

## MASTER

### Building a networked organization

improving Neways' strategic position through collaboration among its operating companies

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2005

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## **Building a Networked Organization**

*Improving Neways' strategic position through collaboration  
among its operating companies*

共存 共栄

*"Kyoson kyoei"*  
(Coexistence and Co-prosperity)

**NIET  
UITLEENBAAR**

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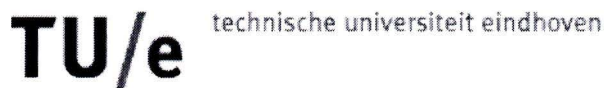
# Building a Networked Organization

*Improving Neways' strategic position through collaboration  
among its operating companies*

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Master Thesis Project  
July 2005

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## **Abstract**

This graduation report deals with the strategic factors, drivers and enablers of collaboration among the operating companies of a networked organization named Neways. Collaboration has to improve the strategic position of the entire organization. Insight is gained in the possibility of collaboration among the Neways operating companies. Recommendations are given concerning the organization of collaboration among the operating companies.

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## Summary

This graduation report is the result of a research project performed at Neways Electronics International, which is the holding of Neways. Neways is a networked organization and has eight operating companies (OCs) in the Netherlands, two in Germany, two in China and one in Slovakia. The main focus of the research project is on the problems related to the realization of collaboration among the Neways operating companies. The philosophy behind collaboration is that Neways operating companies can aim to enhance their performance and create value by combining their technological capabilities. By pooling their resources and capabilities with those of other operating companies, operating companies can initiate projects that they could not have successfully done by themselves (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000).

### **Research problem and goals**

Offering 'total solutions' to customers is an important strategic aim for Neways. But a single Neways operating company does not have all the necessary technological capabilities to implement marketing/commercial concepts like life cycle management and full-system supply. Collaboration among operating companies is necessary for the Neways group in order to be able to implement its strategy. The problem currently faced by the Neways organization is formulated as follows:

There is limited collaboration among Neways operating companies in technological/commercial areas.

As a result, no advantage is taken of an important opportunity that could lead to an improvement of the strategic position of the Neways organization. Successful collaboration is not easy to realize. While collaboration within networked organizations offers many potential benefits, the actual realization and management of collaboration proves to be difficult (Draulans et al. 2003). This gives a strong incentive to take a closer look at factors that have a positive influence on the realization of collaboration within networked organizations. The following goals of this research project are formulated:

To gain insight in the possibility of collaboration among Neways operating companies.

To propose how collaboration among Neways operating companies could be organized.

### **The framework**

To support and structure this project, a framework with factors that have a positive influence on the realization of collaboration is developed. Strategic factors, drivers and enablers of collaboration are referred to as building blocks of collaboration. The foundation for collaboration in supply networks, such as Neways, is formed by the main drivers. Drivers are defined as factors that lie at the basis of collaboration. They encompass the fields on which the different partners can collaborate and the characteristics of these fields. In this project the drivers are related to the technological capabilities of the operating companies. These capabilities are at the roots of the products and services that the operating company supplies (Prahalad & Hamel 1990). The complementarity, copyability and switching costs of

technological capabilities are identified as drivers (Hamel et al. 1989, Dyer & Singh 1998, Chung et al. 2000).

Enablers are defined as factors that can smoothen the collaboration process. These enablers are categorized into two groups, namely social capital and network management. The category social capital addresses the investment in social relations to build up trust and commitment, recognizing its importance as an enabling factor of collaboration (Granovetter 1985, Gulati 1995). In this context the enabling force of transparency, group identity and prior social relations (Bartlett & Ghoshal 1993, Chung et al. 2000) is also stressed.

The second group of enablers is named network management. The possibility to combine technological and social capital of the different operating companies, in order to make the collaboration successful, depends on an organization's network management capabilities. Enablers of the group network management are therefore situated at the pinnacle of the framework. Enablers related to network management are network management task execution and the presence of a network orchestrator (Ritter et al. 2002, Prange et al. 2004). Finally, strategic factors are defined. The networked organization should be entrenched by an overall alignment of strategic goals and vision in order to make collaboration possible. The strategy functions as glue that holds the building blocks for collaboration together (Jarillo 1988, Brouters et al. 1995, Tsai & Ghoshal 1998, Tsai 2000).

The framework or construction with building blocks of collaboration within Neways is shown in the figure S.1.

