the questionnaire was if the scenarios and/or Future Factory stimulated the respondent to innovate. The greater part (5) confirmed that some kind of innovation did result from the scenarios or Future Factory. In the following table (4.3) these results are being drawn up.

TABLE 4.3 – Innovations among the respondents

Respondent¹⁹	New product/ service	New production method	New materials	New markets	Changes in business model	Different, that is...
Anonymous	Yes	Yes	Yes	No	No	n/a
L.A. (Lucas) Wintjes	No	No	No	No	No	Enforcement of existing ideas
Ton de Bruine	No	No	No	No	No	Defining the market
J.H.F. (Johan) Hundscheid	Yes	Yes	Yes	Yes	Yes	n/a
Dr. Ir. E.J. Sol	No	No	No	No	No	Publicity about the importance of industry for The Netherlands

Table 4.3 shows that the five respondents who indicated that the scenarios and/or Future Factory stimulated them to innovate cannot precisely point out the result. During the interviews, more data was being collected about the actual innovative results.

Two of the eight respondents confirmed that meeting other members of NEVAT inspired them to innovate. The scenarios and Future Factory inspired two of the respondents to see the advantages of cooperate with entrepreneurs from the industry. One of them did indicate that other NEVAT companies could be optional clients. Another respondent mentioned that becoming aware of possible future changes encouraged him to search for possible partners to spread the risk of innovation and meet the demand of consumers.

¹⁹ These respondents answered the question “*Did the scenarios and/or Future Factory inspire you to innovate?*” with ‘yes’ or ‘to some extent’.

Interviews

All of the four respondents of the interviews had very positive memories about the project, because they had a fun day, met new people, got the opportunity to think out-of-the-box, and got acquainted with the scenario method. Three of them were not familiar with ‘writing scenarios’ as a strategic tool before, and one had actually developed scenarios within his own company as well. Expectations of the participants were initially not great, because they did not know what to expect. Participants’ motives to participate were curiosity, willingness to contribute to thinking about the future of the industry, and interest in meeting people from the industry to think about the future with. Respondents had a fun day, found it interesting, useful and they met new people from the industry. Two respondents emphasized how exceptional it is how well a bunch of people from the industry can predict the future.

“.. Many of the scenarios are becoming reality; they appeared very relevant and the consequences are obvious..” (Lucas Wintjes, Bosch Rexroth)

All four respondents found both writing scenarios and Future Factory positive experiences. Respondents were enthusiastic about the fact that NEVAT organizes these kinds of events.

“..Conferences, seminars and meetings within the industry are usually very passive and therefore it is challenging to be invited to actually participate and not just listen to other people’s perceptions..” (anonymous).

One of the respondents of the interviews (Geert Reitsma, Sergem Engineering BV) mentioned that the regularly explored time horizon for SMEs is a year. Looking beyond that year and anticipate on future developments was hard for him. Therefore it was difficult to start working with the scenarios. The fact that NEVAT invited many different people from the industry was perceived positively because:

“..The additional value of discussing the future with other companies is that issues are being clarified from different points of view. Because of that, a realistic reflection of the future emerges..”(Lucas Wintjes, Bosch Rexroth)

In the in-depth interviews, two respondents confirmed that the project did stimulate innovation.

“.. These kind of projects do stimulate innovation..” (Lucas Wintjes, Bosch Rexroth)

However, the two respondents of the interviews that confirmed innovation had occurred from this project could not really indicate one specific innovation. Some did mention increased awareness of very specific future trends on which they anticipated.

“.. Flexibility becomes increasingly important, time 2 market changes: customers want their products faster and companies have to be able to respond to this need. Recycling and shortage of natural resources is another trend that appeared from the scenarios and is coming true. Especially the realization of scenarios coming true is worth considering..” (Ton de Bruine, Brinks Metaalbewerking)

Three of the interviewees mentioned that the project contributed to a certain awareness of future trends which encourages entrepreneurs towards innovation. Anticipating on these trends is important to keep up with the competition.

“.. There are not specific ideas that came up that day, but it certainly stimulated a certain reasoning concerning future developments. That reasoning enforced existing ideas about future products..”
(anonymous)

“.. I cannot indicate one specific innovation that resulted from this project, but I am convinced that it is crucial to explore the future. This way, entrepreneurs can take into account certain developments and anticipate on these future developments..” (Lucas Wintjes, Bosch Rexroth)

“.. The scenarios lead to awareness of certain trends. We have started to work in a clear direction based on this awareness. We took this into account in formulating a strategy for the company...” (Ton de Bruine, Brinks Metaalbewerking BV)

After questioning the two companies that confirmed the process had resulted in collaboration in an open-ended interview, it appeared that not actual collaborative innovation occurred. The collaborations that these two meant were 1) “..I found possible new client companies..” (Lucas Wintjes, Bosch Rexroth), and 2) “.. I realized that working with other companies can be very beneficial for spreading the risk of innovation..”(Johan Hundscheid, Reef Precisie BV).

Two of the interviewees denied any kind of innovation occurred from the project.

“.. We did not do anything with the scenarios, but we have ourselves to blame. I have seen possibilities for the future, but at that time they seemed too far-away for our company..” (Geert Reitsma, Sergem Engineering BV)

The following explores why the overall perception of the participants is very positive and at the same time, concrete results seem disappointing. According to one of the four respondents it has to do with entrepreneurial skills of the companies present.

“..It is important to be able to make changes in your business model to keep up with developing markets. Many companies make the mistake of being stuck in their business model for too long. (..) An important condition for the success of these kinds of projects is the effort and faith in the project of the participants..” (Lucas Wintjes, Bosch Rexroth)

A notable remark of one of the companies was that it was not invited to participate in Future Factory after cooperating in writing the scenarios. He was curious what the implications of the scenarios might have been. Generating options from the scenarios might have encouraged him to start working with them. Another result from the interviews was that none of the respondents watched the DVD again after the project.

Conclusion

The answer to this sub question is that the long term result (after four years) perceived by participants is that they have found it useful to look beyond the usual one year time horizon. Some respondents have anticipated on trends from the scenarios that led to innovative ideas. Some respondents met interesting people with whom new relationships came about. But actual concrete (collaborative) innovations did not occur from this project within this group of respondents.

4.3.3 Do the results of the project align with the initial goal?

Sub question B3 will be answered by extracting data from the information obtained from the archives of De Ruijter Strategy and NEVAT. However, the interviews with participants are the main source of information for this sub question.

Desk research

As described, the project consisted of two phases: making scenarios and Future Factory. The goal of the making of the scenarios differs from the goal of Future Factory. The initial goal of NEVAT of making the scenarios was to encourage entrepreneurs to think out of the box and explore possible future developments. The initial goal of Future Factory was to use these scenarios to explore (innovative) possibilities for entrepreneurs to start working with these scenarios. Especially letting member companies explore the opportunities for innovating collaboratively.

Interviews

During the interviews, respondents had the opportunity to explain what reasons there might have been for the disappointing results.

“.. The period of time we usually look ahead is a year. Therefore it was not possible for my company to do something with the scenarios. (..) The industry is very specialized, which makes it difficult to extract very specific ideas from generic scenarios..” (Geert Reitsma, Sergem Engineering BV)

One of the participants emphasized that it would have been useful to invite NEVAT members again for a meeting to discuss the topics from the scenarios again.

“.. The topics from the scenarios are still very relevant and it would be good to revert to those...”
(anonymous)

Conclusion

The initial goal of writing the scenarios aligns with the results, because all interviewees confirmed out-of-the-box thinking resulted from the process. Entrepreneurs, also the ones that denied innovation had resulted from the project, were encouraged to think out-of-the-box. Possible future developments were also successfully explored. Besides, the scenarios stretched all their mental models and stimulated to think different from their usual perceptions. Moreover, all respondents have seen business opportunities for the future.

The initial goal of Future Factory was 1) to explore (innovative) business opportunities for companies and 2) to encourage collaborations between the entrepreneurs. The first goal has been attained to some extent; according to the results of the research of Van Assen and Van Hezewijk. It appeared from that research that most of the participants left with very good ideas. The latter does not appear to be attained based on the results of this study. In the following I will explore these results in-depth.

4.3.4 In what way did the collaborative innovation session stimulate innovation of the companies of interest?

Sub question C1 will be answered by extracting data from the interviews with participating companies.

Interviews

All four respondents indicated that the presence of both new and existing relationships is important for the dynamics of collaborative innovation sessions. The organization of the sessions was indicated crucial, because that determines the entire atmosphere and content. The presence of an inspiring facilitator was considered sometimes crucial, sometimes irrelevant.

Bringing together entrepreneurs to think about innovation is perceived as useful by all four respondents. Especially with faster developing markets and technological changes, meeting possible partners is crucial:

“..Necessary competences are not always present within any organization. Changing markets demand flexible organizations, but not every organization has all necessary competences. Therefore, organizations need to cooperate and join forces..

..With new developments, faster moving markets and more demanding customers it becomes increasingly important to be able to switch. That is, being flexible. Making sure your organization is flexible means making optimal use of outsourcing business units and purchasing business units. Individual organizations can not do that alone and therefore it is very useful to participate in these kinds of projects..” (Lucas Wintjes, Bosch Rexroth)

Another respondent emphasized that for entrepreneurs it is important to gain profit from collaboration, otherwise they do not see the advantages.

“..When companies want to collaborate, they both need to gain equally from the collaboration. As soon as one of the parties gains more from the agreement, conflicts will arise because both parties want to maximize their profits..

..The readiness of entrepreneurs to innovate collaboratively is very dependent on the prosperity of the market. In successful periods companies are less willing than in less successful periods..” (Ton de Bruine, Brinks Metaalbewerking)

In three of the four cases, the collaborative innovation session did not result in new relationships or in the intensification of the existing network. Apparently, the circumstances in this collaborative innovation session were not optimal enough to actually encourage collaboration with this group of respondents. The respondents have their explanations for this. One of them just did not feel the urge to start collaborating with another company.

“..Bringing together entrepreneurs from the industry to think collaboratively about innovation is very useful. However, it stimulates innovation with individual companies more than it stimulates collaboration between those companies..