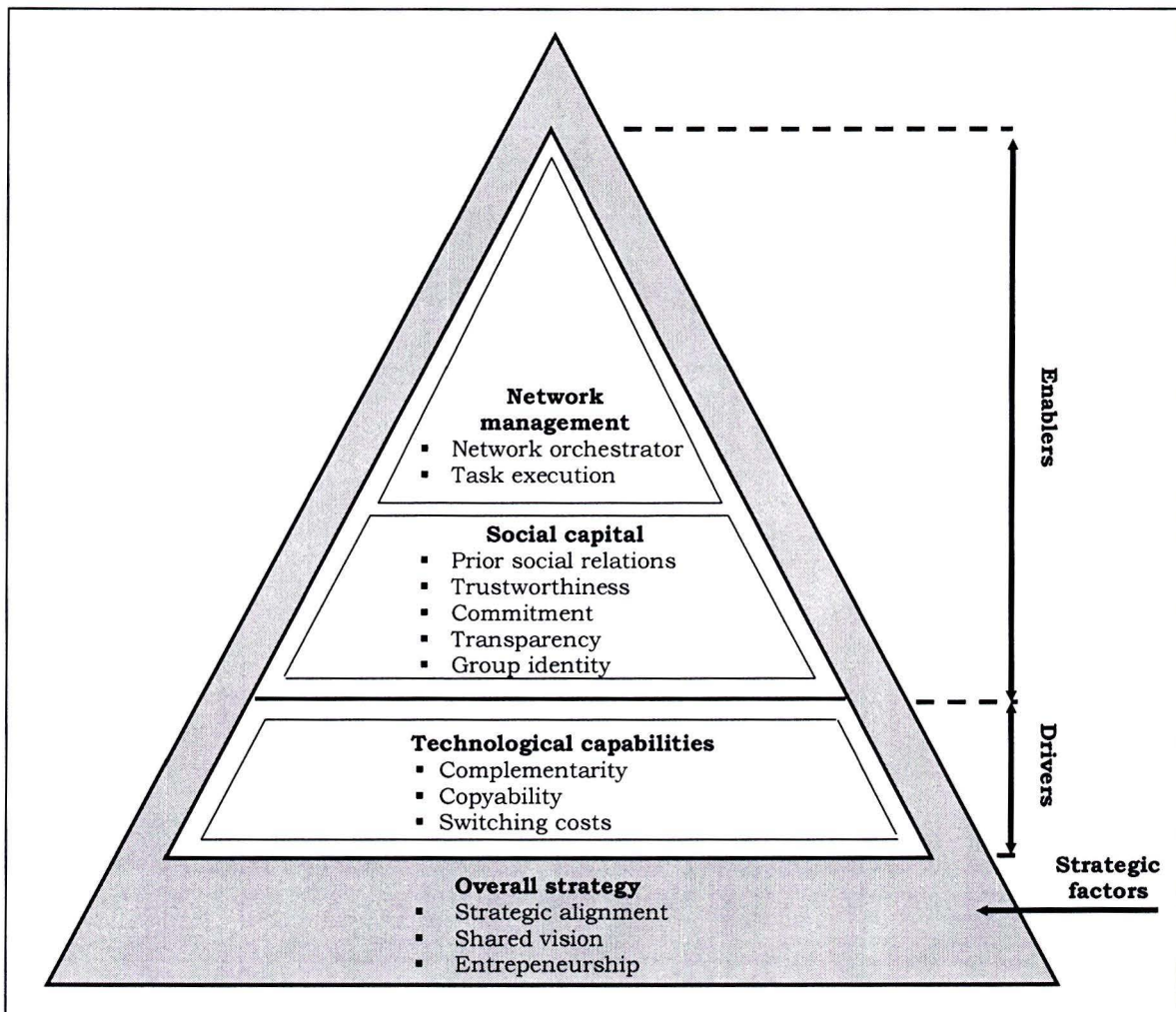


Figure S.1: Framework with strategic factors, drivers and enablers of collaboration

Suggested is that, for improvement of the strategic position of a networked organization through collaboration among its operating companies, all mentioned building blocks of the construction need to be in order. When enablers are present and drivers are not, collaboration is difficult because no field on which collaboration can take place exists. When drivers are present and enablers are not, collaboration is difficult because the process (actual interaction between parties) itself is hard. When the overall strategic frame is weak, collaboration is difficult because of possible conflicting interests and goals. Thus strategic factors, drivers and enablers need to be present and synchronized for the realization of successful collaboration.

**Measurement**

A questionnaire is used as data collection method. Strategic factors, drivers and enablers are measured within Neways through asking twenty employees to score 37 propositions, which are suggested to be usable operationalizations of the constructs. Employees, who are suspected to be acquainted to strategic subjects, like the managing directors and persons responsible for sales/marketing of the ten participating Neways operating companies were asked to fill in a questionnaire during interviews. From the results of this questionnaire several conclusions concerning the construction of collaboration within Neways are drawn. An overview of the conclusions is given in figure S.2. Each measured strategic factor, driver and enabler is labeled. A ‘+’ indicates that the considered strategic factor, driver and enabler is rated positively and a ‘-’ mainly negatively. Those which are considered to be rated neither clearly positive nor negative are labeled ‘+/-’. In order to create a readable overview this rough distinction is made. See the report and appendices for a more detailed examination.

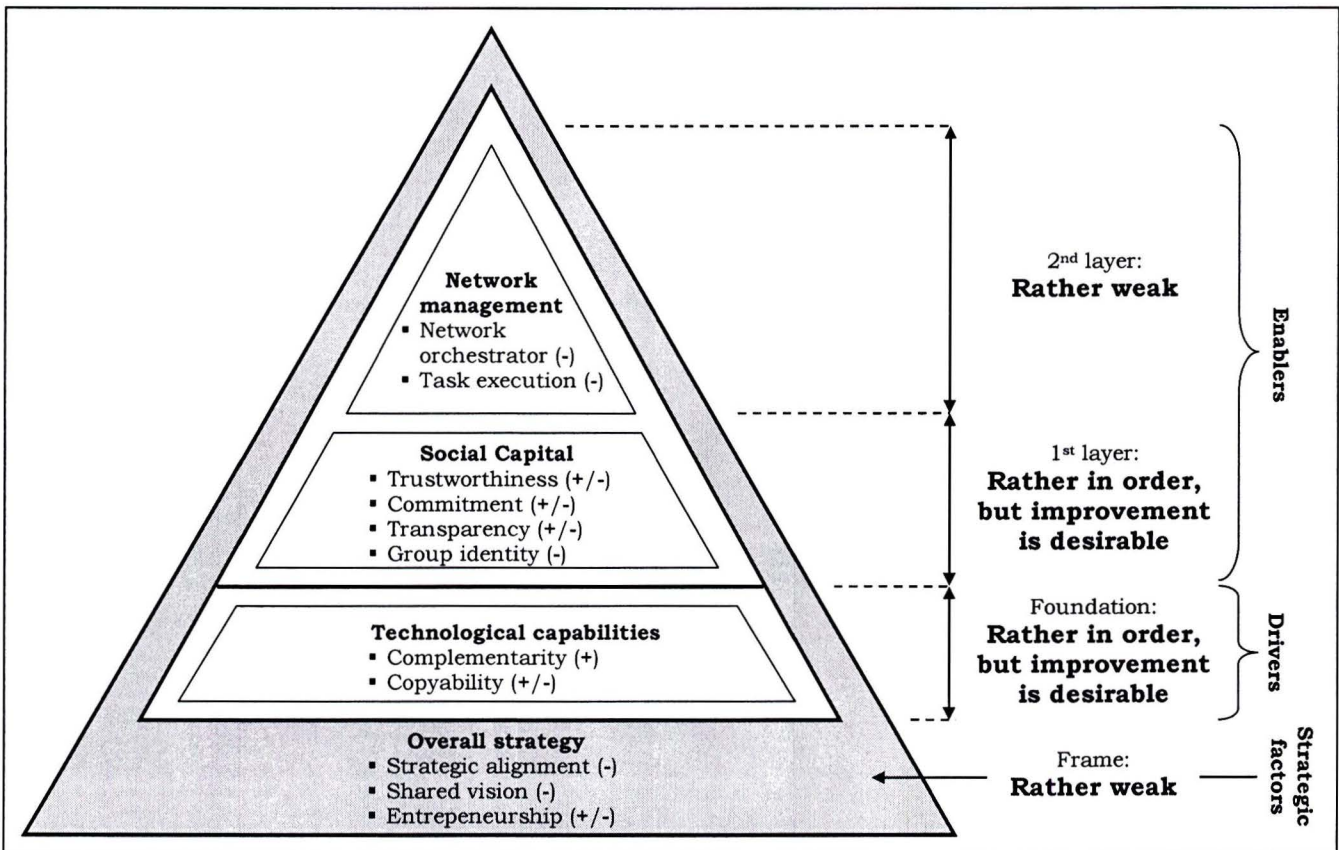


Figure S.2: Overview of the conclusions

## Recommendations

The results of the questionnaire and related conclusions form the basis of the recommendations. It is recommended to start with improving the strategic formulation process within Neways. The strategies of the operating companies should be aligned and a shared vision created. Only then everyone is facing the same direction, so one can make a start with realizing common goals (Tsai 2000). Several recommendations are formulated, which can contribute to structuring and improving the building blocks of collaboration. These are summarized in figure S.3.

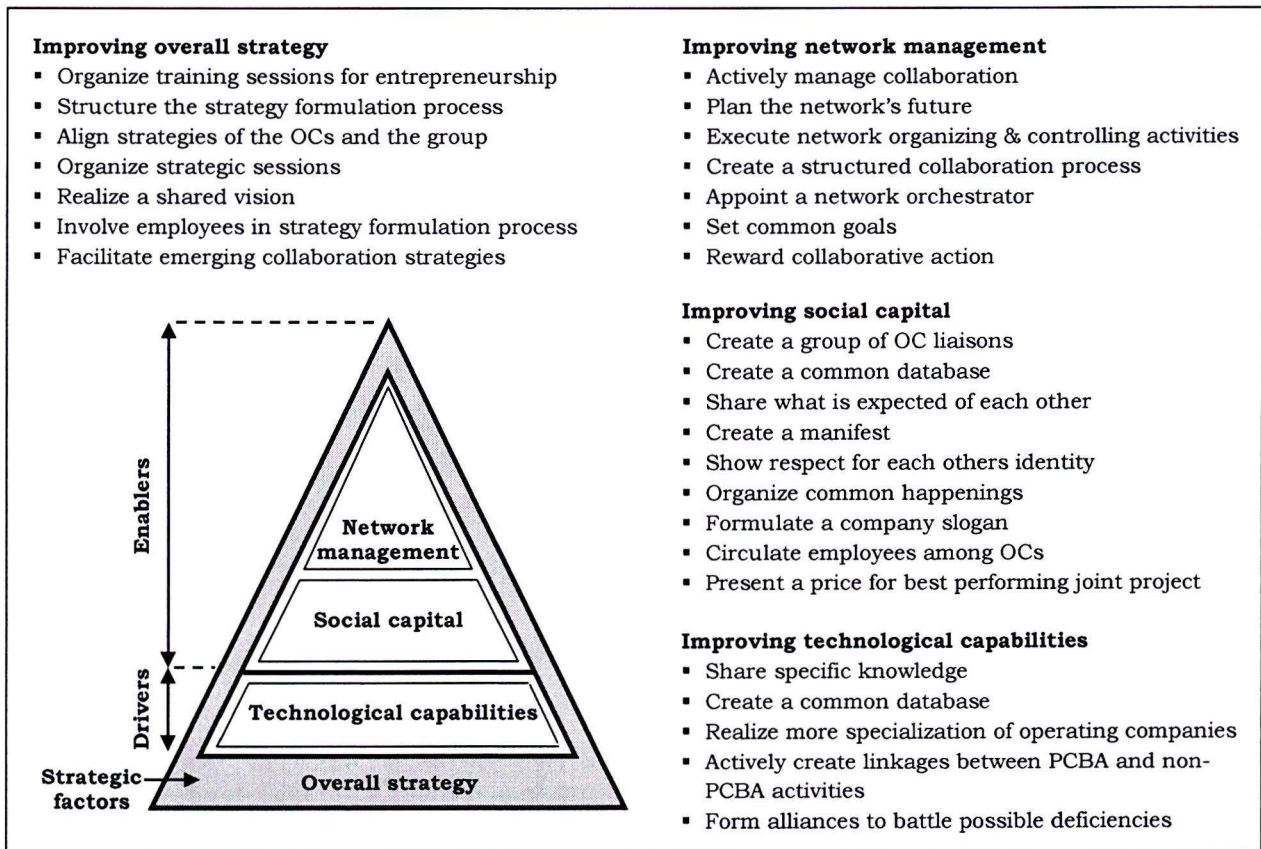


Figure S.3: Overview of the recommendations

Participation of employees is important for realizing support for the necessary changes. Therefore, discussion should be stimulated. But power interventions should not be avoided, when strong contra-productive coalitions are formed based on individual interests (van Aken 2002).