..Being an entrepreneur is inherent to being stubborn and obstinate. (..) All the people in that room are very convinced of their own philosophy, and therefore reality is tougher than theory..” (Ton de Bruine, Brinks Metaalbewerking)

One of the requirements for successful collaborations is being able and willing to share knowledge, assets and possibilities. This ability and willingness is usually driven by trust between parties. In this research, all four respondents found trust the most important prerequisite in collaborations with other member companies.

“..Trust is an important issue in these kinds of projects, because people have to be open for input from other participants and have to be able to open up and share knowledge. That is the only way to lift knowledge to another level..” (Lucas Wintjes, Bosch Rexroth)

Although three of the four respondents of the interviews indicated that trust was created during the collaborative innovation session and/or writing the scenarios, obviously it was not enough to start collaborating. One of the respondents, Geert Reitsma (Sergem Engineering BV) indicated that trust was a barrier during the session, because of the presence of competing firms within the same room. Another respondent mentioned that being in the same room with competing firms should not be an issue, because:

“.. The additional value of collaboration is much greater than the loss it causes by sharing knowledge with competitors..” (Lucas Wintjes, Bosch Rexroth)

However, the answers to the question about increased willingness to share knowledge, resources and possibilities were disputable. Only one of the four respondents agreed that this willingness had increased by means of participating in writing the scenarios and/or Future Factory. One of the respondents explained that risk and uncertainty are great issues in innovation and especially collaboration.

“..The risk of both innovation and collaboration is significant. Together with the expenses and insecurity about the outcomes entrepreneurs are not very fond of these processes. Risk and uncertainty are difficult barriers to overcome..” (Ton de Bruine, Brinks Metaalbewerking BV)

Conclusion

Summarizing all these comments and results I conclude that the collaborative innovation session did stimulate awareness concerning innovation, but did not stimulate collaborations and collaborative innovation as such. Collaboration is perceived important, but apparently there are some issues that are hard to overcome. The first issue is trust. Most respondents indicated that trust in other participants increased by means of the session. The second issue is the presence of competing firms. Some respondents found that aspect hard to overcome because of exposing competitive advantage. The third issue is the great risk of innovation and collaboration. Fourth issue is that expenses are high for innovation, especially for smaller companies with small budgets. The fifth issue is uncertainty. There is always uncertainty in business and especially in innovating, and some participants find this risk hard to deal with. Final inhibitor is entrepreneurial stubbornness towards changing usual business. Entrepreneurs are people who are very convinced of their own business and major persuasiveness is needed to change their minds.

4.3.5 In what way did scenario thinking stimulate innovation of the companies of interest?

Sub question C2 will be answered by extracting data from the interviews with participating companies.

Interviews

Most of the respondents were involved in making the scenarios in 2004. Most of them were not familiar with this approach, but were curious and therefore willing to participate. In the previous I have clarified that the scenarios did not lead to identifiable innovations, but to a certain awareness that stimulated innovation. In the interviews underlying reasons were being explained.

All the four respondents agreed that the scenarios encouraged them to think out-of-the-box. They all found it useful to talk with other entrepreneurs about the future of the industry and to look beyond their usual time horizon. It encouraged them to innovate because they realize that some trends will become reality and are therefore worth considering. One of the respondents found it a useful process, but did not use the results to innovate.

“.. I have not started to work with the scenarios, because I realized my vision conformed to the vision of the rest of the group. Because of that, I knew changes were not crucial for my company to survive. Maybe if my vision of the industry would have been extremely different from the other people in the branch I would have made some changes..”(Geert Reitsma, Sergem Engineering BV)

Another respondent indicated that he found making the scenarios very surprising, because:

“.. It made me realize that what we come up with today might not be relevant tomorrow..” (Johan Hundscheid, Reef Precisie BV)

The scenarios themselves did not really create trust between the participants, but the process did. Getting together with existing relationships and meeting new people is inspiring for entrepreneurs, although not enough to start collaborating.

“.. You meet new people on a day like that, and that creates a certain trust. And trust is important for collaborations to originate..

..The scenarios brought about insights in the future and insights in ideas from other people in the industry..” (Geert Reitsma, Sergem Engineering BV)

Another important goal of using scenarios as a strategic tool is stretching and aligning mental models. In this project, stretching might have been more successful than aligning. This is because of the stubbornness of entrepreneurs and a certain resistance towards sharing knowledge and resources with

competing firms. Stretching however was really successful. All the respondents agreed that working with the scenarios changed their perception of the environment in a positive way. Some respondents had some remarks on the content of the scenarios. One of them argued that a crucial recent development had been overlooked. Another respondent found the situations sketched in some of the scenarios a bit too extreme. He argued that it is almost impossible to anticipate on these situations, and he is convinced that none of the participants were able to.

Two of the respondents of the interviews argued that action from entrepreneurs will only derive from a crisis situation. They meant both anticipating on (extreme) situations sketched in the scenarios and collaborating with other entrepreneurs.

“.. It is hard to align mental models of entrepreneurs when it comes to collaboration. I think that this will only originate from a crisis situation, catastrophe or economic necessity..”(Ton de Bruine, Brinks Metaalbewerking BV)

He argued that collaboration might turn out to be the only way to continue to exist as a company in bad economic times. Another result of unprofitable periods might be that companies are bought up and joined in a new holding. In this new holding they are forced to think about collaborative innovation.

Geert Reitsma (Sergem Engineering BV) found discussing future environmental trends with people from the industry valuable in relationships with clients, because you can anticipate possible future needs. He emphasized that just discussing does not bring about innovation: entrepreneurial skills are another crucial element. He was not the only one who mentioned entrepreneurship as important element in successful innovations. In the previous section, quotes of other respondents also made clear that the people in the room must be willing to innovate and must have some courage to make a change in their business model.

“..Entrepreneurs will realize that what has been predicted in the scenarios is not nonsense. Many of them find changing scary and difficult. People like to plan for the future, but as an entrepreneur you have to have the courage to let go of the plan..” (Lucas Wintjes, Bosch Rexroth)

Conclusion

Looking back after some years made all four respondents realize that many of the elements made up in the scenarios are becoming reality. Summarizing these comments concludes that the scenarios stimulated the awareness of entrepreneurs regarding innovation. Collaborations did not originate from the scenarios, and neither did concrete innovations. However, it resulted in awareness of developments in the external environment by which participants were encouraged to think about possible business

opportunities. This awareness resulted from encouragement towards out-of-the-box thinking and stretching mental models. Making the scenarios with other participants increased trust to the extent that the willingness to share resources, knowledge and possibilities increased with three of the four respondents. The process resulted in new and reinforced relationships, a collective mental model about the future of the Dutch subcontracting industry. It also encouraged companies to think about innovation, but not collaboratively.

5 CONCLUSION AND DISCUSSION

The objective of this master thesis was to explore the effectiveness of collaborative innovation sessions and scenario thinking on innovation of small and medium enterprises. Therefore, I have tried to answer the following research question:

Do collaborative innovation sessions stimulate innovation of small and medium enterprises and how effective is scenario thinking as a tool to support this process?

In this chapter, the most important findings of this study will be summarized. Conclusions will be drawn based on these results by answering the sub questions stated in this research. After that, theoretical and managerial implications and recommendations for further research are being discussed. Furthermore, limitations of this research will be discussed in the final section.

5.1 CONCLUSIONS SUB QUESTIONS

The goal of the project (sub question **A1**) studied for this research was twofold, because it comprises two phases. In the first instance NEVAT wanted to do something special for the 25th anniversary of the branch organization in 2004. Therefore, instead of looking back they decided to offer their members an opportunity to look forward ten years and explore possible futures of the subcontracting industry of 2014. NEVAT wanted to help her member companies with the upcoming importance of technological innovation and stimulate cooperation among member companies by encouraging them to share knowledge and bring technological developments to a higher level. Therefore, they chose to make scenarios for the Dutch subcontracting industry. The initial goal of NEVAT by making scenarios was to encourage entrepreneurs to think out-of-the-box and explore possible future developments. Seven relevant topics were chosen by NEVAT and ‘remarkable people’ from the industry, science, politics and journalism were invited to create scenarios (sub question **A2**). In June 2004, about 60 people came together to define trends, developments and uncertainties to create seven relevant, surprising and plausible scenarios. NEVAT wanted to present the results - seven scenarios - to her member companies. An extensive report was perceived not that attractive, so it was determined to make short movies of the scenarios and put them on DVD. This DVD was distributed among member companies and other related people and companies of the industry.

To offer participating entrepreneurs handholds to link action to possible future developments sketched in the scenarios (sub question **A2**), it was decided to add a second phase to the project. In 2005, the scenarios were used in Future Factory to extract concrete ideas from the scenarios for business. The initial goal of Future Factory was to use these scenarios to explore (innovative) possibilities for entrepreneurs to start working with these scenarios. Especially letting member companies explore the

opportunities for innovating collaboratively. NEVAT brought together member companies and some guests from the industry to explore innovative ideas and encourage collaborative innovation (sub question **A1**). This would offer these companies a chance to anticipate on opportunities and threats of each scenario to take the lead in the future market. Four collaborative innovation sessions on various subjects took place and a total of about thirty member companies came to Future Factory and were interested to elaborate on the scenarios (sub question **A2**). These meetings resulted in hundreds of ideas generated through GDR of Rabobank and a book with 52 worked out business-options (Future Factory Idea book). Well over 5500 copies of the Idea Book were spread among member companies, people and companies from the industry and other people interested. Another tangible result is three animations that were made from the three best ideas of Future Factory that were presented on the annual meeting of NEVAT in 2005.

In previous research, short-term results of this project were explored. This study concluded that both phases of the project stimulated out-of-the-box thinking. Generated options were not found that innovative, although the sessions did contribute to stretching their mental models. Another conclusion of this previous research is that a strategic conversation is an effective tool to reduce uncertainty and creates trust among the participants of the strategic conversation. This implies that some of the initial goals seem to be attained on the short term, namely stretching mental models and stimulating out-of-the-box thinking. Other goals like actually stimulating innovation and collaborations among participants are not being studied. Therefore, long-term results of this project were being studied to explore the effectiveness of making scenarios and having a collaborative innovation session on stimulating innovation among small and medium sized enterprises (sub question **B1**).

The long term result (after four years) perceived by participants is that they have found it useful to look beyond their usual one year time horizon. Some respondents have anticipated on trends from the scenarios that led to innovative ideas. Some respondents met interesting people with whom new relationships came about. But actual concrete (collaborative) innovations did not occur from this project within this group of respondents.

The long-term results of writing the scenarios appear to align with the initial goal (sub question **B2**). All interviewees confirmed out-of-the-box thinking resulted from the process. Also participants that denied any actual innovation resulted from the scenarios confirmed that they were encouraged to think out-of-the-box. Possible future developments in the environment of the Dutch subcontracting industry were successfully explored, which stimulated participants to think past their usual one year time horizon. Opportunities for future actions were seized by stretching the mental models of the participants.

The long-term result of the collaborative innovations sessions appear to align to some extent with the initial goal (sub question **B2**). Innovative business opportunities have been explored and Future Factory resulted in an abundance of ideas. However, among this group of participants, none of them actually executed one of the ideas. The other goal, encouraging collaborations between the entrepreneurs, was not attained at all among these participants.

The collaborative innovation sessions did not lead directly to collaborations and / or collaborative innovation (sub question **C1**). Although the sessions did not lead directly to (collaborative) innovation, the session did contribute to an increased awareness towards the importance of innovation. This awareness came to existence through conversations with other people from the industry. There are a few hurdles that seem hard, in this case impossible, to overcome. One of the main issues that blocked these SME's to innovate collaboratively is trust. Respondents indicated that during the sessions, trust increased among them, but apparently not enough to start collaborating. After all, you will not share the greatest innovative ideas with someone you do not trust. Another issue that is somewhat related to trust is the presence of competing firms. Exposing your competitive advantage to the competition appeared to be a problem for most of these participants. A third hurdle that was hard to overcome is the risk of collaboration. Companies indicated that they needed to be sure of the profit they would gain from sharing resources with other companies. Fourth are the expenses of innovation. The small to medium sized enterprises have small budgets, and the payback time of innovation is very uncertain. This is the fifth issue: uncertainty. Business is uncertain, and innovating collaboratively is something most small entrepreneurs usually do not do. Therefore, outcomes are very uncertain and some respondents indicated that they are satisfied with business as usual. A final issue is entrepreneurial stubbornness towards changing usual business. Small businessmen are people who are very convinced of their own business and major persuasiveness is needed to change their minds.

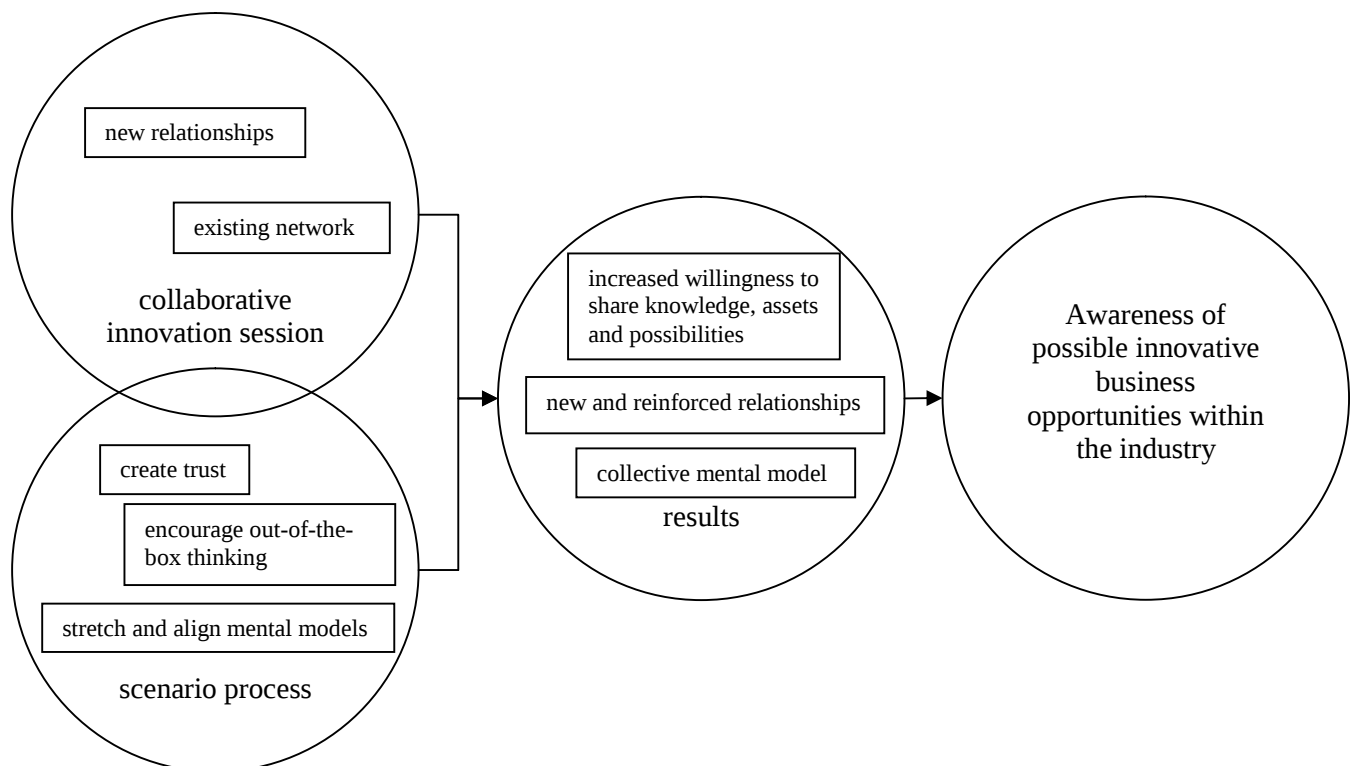
The participants interviewed for this thesis agreed that many of the elements from the scenarios came true. However, making and watching the scenarios did not directly stimulate innovation among these participants (sub question **C2**). The possible futures of the subcontracting industry did stimulate awareness of entrepreneurs towards the importance of innovation to the extent that they were encouraged to think about possible future business opportunities in each scenario. The awareness resulted from encouragement towards out-of-the-box thinking and stretching mental models. Some respondents indicated that the willingness to share resources, knowledge and possibilities did increase by making scenarios with other entrepreneurs, because it increased trust between them. Not enough however to start innovating collaboratively or to start other kinds of cooperation. The process resulted in new and reinforced relationships and a collective mental model about the future of the Dutch subcontracting industry.

5.2 THEORETICAL IMPLICATIONS AND FURTHER RESEARCH

In this study, an attempt has been made to explore the results of two very specific methods. The existing literature mainly focuses on the implied results of scenario thinking. Collaborative innovation session is a method that is hardly described in literature before. The approach studied in this research provides interesting results for theory. The results can be used for other branch organizations that are planning to use the combination of scenario thinking and collaborative innovation sessions as a method to stimulate innovation among their member companies.

The methods were used in this case study to stimulate innovation among small and medium sized enterprises. Looking at the conceptual model that was explored in this research I can conclude that some of the implied relationships have been confirmed by this research and some of them have been denied by the results of this research. In the following figure 5.1, the resulted relationships from the conceptual model are presented.

FIGURE 5.1 *Resulted relationships*



Bood and Postma (1997) already indicated that scenarios do stretch mental models and Van der Heijden (1996) mentioned out-of-the-box thinking as one of the results of scenario thinking. This study emphasizes these effects. However, this study did not underline that scenarios offer managers the realm in which strategic decision making can be made, as implicated by Van Assen and Van Hezewijk (2007). I do agree with Van Assen and Van Hezewijk (2007) that scenarios encourage

common trust among participants of a scenario process. It appeared that scenarios trigger innovative ideas (Verloop, 2007), but not that they actually result in innovation. In this realm, I can agree with Verloop (2007) that the essential role of scenarios is not to shape decisions, but to alert the manager and open his mind for possible changes in the business environment. To make this exploratory research more explicit, the following proposition could be tested in further research:

Proposition 1: Because of its ability to stretch and align mental models, to create trust between the participants and to encourage out-of-the-box thinking by jointly exploring the external environment, scenario thinking is a method for stimulating innovation in collaborative innovation sessions.

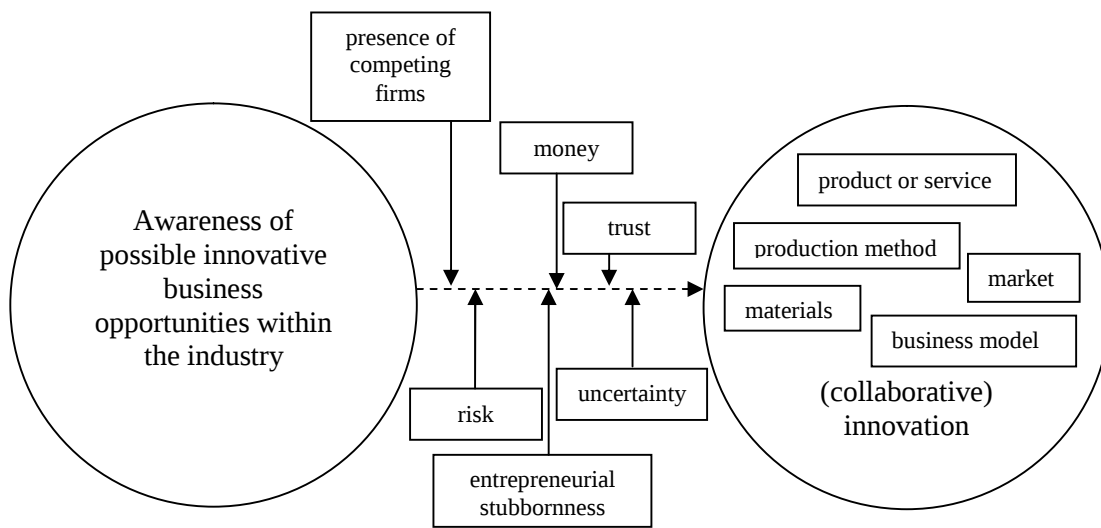
There was not much literature available on the method collaborative innovation session. From literature did appear that to encourage collaboration, people's thoughts within partnering firms need to be coordinated and common understanding needs to be created (Nooteboom, 2000). In this study, we have seen that although common understanding was created among entrepreneurs in the collaborative innovation session, it did not result in collaboration. Firms shared external future environments and discovered possible shared elements in these futures, but collaborative innovations were not derived from these results. To attain that firms collaboratively explore future developments it appeared to be important that both people from the existing network and new relationships are present. These explorations should be studied in further research by testing the following proposition in quantitative research:

Proposition 2: A collaborative innovation session in which companies from existing networks are brought together with new relationships and an inspiring facilitator is an effective way to encourage (collaborative) innovation, because it results in a trustworthy and accessible network.

Main result of this study is that the combination of these methods leads to increased awareness of possible innovative business opportunities within the industry. Question that remains: *How can the increased awareness of possible innovative business opportunities within the market be converted into actual (collaborative) innovation?*

A few answers have already emerged from this research, although their generalizability is questionable. These answers and additional inhibitors should be studied in further research. In the following figure, preliminary results are being showed.

FIGURE 5.2 – Inhibitors from awareness to action



A final field for further research could be to study the content of scenario stories. It appeared that some participants were interested in the outcomes of scenarios written a few years ago. By studying these contents, the sense of performing scenario projects can be proven.

5.3 MANAGERIAL IMPLICATIONS

This study was not just a mean to graduate, but also to evaluate the scenario method and to explore the implications of a large-scale project of NEVAT. Therefore, the main managerial implications of this research will be stated in the following.

It appeared from this study that scenarios are an appropriate method to stimulate entrepreneurs to think about future environmental uncertainties. This resulted in an increase of awareness among the participants towards possible future business opportunities within their industry. However, in spite of their increased awareness they did not put these results into the action ‘innovating collaboratively’. It appeared to be important that the existing network and new relationships are being invited to a collaborative innovation session. The role of an external facilitator seems sometimes irrelevant and sometimes crucial. So, for managers it is important to think about who to invite for a collaborative innovation session. Organizers should also consider the influence of the presence of competing firms; this could inhibit entrepreneurs to share good ideas or this increases group dynamics and therefore more innovative ideas could emerge. To actually encourage participants to start innovating collaboratively appears to be difficult because of a certain entrepreneurial stubbornness. Another inhibitor on the path towards successful innovation is money. Small and medium sized enterprises appear sometimes not wealthy enough to invest in product development. Therefore, it might be recommendable for other managers to think about possible investors beforehand. Other important points of attention are trust, risk and uncertainty.

5.4 LIMITATIONS

This study has been subject to some limitations that could have affected the results. First, the main quality limitation of this research is the validity of the results because of a limited reference material. An attempt was made to perform multiple case study research, but it appeared hard to compare projects like these. Both methods studied in this research are not used very much, let alone combined in one project. Besides, the findings result from research in one specific industry. Although some conclusions can be drawn, the generalizability of these conclusions is limited.

To increase the validity of the results propositions in the previous should be tested for a larger amount of cases. Another remark that should be taken into account is the amount of respondents. Because of an altered database with NEVAT, data about many participants was no longer accessible. Therefore, a limited number of participating companies could be approached for interviews. Among participants who were interviewed for this study (collaborative) innovations might have emerged.

Another limitation is that no prescribed method of evaluating projects has been used. The author developed her own evaluation methodology, which might have influenced the completeness of the evaluation of this case. Final limitation is that the project was performed four years ago. This might have affected the perception of the participants.

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APPENDIX 1 – STEPS OF THE SCENARIO PROCESS

According to Schwartz (1996), developing scenarios concerns the following eight steps:

- Step 1 Identify Focal Issue or Decision
- Step 2 Key Forces in the Local Environment
- Step 3 Driving Forces
- Step 4 Rank by Importance and Uncertainty
- Step 5 Selecting Scenario Logics
- Step 6 Fleshing Out the Scenarios
- Step 7 Implications
- Step 8 Selection of Leading Indicators and Signposts

Bood & Postma (1997) have also defined steps, they argue that developing scenarios happens in the following six phases:

- Phase 1 Problem Identification and Demarcation of its Context
- Phase 2 Description current situation and identification relevant factors
- Phase 3 Classification, valuation and selection of scenario-elements
- Phase 4 Construction of scenarios
- Phase 5 Analysis, interpretation and selection of scenarios
- Phase 6 Supporting strategic decision-making with scenarios

APPENDIX 2 – SUMMARY OF SCENARIOS (Dutch)

De noodzaak van duurzaamheid

Toekomstscenario Lean Mobility

Volgens sommige deskundigen is de olie eerder op – of niet meer beschikbaar – dan we denken. Industrieën die van olie afhankelijk zijn moeten daarom op zoek naar alternatieven. De met olie, gas of steenkool opgewekte elektriciteit wordt onbetaalbaar en transportkosten stijgen. Import wordt duurder en de export neemt fors af; zo ontstaat een cultuur van zelfvoorziening. Produceren voor de lokale markt wordt de nieuwe strategie.

Aangezien transport van grondstoffen en halffabrikaten goedkoper is dan van eindproducten, vindt assemblage – kleinschalig – dicht bij de gebruiker plaats. Energieverslindende productiemethoden en –technieken verdwijnen. Er komt meer onderzoek naar lichtgewicht materialen en constructies.

Gelukkig maakt de digitale snelweg veel fysiek transport overbodig.

De overheid heeft een belangrijke verantwoordelijkheid, voor het stimuleren van minder energieverbruik en het ontwikkelen van nieuwe brandstofbronnen. Zo wordt Europees landbouwbeleid omgebouwd tot energiebeleid. De industrie moet investeren in nieuwe technologieën voor duurzame energieproductie en in methoden voor zuiniger produceren. Uiteindelijk ligt er een gigantische markt te wachten voor de echte innovatieve industrieën. Voorwaarde is een omslag in het denken van overheid, bedrijfsleven én consument. Zijn wij immers niet jarenlang verwend met een lage olieprijs?

Toekomstscenario Re-manufacturing

Wat als over tien jaar blijkt dat onze primaire delfstoffen bijna zijn uitgeput? Na de schrik volgt nieuwe wetgeving, waardoor terugwinning en hergebruik gewoon moet. Daarna komt de marktwerking op gang: terugwinning van grondstoffen en meer aandacht voor onderhoud, renovatie en hergebruik worden economisch aantrekkelijk.

‘Lifecycle cost calculation’ wordt een hype. Vooral de grote multinationals richten hun R&D op regeneratie van afgedankte materialen en re-manufacturing. Er worden feilloze processen bedacht voor materiaalidentificatie en –scheiding. Toeleverketens schuiven in elkaar. Bedrijven die operationeel samenwerken, gaan fysiek dichtbij elkaar zitten. Dat scheelt transport, verpakking, tijd, energie en materiaal. Productseries worden kleiner en de informatisering door de keten heen wordt geoptimaliseerd. Zo treedt minimale materiaalverspilling op. Omdat de klant toch snel over zijn product wil beschikken, verschuift de assemblage naar locaties dicht bij de afzetmarkt. Tegelijk is er een boost voor de ontwikkeling van nieuwe materialen.

Bij de zogeheten ‘smart materials’, die in slimme toepassingen energie- en materiaalverbruik kunnen terugdringen, loopt Nederland voorop, door de combinatie van chemie, biotechnologie en nanotechnologie. Zo kan re-manufacturing tot een renaissance van onze nationale industrie leiden. Noem het een shocktherapie voor vernieuwing.

Het belang van Europa

Toekomstscenario Fort Europa

Isolationisme, economische protectie en xenofobie. Tien jaar geleden waren de contouren al zichtbaar: een voortdurend dreigende staaloorlog met de VS en importbeperkingen voor textiel uit China. Anno 2014 zijn de buitengrenzen van Europa steeds sterker geworden terwijl de binnengrenzen vervagen. In Fort Europa is de identiteit van de Europese gelukkig behouden gebleven en zijn ze niet verworden tot een eenheidsworst. Duidelijk is dat Nederlandse bedrijven voor zichzelf de lat hoog moeten leggen én samenwerking met anderen moeten zoeken. Zo niet, worden ze overvleugeld in de Europese markt. De export is inmiddels geminimaliseerd en importheffingen zijn extreem hoog. Er is een groot tekort aan energie en traditionele grondstoffen zoals staal. In antwoord hierop moet Europa op zoek gaan naar alternatieven en voorrang geven aan innovatie. Productie in Europa is nu een kwestie van kleine series. Bedrijven hebben hun processen daarop aangepast. Zelfs het machtige Philips heeft de bakens verzet. Vanwege de forse importheffingen is productie en assemblage weer in Europa ondergebracht. Ondertussen wordt duidelijk wat de gevolgen van Fort Europa zijn voor Nederland.

Vlak nadat de grenzen werden gesloten, kregen we zware klappen te verduren. De mainports Rotterdam en Schiphol werden ernstig getroffen en vooral de burgerluchtvaart nam af. Maar Fokker kon van toeleverancier weer uitgroeien tot fabrikant van vliegtuigen gericht op continentale vluchten. Bestaansrecht is er voor ondernemingen die niet afhankelijk zijn van klanten en leveranciers buiten Europa. Anders moeten ze verplaatsen naar bijvoorbeeld China of overstappen naar een potentiële Europese groeiemarkt, zoals textiel, landbouw of een innovatieve industrietak als de energiesector. Hoewel Fort Europa onomstotelijk tot een daling van de welvaart leidt, biedt het scenario wel degelijk kansen.

De kracht van technologie

Toekomstscenario Concorde

Jarenlang was technologie de motor achter productontwikkeling en innovatie. De Concorde ging echter ten onder aan zijn eigen technologische hoogvliegendheid. De tijd waarin de techneuten bepaalden wat goed was voor de klant, is anno 2014 definitief voorbij. Er komt een omslag van zichtbare naar onzichtbare technologie, want consumenten hebben een weerstand tegen technologie opgebouwd. Met dank aan de ‘ingewikkelde’ bediening van de videorecorder, incompatibele computersoftware en het grote aantal afstandsbedieningen. Standaardisatie en gebruiksvriendelijkheid zijn vaak ver te zoeken. Het kost mensen te veel tijd, moeite en geld om met de nieuwe mogelijkheden te werken. Een opstand tegen die ‘technologieterror’ dreigt, en anders wel een ‘software-infarct’ dat het dagelijks leven kan platleggen. Bovendien heeft techniek zijn onderscheidend vermogen verloren. Een innovatie die morgen wordt bedacht, loopt overmorgen in China van de band. Ondernemingen moeten het zoeken in dienstverlening en service naar een klant. Nut en eenvoud van technologie staan voorop. Productinnovaties sluiten naadloos aan op de dagelijkse behoeften van de consument: dingen die gewoon werken en gemak brengen, zonder instructie, moeilijke installatie of onderhoud. Nieuwe technologie is gebruiksvriendelijk, energiebesparend, virusresistent én multifunctioneel. Technologie is er dus nog volop, maar de consument ervaart haar als vanzelfsprekend.

Toekomstscenario Patent Power

Omdat kennisintensieve producten het meest succesvol zijn, is er in 2014 sprake van een run op patenten en een wereldwijde strijd om de intellectuele eigendomsrechten. Want wie de patenten bezit, heeft de markt in een wurggreep. Europa had op patentengebied een enorme achterstand op Amerika, maar vecht terug. Het samenspel tussen overheid en bedrijfsleven (groot en klein) is schoorvoetend op gang gekomen. Als eerste zijn de randvoorwaarden voor het vestigen van patenten helder ingevuld. Brussel en de nationale overheden ondersteunen het mkb, met geld én advies. Gesubsidieerde octrooigemachtigden adviseren het mkb over wat patenteerbaar is en hoe patenteren in z’n werk gaat. Om het aanvragen van patenten te stimuleren, koppelt het ministerie van Industrie haar subsidie voor innovaties aan patenten.

Grote bedrijven laten hun octrooibureaus fulltime zoeken naar mogelijke patenten binnen de eigen afdelingen. Hun patentenkennis gebruiken ze om hun toelevernetwerk te ontginnen. Bedrijven nemen gezamenlijke initiatieven om technici juridisch bij te scholen, om hen beter te laten communiceren met de juristen die het patentenportfolio beheren. Constant wordt de vraag gesteld of ergens een patent in zit. Want wie net patenteert, kan zijn werk geblokkeerd zien door patenten van de concurrent. Alle begin is klein, maar langzaam ontwikkelt Europa zich tot patentengrootmacht.

De charme van industrie

Toekomstscenario NID-Nederland

De traditionele vorm van industrialisatie had zijn langste tijd gehad. De industrie transformeerde naar een schone activiteit met nieuwe omgangsvormen, waarin het steeds leuker werd om met elkaar iets op te bouwen. Werken in de industrie werd sexy. Anno 2014 is de ondernemer trots en zelfbewust en pakt hij meer ruimte om écht te ondernemen. Hij leunt daarbij zwaar op de inventiviteit van zijn werknemers. Kortom, er is een herwaardering van het ondernemerschap gekomen. Nederland is NIC-Nederland, een ‘Newly Industrialized Country’.

De Nederlandse industrie telt veel modern ingerichte toeleveranciers met een bovenmatig mondiaal marktaandeel. Ze kunnen het ontwikkel- en het maaktraject goed in elkaar schuiven en zitten dicht bij de vraag, voor producten die snel op de markt moeten worden gebracht en waarbij geld een grote rol speelt. De medische industrie en de vergrijzing hebben hier voor een impuls gezorgd. De producten kunnen snel worden geleverd dankzij efficiënte en flexibele productie, een gesmeerde logistiek en sterke projectbeheersing. Ook op sociaal gebied is geïnnoveerd. De mensen op de werkvloer krijgen meer creatieve autonomie, ondernemende werknemers worden 'wondernemers'. Ze kunnen hun specialismen aan meerdere bedrijven 'verlonen'. Zo ontstaat er per project of order steeds een tijdelijk netwerkje van zelfstandige maakspecialisten. Om hen te binden is er veel gebeurd op arbo-gebied. De moderne 'NIC-fabriek' heeft trekjes van een kantoor en een winkel: een schone omgeving waarin het door de klant gevraagde product gemaakt wordt door het slim en klantspecifiek samen te stellen uit bestaande technologische modules.

De Nederlandse industrie heeft niet op de overheid gewacht, maar zelf het voortouw genomen. Zo is het beroepsonderwijs op orde gebracht en zijn de bedrijfs-CAO's zo aangepast dat creativiteit beter wordt beloond en dat regeltjes die het ondernemerschap van werknemers in de weg stonden zijn geschrapt. Maar ook de overheid heeft niet stilgezeten. Ze heeft de ondernemer de laatste jaren meer bewegingsruimte gegeven om zijn doelen te bereiken. Administratief machtsvertoon van de overheid is misplaatst gebleken. En gelukkig hebben we ons niet laten ketenen.

APPENDIX 3 – FUTURE FACTORY DVD

NEVAT BUSINESS VRANDEL

Wat zal 2014 ons brengen als:

- de olie tien keer zo duur wordt?
- er écht gevochten gaat worden om patenten?
- de technologische innovaties sneller gaan als de mens kan absorberen?
- de grondstoffen zo schaars zijn, dat hergebruik veel eerder interessant wordt?
- de consument een dominante rol gaat spelen in de maakketen?
- vrij handelsverkeer tussen economische grootmachten niet meer mogelijk wordt?
- er een herwaardering komt voor ondernemerschap en industrie weer "sexy" wordt?

In de zomer van 2004 bracht NEVAT zo'n zestig kopstukken uit de industrie, wetenschap en journalistiek bij elkaar om deze 7 toekomstscenario's uit te werken. Deze scenario's zijn zowel in woord als beeld uitgewerkt. Het resultaat, een boekje én DVD treft u in deze box aan. Samen geven zij een beeld hoe de wereld er in 2014 uit kan zien.

De 7 scenario's zijn een absolute must voor iedereen die alles wil weten over de kansen en bedreigingen die op de Nederlandse maakindustrie afkomen. De informatie leent zich uitstekend om het strategisch plan van industriële ondernemingen invulling te geven.

TOEKOMSTSCENARIO'S
voor de Nederlandse industrie



FORT EUROPA



RE-MANUFACTURING



PATENT POWER



NIC-NEDERLAND



MCPRODUCT



LEAN MOBILITY



CONCORDE

DE ZEVEN TOEKOMSTSCENARIO'S

NEVAT
CONNECTING WINNERS

NEVAT

Nederlandse Vereniging Algemene Toelevering (NEVAT)

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www.nevati.nl



Rabobank

NEVAT

CONNECTING WINNERS

APPENDIX 4 – INVITATION FUTURE FACTORY



TOEKOMSTSCENARIO'S
Voor de Nederlandse industrie

PORT EUROPA
De handelspartij van economieën
door onderlinge afhankelijkheid
Amerika, Europa of China? Zij proberen hun eigen verkeer
en/of geldigheid te handhaven.

RE-MANUFACTURING
Alles verspreiden wordt
even daar als afgevoerd.
Herfabrik is noodzaak en geen pech.

PATENT-POWER
Kennis wordt macht.
Grote concerns houden de
industrie in een wettige greep van patenten.

NIC-NEDERLAND
Nederland gaat ook opteren
voor innovatieve maar, het als is
het best van integratie van zaken en verduurzamen.
Herontwikkeling van het ondernemerschap. Nederland, nu
en NIC, New Industrialized Country.

MCPRODUCT
Producten krijgen een slede.
Producten toe te voegen in de juiste behoeftes
van de consument.

LEAN MOBILITY
De afstands van de jaren
zeventig van de vorige
maakt is slechts 'impulsie' in een vorm van verpakking. Zij
de scenario. Energie wordt daar, transport wordt een
schaarste artikel.

CONCORDE
We gaan terug in technologische
medelen vervult er nuwelis
in prestaties. Technologische innovatie gaat sneller
dan het menselijke adaptatievermogen.



NEVAT
CONCEPTS WIRVALL

Nederlandse Vereniging Algemeen Toelating
Postbus 990
2000 AB Zaandam
Telefoon 079 353390
Telefax 079 353195
e-mail info@nevat.nl
website www.nevat.nl

De afgevoerd wordt meer
ingepikt, gemaakt daar:

Robobank

Future Factory
Wat u vandaag al kunt doen
om morgen op voorsprong te staan.

PERSOONLIJKE UITNODIGING

Future Factory: De toekomst begint vandaag

In 2014 ontwikkelde NEVAT – ter gelegenheid van haar 25-jarig bestaan – een reeks toekomstscenario's voor de Nederlandse industrie. Uit deze 7 scenario's bleven belangrijke thema's tevens staan zoals het toegenomen belang van duurzaamheid, de waarde van het intellectueel eigendom en een mogelijke herwaardering van de Nederlandse maakindustrie.

De 7 scenario's zijn gebaseerd op aannemelijke trends maar bevatten ook trends die, overvloedige voorbeelden van spannende ideeën, ze hebben allemaal één ding gemeen: ze zijn realistisch dan o denks.

Het is nu de tijd om deze scenario's te concretiseren.

Graag nodigen wij u uit om mee te denken aan de Future Factory. Een unieke mogelijkheid om de toekomst vandaag al aan te zetten in een voorproefing voor morgen.



Stap voor stap vanuit de scenario's naar nieuwe business

Ieder toekomstscenario bevat kansen en bedreigingen. Wie in staat is deze kansen te benutten ontwikkelt een voorrang in de markt. NEVAT en Rabobank bieden u de kans op voor-sprong in de Future Factory. Vijf groepen ondernemers worden in de groepen verdeeld om – onder deskundige leiding – één van de zeven toekomstscenario's te vertalen naar tastbare ideeën voor nieuwe business. Wie die kans niet heeft gaat in de Future Factory om ideeën die u als ondernemer vooral brengen. Maar ook om ideeën voor de Nederlandse industrie als geheel. Mendem-kost u een afbeld of middag van uw tijd.



Follow-up

Naar het nieuwe business-ideeën zullen – met steun van Rabobank en NEVAT – door ondernemers zelf worden worden uitgevoerd. Daarnaast bieden we de deelnemers aan de Future Factory ook de mogelijkheid om kennis te nemen van lokale innovatie programma's. Aan het eind van het project presenteren wij een business-agenda voor de toekomst van de Nederlandse industrie, een agenda bronnen inspiratie voor nieuwe business.

What's in it for you?

- Creëren nieuwe kansen voor uw bedrijf
- Ontdek nieuwe productmarkt-combinaties
- Doe mee in de ontwikkeling van nieuwe business concepten
- Leer samenwerken met belanghebbenden
- Leer met of the-box denken
- Maak beter gebruik van zakelijke netwerken



Hoe gaat het in zijn werk?

Nieuw Future Factory bijeenkomst begint met een brainstorm over de vraag "Welke kansen biedt de toekomst voor de Nederlandse industrie in Nederland?"

Met behulp van een interactief voorgedrukt systeem worden de suggesties geïntegreerd, geïntegreerd en uitgewerkt. Dit alles interactief en met voldoende tijd voor discussie en verdere uitwerking. Aan het eind van de bijeenkomst zijn er concrete kansen geïdentificeerd waarmee de deelnemers, ieder voor zich of in kleine groepjes, aan de slag kunnen. Aan iedere bijeenkomst doet een vertegenwoordiger groep ondernemers mee. De bijeenkomsten van Future Factory zijn op de volgende data gepland:

Datum	Tijd	Thema	Agenda
7 juni	14.00 - 18.00	Schaarsheid	Lean Mobility / Remanufacturing
14 juni	14.00 - 18.00	Gevoelens	Gevoelens
21 juni	14.00 - 18.00	Technologie & inn	Technologie & inn
28 juni	14.00 - 18.00	Integreer	Integreer
5 september	14.00 - 18.00	Integreer	Integreer
12 september	14.00 - 18.00	Integreer	Integreer
19 september	14.00 - 18.00	Integreer	Integreer

De richtingsbijeenkomsten duren van 14.00 - 18.00. De richtingsbijeenkomsten van 14.00 - 18.00 uur. Lunch en sprinkel worden u aangeboden door Rabobank Nederland.

De bijeenkomsten vinden plaats in het Koninginpark van de Rabobank te Den Haag.

Wie doen er mee?

Nieuw Future Factory worden in de eerste plaats leden van NEVAT-afdeling. Dit zijn ondernemers uit de maakindustrie. Van voor tot achter in de keten, van engineering tot productie. Bij ieder scenario wordt een beperkt aantal deelnemers uitnodigd. Zij brengen specifieke kennis in over de centrale thema's zoals duurzaamheid, design, arbeidsmarkt, IP, globalisering enz. Het is niet nodig om ook de lijst van de toekomst om aan te schrijven. Uiteraars uit diverse DGB-afdelingen nemen deel aan de bijeenkomsten van hun kennis over de toekomstige rol van O&M en in te brengen.

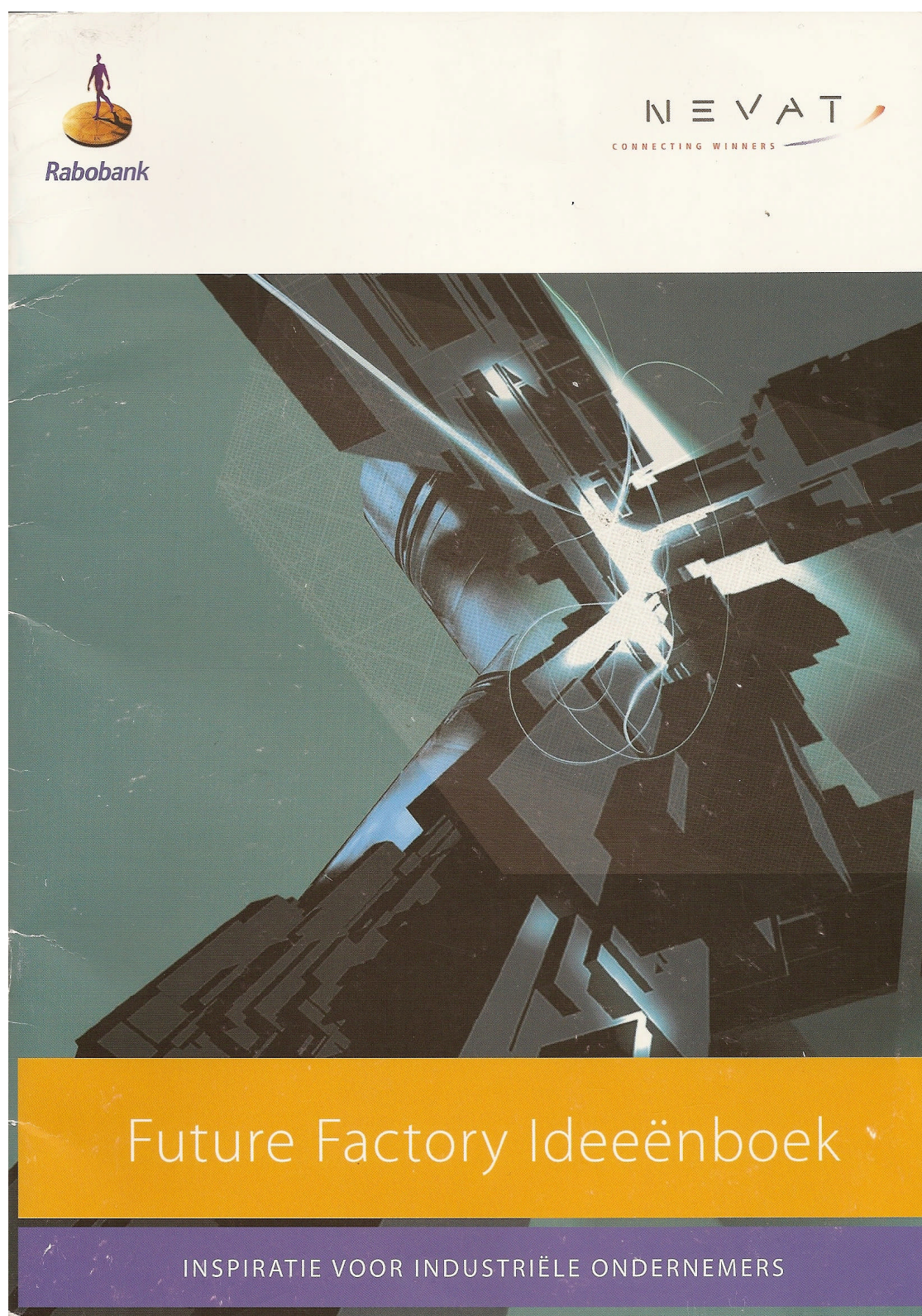
Beschrijven

U kunt zich voor één van de vijf bijeenkomsten inschrijven via hetgeen inschrijfformulier. Deelnemers in totaal voor ieder van NEVAT. Het aantal deelnemers per bijeenkomst is beperkt tot maximaal 15. Inschrijving op volgende van ontvangst. Indien de bijeenkomst van uw keuze is volgeboekt, kunt u eventueel kiezen voor een alternatief thema. Inschrijven kan tot uiterlijk 27 mei 2014. Wij vragen de deelnemers een bijdrage van 100,- in de kosten van 75,- met incl. BTW. U ontvangt een bevestiging en inschrijfformulier.

Organisatie

Future Factory is een initiatief van de Nederlandse Vereniging Agri-energie (NEVAT) en wordt gesteund door Rabobank Nederland. Het is bedoeld om de Nederlandse industrie een impuls te geven aan een nieuw elan voor de toekomst.

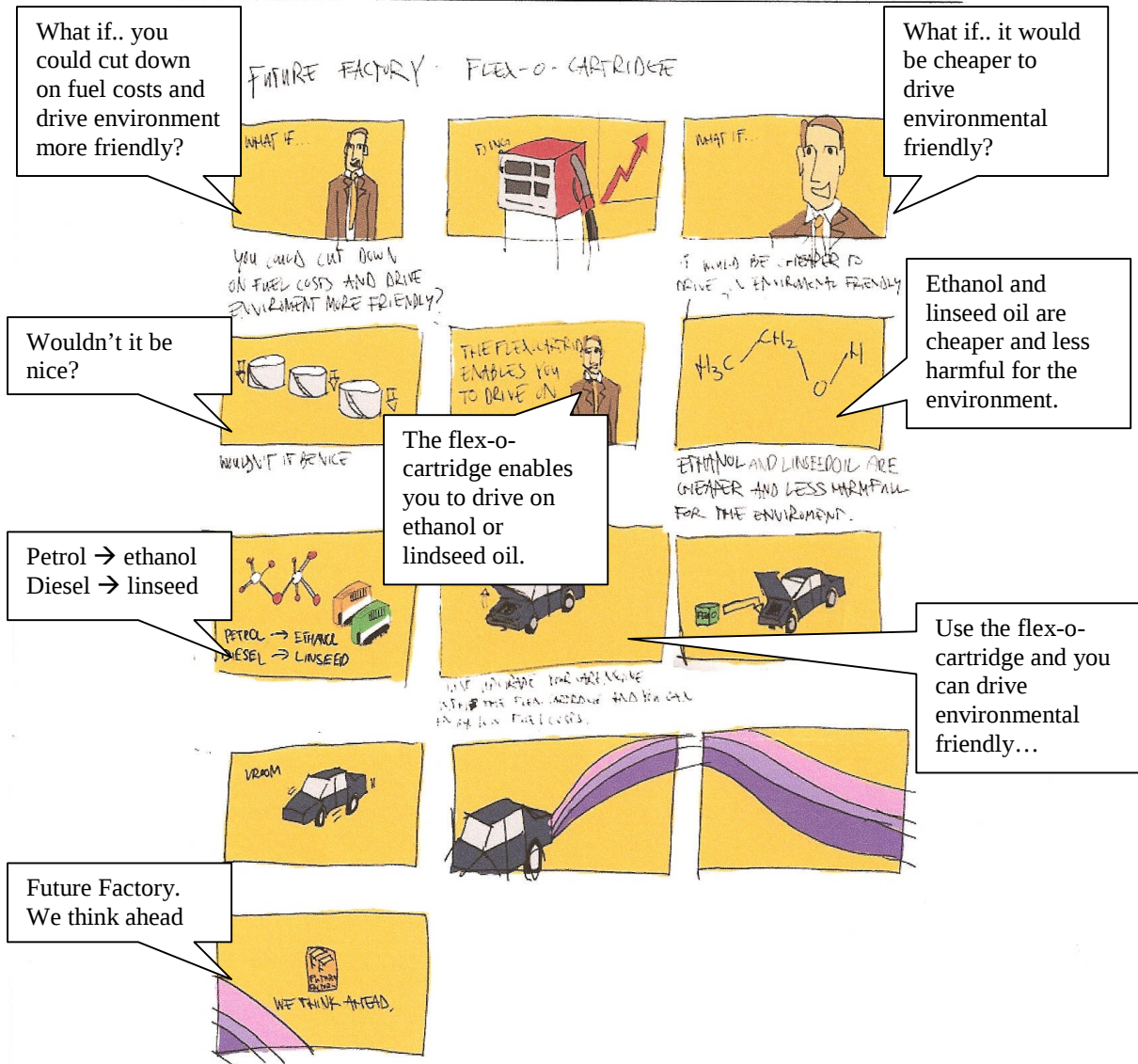
APPENDIX 5 – FUTURE FACTORY IDEABOOK



APPENDIX 6 – ANIMATION

Yuri den Ouden
Ton Mikkers

Nevat T & U Congres



APPENDIX 7 – QUESTIONNAIRE (Dutch)

Zoetermeer, 15 april 2008

Betreft : Enquête

Geachte heer, dame,

In 2004 heeft u een bijdrage geleverd aan de “7 Toekomstscenario’s voor de Nederlandse Maakindustrie” van NEVAT. Mogelijk was u zelfs betrokken bij “The Future Factory” die hieruit is voortgekomen. Nu al is het verrassend om te zien hoeveel ideeën inmiddels zijn uitgekomen. Denk maar aan de Islamisering, de schaarste aan grondstoffen en de hoge olieprijs.

Samen met Paul de Ruijter (die het project destijds voor ons heeft begeleid) doen we een onderzoek naar de concrete resultaten van scenario’s en in hoeverre die van invloed zijn (geweest) op innovatie. In hoeverre hebben ze geleid tot nieuwe producten en/of diensten, nieuwe productiemethoden, het betreden van nieuwe markten, het gebruik van andere materialen en/of het doorvoeren van veranderingen in de bedrijfsvoering?

Om een beeld te krijgen van de resultaten van dit project, heeft Lineke Botterhuis (De Ruijter Strategie) zeven korte vragen. Wij zouden het erg op prijs stellen als u dit zou willen invullen en per kerende mail aan lineke@deruijter.net terug te sturen.

Voor meer informatie over dit onderzoek kunt u kijken op:
<http://www.deruijter.net/collaborativeinnovativescenarios.html>

Hartelijk dank voor uw medewerking!

Met vriendelijke groet,

NEVAT

Theo Koster

Directeur

1. **Bedrijfsnaam:**

Naam:

2. Bent u betrokken geweest bij de samenstelling van de Toekomstscenario's (bijeenkomst 17 juni 2004 in Huis de Voorst)
- ☐ Ja
 - ☐ Nee
3. Bent u betrokken geweest bij één van de opvolgssessies van de Future Factory die in de periode van juni tot en met september 2005 heeft plaatsgehad?
- ☐ Ja
 - ☐ Nee
4. Hebben de Toekomstscenario's en/of Future Factory u geïnspireerd tot één van de onderstaande vormen van innovatie? Zo ja, op welke wijze?
- veranderingen in de bedrijfsvoering?
 - het betreden van nieuwe markten?
 - ontwikkeling van nieuwe producten en of diensten?
 - nieuwe productiemethoden?
 - gebruik van andere of nieuwe materialen?
 - anders, namelijk
- ☐ Ja, namelijk:
 - ☐ Enigszins, namelijk:
 - ☐ Vrijwel niet
 - ☐ Nee
 - ☐ Geen mening / Weet niet
5. Heeft het contact met andere NEVAT- leden u geïnspireerd tot één van de bovengenoemde vormen van innovatie? Zo ja, op welke wijze?
- ☐ Ja, namelijk:
 - ☐ Enigszins, namelijk.....
 - ☐ Vrijwel niet
 - ☐ Nee
 - ☐ Geen mening / Weet niet
6. Hebben de Toekomstscenario's en/of Future Factory geleid tot samenwerkingsrelaties met andere NEVAT- leden?
- ☐ Ja, namelijk:
 - ☐ Enigszins, namelijk.....
 - ☐ Vrijwel niet
 - ☐ Nee
 - ☐ Geen mening / Weet niet
7. Bent u bereid binnenkort mee te werken aan een kort (telefonisch) vervolg interview, waarin wat dieper ingegaan zal worden op het proces en de onderliggende reden van de mate van succes voor uw organisatie?
- ☐ Ja
 - ☐ Nee

APPENDIX 8 – INTERVIEW SCHEME (Dutch)

Allereerst bedankt dat u tijd vrij heeft kunnen maken voor dit interview. U heeft de korte digitale vragenlijst ingevuld en nu wil ik graag wat dieper ingaan op het onderwerp.

Het doel hiervan is om in een beeld te krijgen van de effectiviteit van het samenbrengen van ondernemers en het gebruik van scenario's voor het bevorderen van innovatie. Eerst zal ik wat korte inleidende vragen stellen en zal ik wat specifieke vragen stellen over het project en de resultaten daarvan voor uw onderneming. Ik zou de informatie uit dit interview anoniem kunnen behandelen. Stelt u dat op prijs?

1. Algemeen

- a. Naam
- b. Functie binnen het bedrijf
- c. Werkzaamheden/expertisegebied

2. Resultaat enquête

- a. Positief, waarom
- b. Negatief, waarom

3. Collaborative innovation session

Door het bij elkaar brengen van verschillende ondernemers uit soortgelijke branche, maar met elk zijn eigen invalshoek kunnen nieuwe relaties ontstaan en kunnen bestaande netwerken worden versterkt. De aanwezigheid van een externe partij die het proces begeleidt kan dit beïnvloeden. Het opbouwen van een toegankelijk en betrouwbaar netwerk binnen je branche kan samenwerkingsrelaties stimuleren.

- a. Heeft Future Factory invloed gehad op uw relaties met leden van NEVAT?
- b. Zijn bestaande relaties veranderd?
- c. Zijn er nieuwe relaties ontstaan?
- d. Heeft de aanwezigheid van een externe sessieleider invloed gehad op het versterken of uitbreiden van uw netwerk?
- e. Hoe speelt vertrouwen een rol in de relaties met andere NEVAT leden?
- f. Is de bereidheid tot het delen van kennis, middelen en mogelijkheden toegenomen door het samenkomen met andere NEVAT leden in Future Factory?
- g. Zijn er innovatieve ideeën ontstaan door de invloed die Future Factory heeft gehad op uw netwerk?

4. Scenario thinking

Het gezamenlijk beleven en maken van scenario's kan ervoor zorgen dat je meer buiten je reguliere kaders denkt, het vertrouwen tussen deelnemers kan vergroot worden en de mentale

modellen van de deelnemers kunnen worden opgerekt en op een lijn gebracht. Een mentaal model is in het kort de manier waarom men tegen de wereld aankijkt.

- a. Hebben de scenario's die gemaakt zijn voor Future Factory u aangemoedigd om buiten uw reguliere kaders te denken?
- b. Hebben de scenario's gezorgd voor een verandering in uw mentale model; de manier waarop u de toekomst bekijkt?
- c. Hebben de scenario's invloed gehad op het vertrouwen in samenwerkingrelaties met andere leden van NEVAT?

5. Results

- a. Heeft Future Factory ervoor gezorgd dat uw netwerk toegankelijker en betrouwbaarder is geworden?
- b. Heeft Future Factory u aangemoedigd met andere NEVAT-leden kennis, middelen en mogelijkheden te delen?
- c. Heeft Future Factory ervoor gezorgd dat u meer op 1 lijn zit met andere NEVAT-leden?

6. (Collaborative) Innovation

- a. Hebben de toekomstscenario's / Future Factory u aangemoedigd innovatieprojecten met andere NEVAT-leden aan te gaan?
- b. Hebben de toekomstscenario's / Future Factory invloed gehad op het ontwikkelen van nieuwe producten of diensten?
- c. Hebben de toekomstscenario's / Future Factory invloed gehad op het toepassen van nieuwe productiemethoden?
- d. Hebben de toekomstscenario's / Future Factory u gestimuleerd nieuwe markten betreden?
- e. Hebben de toekomstscenario's / Future Factory u gestimuleerd andere materialen te gebruiken / nieuwe samenstellingen in bestaande producten door te voeren?
- f. Hebben de toekomstscenario's / Future Factory u gestimuleerd veranderingen door te voeren in de bedrijfsvoering?

7. Heeft u zelf nog opmerkingen die u kwijt wilt naar aanleiding van de vragen die ik heb gesteld over Future Factory?

8. Heeft u suggesties voor het optimaliseren van dit soort projecten teneinde het stimuleren van innovatie?

Hiermee zijn we aan het einde gekomen van dit interview. Hartelijk bedankt voor je tijd. Mocht je achteraf nog vragen of opmerkingen hebben dan ben ik uiteraard altijd te bereiken. Ik ga het interview straks uitwerken en samenvoegen met de andere interviews die gehouden worden. Als ik mijn verslag helemaal heb afgerond dan is het uiteraard ook beschikbaar om te lezen

APPENDIX 9 – LISTS OF INTERVIEWEES

Name	Position	Company	Kind of information	Kind of interview	Date of interview
Paul de Ruijter	CEO	De Ruijter Strategy	Experiences with scenario projects and facilitator of scenarios and Future Factory	In-depth, face-to-face	18-04-2008
Renate Kenter	Senior Consultant	De Ruijter Strategy	Experiences with scenario projects	In-depth, face-to-face	
Marcel van Assen	Senior Consultant	Berenschot BV	Performed pre-research on the case Future Factory	In-depth, face-to-face	03-03-2008
Theo Koster	CEO	NEVAT	Inside information on NEVAT, scenarios and Future Factory	In-depth, face-to-face	27-02-2008
G.W. (Geert) Reitsma	CEO	Sergem Engineering BV	Participant in writing scenarios	Questionnaire (e-mail) and in-depth (telephonic)	24-04-2008
Anonymous	CEO		Participant in Future Factory	Questionnaire (e-mail) and in-depth (telephonic)	24-04-2008
L.A. (Lucas) Wintjes	CEO	Bosch Rexroth BV	Participant in writing scenarios and Future Factory	Questionnaire (e-mail) and in-depth (telephonic)	25-04-2008
Ton de Bruine	CEO	Brinks Metaalbewerking BV	Participant in writing scenarios and Future Factory	Questionnaire (e-mail) and in-depth (telephonic)	29-04-2008
J.H.F. (Johan) Hundscheid		Reef Precisie BV	Participant in writing scenarios	Questionnaire (telephonic)	21-04-2008
Dr. Ir. E.J. Sol	Directeur Kennis	TNO Industrie en Techniek	Participant in writing scenarios	Questionnaire (e-mail)	28-04-2008
Geert van de Kerkhof		Eurotech Group BV	Participant in writing scenarios	Questionnaire (e-mail)	17-04-2008
I. J.C.J. Schlösser		Fidelis Consultancy BV	Participant in writing scenarios	Questionnaire (e-mail)	15-04-2008

APPENDIX 10 – INTERVIEW RESULTS (Dutch)

Who Theo Koster, CEO NEVAT

When 27 February 2008

Where NEVAT office, Zoetermeer

NEVAT en haar leden

NEVAT is een branchevereniging voor ondernemers in de maakindustrie. NEVAT is een van de 160 brancheverenigingen binnen de FME. NEVAT onderscheidt zich van grotere brancheverenigingen binnen deze industrie als de Metaalunie.

NEVAT stelt zich ten doel de leden tot de internationale top van de toeleveranciers te laten behoren. Er zijn een aantal kenmerken die belangrijk zijn

- NEVAT heeft 250 leden, in verhouding een klein aantal (als je bedenkt dat de Metaalunie 1000 leden heeft) in 7 verschillende sectoren:
 - o Groep Plaatverwerkende Industrie (GPI)
 - o Grote Verspaning Nederland (GVN)
 - o Precision Machining & Tooling (PMT)
 - o Holland Automotive (HA)
 - o Electronic Manufacturing Services (EMS)
 - o System Suppliers (Sys)
 - o System Developers (SD)
- Het voordeel van dit kleine aantal is dat het mogelijk is persoonlijk contact te onderhouden met de leden.
- Het businessmodel van NEVAT is dat de leden een jaarlijkse contributie betalen van ongeveer € 2500,-
- De leden zijn toeleveranciers; zij leveren onderdelen, halffabrikaten. Geen eigen producten, marketing is dus geen prioriteit.

NEVAT richt zich op de kopgroep en niet op het peloton. De leden van NEVAT zijn geïnteresseerd in zaken als strategie en innovatie. Als branchevereniging proberen zij hierop in te springen door ambitieus, vooruitstrevend en (toekomst)voorspellend bezig te zijn. NEVAT bewerkstelligt dit door verschillende zaken te organiseren voor haar leden:

- jaarvergaderingen en sectorvergaderingen
- collectieve deelname aan beurzen – voor kleinere ondernemingen is het vaak lastig dit te organiseren, en zich zichtbaar te presenteren. NEVAT bundelt de krachten en verzorgt de stands voor haar leden op deze beurzen.
- T&U congres
- Kennismakelaar

Het onderscheidend vermogen van NEVAT zit volgens Theo is het winnen op de content: leden als eerste en diepgaand informeren. Content combineren met fun.

Een van de projecten die zijn georganiseerd in het kader van het combineren van content met fun voor de leden is het ontwikkelen van toekomstscenario's. Er zijn een aantal zaken die NEVAT heeft doen besluiten scenario's te ontwikkelen.

1.

In het kader van het 25-jarig bestaan wilde NEVAT iets bijzonders doen voor haar leden. NEVAT wil vooruitstrevend zijn en vooruit kijken. Daarom leek het logisch iets te doen op het gebied van toekomstverkenning. Zo kwam men in aanraking met scenario's.

2.

De markt waarin de leden van NEVAT zich bevinden is erg in ontwikkeling. Alle leden zijn toeleveranciers: ze maken zelf geen eindproduct, maar leveren aan een zogenaamde OEM-er (Original Equipment Manager). Deze OEM-ers zijn de fabrikanten die uiteindelijk eindproducten op de markt brengen. Voor deze groep is het maakproces minder belangrijk dan de klant en de marketing. Aan de

andere kant wordt technologie steeds belangrijker en worden producten steeds complexer. Dit heeft als resultaat dat deze bedrijven steeds meer van hun technologie uitbesteden. Aan de toeleveranciers – de leden van NEVAT. Voor de leden wordt technologische innovatie dus steeds belangrijker om te kunnen beantwoorden aan de vraag van de OEM-ers. NEVAT wil de leden stimuleren zich te specialiseren om zich te onderscheiden van de concurrentie. Hier komt ook samenwerking ter sprake: de leden van NEVAT kunnen hun kennis delen om zo gezamenlijk technologische ontwikkeling naar een hoger plan te tillen.

Het proces FF

Er werden ongeveer 80 mensen uitgenodigd uit verschillende vakgebieden die iets te maken hebben met de branche. Niet alleen leden, maar ook klanten, politici, andere brancheverenigingen, kennisinstellingen. Zoveel mogelijk invalshoeken om de scenario's zo goed mogelijk te maken. Onder begeleiding van Paul de Ruijter zijn 7 scenario's ontwikkeld, waaraan 7 toekomsttesten zijn verbonden om ondernemingen met elkaar te vergelijken:

- NIC – Ambitieuw
- Patent Power - Slim
- Remanufacture - Recyclebaar
- Lean Mobility - Duurzaam
- Concorde - Vraaggedreven
- Fort Europa – Dichtbij
- Mc Product - Snel

Van deze scenario's is een DVD gemaakt, welke verspreid is onder de leden van NEVAT. De DVD was een groot succes. Dit was te merken aan de grote vraag die ontstond vanuit de markt.

Onderwijsinstellingen, Ministerie van Economische Zaken en andere brancheverenigingen waren erg geïnteresseerd.

Wat hebben de scenario's opgeleverd voor NEVAT en haar leden:

- Gezamenlijk beeld van toekomst
- Brug tussen maatschappelijke thema's en de toekomst van de maakindustrie: ondernemers krijgen zicht op het maatschappelijk nut van hun bedrijf. Het beeld dat er in bestaat van de industrie klopt vaak niet, men denkt dat industrie alleen maar vervuult terwijl het ook bijdraagt aan technologische ontwikkeling die duurzaamheid mogelijk maakt.
- Aandacht voor duurzaamheid
- Aandacht voor flexibiliteit
- Aandacht voor regionalisering
- Aandacht voor veiligheid

Ondanks het succes van enkel de scenario's besloot de NEVAT dat alleen de scenario's wat generiek was. De bedrijven hadden meer handvatten nodig om mee aan de slag te kunnen. De leden hebben een soort stimulans nodig, omdat ze zelf geen grote affiniteit hebben met de producten. Er werd besloten de scenario's onder te verdelen in groepen en per scenario een aantal bedrijven uit te nodigen om ze concreter te maken. De thema's werden met ongeveer 30 man per scenario uitgewerkt tot concrete business opties. Deze opties werden samengebracht en gepresenteerd in het Future Factory Ideeënboek.

Nu?

Het ideeënboek ligt er, Theo denkt niet dat er concrete ideeën die in het boek staan daadwerkelijk zijn uitgevoerd. Er zijn waarschijnlijk wel samenwerkingsrelaties ontstaan.

Het probleem is dat er investeerders nodig zijn om ze concreet te maken. De OEM-ers zijn degenen die innoveren, toeleveranciers hebben geen budget voor innovatie. Voor het ontwikkelen van een nieuw product is veel geld nodig en dat is er niet. Plus dat het zich pas na jaren terug betaalt.

NEVAT probeert via de regering geld los te krijgen voor hun leden. Niet in de vorm van een gift, maar als kredietverstrekking. FF heeft zeker bijgedragen in deze koers. Er zijn al verschillende applicaties die op de plank liggen, maar door gebrek aan geld worden ze nog niet uitgevoerd. Dit is een van de redenen waarom NEVAT zich richt op deze groep; zij durven dit risico te nemen en hebben

innovatieve ideeën. NEVAT ondersteunt de ondernemers in de bewustwording van de bottleneck; technologische innovatietrajecten zijn risicovol en investeerders zijn onmisbaar.

Hoe ver moet je gaan als branche?

- Wanneer neemt de individuele ondernemer de voorgestelde kansen zelf over?
- Als branche zelf een innovatiefonds oprichten om ideeën uit te werken?

Ondernemers moeten op een gegeven moment zelf actie gaan ondernemen; dit is het niet het belang van NEVAT. Processen als FF helpen bij het bewustwordingsproces ten aanzien van de grootste bottleneck: geld.

Samengevat:

NEVAT is een branchevereniging die zich richt op de ondernemende ondernemer die uitgedaagd wil worden en vraagt om informatie. NEVAT wil op verschillende manieren haar leden van dienst zijn. Ze is zich bewust van de vraag van de leden en probeert fun te combineren met content. In FF is een bewustwordingsproces op gang gebracht door ondernemers te stimuleren na te denken over de toekomst van de maakindustrie.

Wat moet input zijn voor het proces?

- verschillende invalshoeken
- geld
- concrete problemen, anders blijft het zweven

Wat levert het bij elkaar brengen van ondernemers op?

- er worden concrete problemen besproken
- het resulteert in applicaties die uitgevoerd kunnen worden

Wat leveren de scenario's op?

- gemeenschappelijk beeld
- beeldvorming van de toekomst
- signalen van verschillende stakeholders
- marktinformatie
- innovatie naar hoger plan
- het maakt zaken niet concreet, maar het levert wel visie en strategisch inzicht op