Through measurement of strategic factors, drivers and enablers, insight is gained in the possibility of collaboration among the Neways operating companies. Additionally, the recommendations propose how collaboration among the Neways operating companies could be organized. Therefore, the goals of this research project are realized.



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## **Acknowledgements**

This graduation report is the final piece of my master thesis project in Industrial Engineering and Management Science. Ten months of research within Neways preceded the finalization of this report. These months have proven to be one of the most challenging and instructive periods of my study at the Eindhoven University of Technology. The research goals of this project could not have been accomplished without the help of many. Therefore, I want to thank those who contributed to my research project.

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Bas Klerkx

Eindhoven, July 2005

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## Introduction

Collaboration between organizations is gaining popularity. An increasing number of firms realize that their strategic position can be improved through collaboration (Hitt et al. 2001). By pooling their resources and capabilities with those of others, organizations can initiate projects that they could not have successfully done by themselves (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000).

For Japanese firms, collaboration with other companies in networks has been a normal element of corporate strategy for quite some time now. For instance, Toyota's network is known as the 'Toyota group' and Toyota openly promotes a philosophy within the Toyota group called 'coexistence and co-prosperity' (Kyoson kyoei in Japanese) (Dyer & Nobeoka 2000). This reflects the assumed power that collaboration can unleash.

Suggested is that an improvement of the strategic position can also be realized through collaboration among organizational units that are part of a single firm. Such a firm is called a networked organization. Thus, a networked organization is comprised of multiple smaller organizational units that find their competitive strength in complementing each other through collaboration (Bartlett & Ghoshal 1993, Hatch 1997).

But collaboration within networked organizations is not without problems. Organizational units have to cope with many kinds of difficulties to gain from collaborating with other units inside the networked organization (Bartlett & Ghoshal 1993, Tsai 2000). Collaboration fails due to several divergent reasons, for instance conflicting interests (Dyer & Nobeoka 2000), a lack of complementarity (Dyer & Singh 1998), or the absence of a certain chemistry, commitment or culture (Eisenhardt & Schoonhoven 1996, Tsai & Ghoshal 1998).

This report is the result of a project that deals with problems related to realizing collaboration among operating companies of an organization named Neways. The philosophy is that through realizing collaboration among operating companies, Neways can improve its strategic position (coexistence and co-prosperity) (Bartlett & Ghoshal 1993, Dyer & Nobeoka 2000). Thus, this paper is concerned with how to build a networked organization.

The project is structured in three phases. Each phase is dealt with in one or more chapters. The phases of the project, with related chapters are presented in figure I.1.

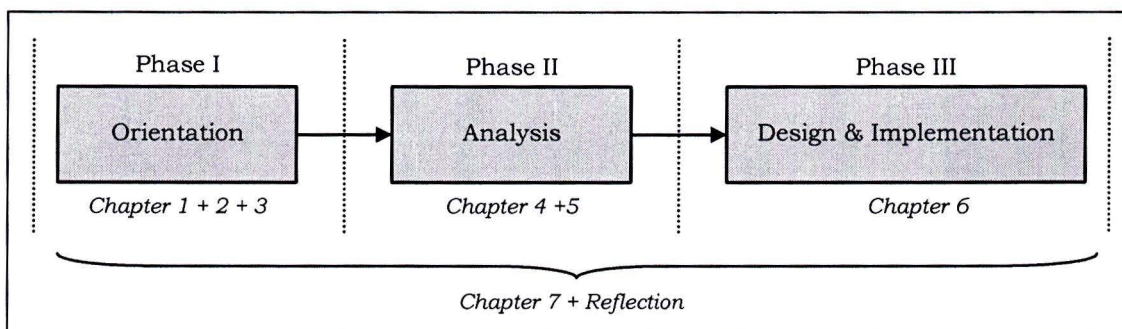


Figure I.1: The project phases with related chapters

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Chapter 1 provides the research context by introducing Neways Electronics International and its operating companies. The research project is formulated in chapter 2 by presenting the problem definition and research goals. Chapter 3 describes the used research methodology, which includes the research questions and research model. Next, the theoretical framework of this project is introduced in chapter 4, while chapter 5 focuses on the measurement of important elements of the introduced framework, based on these findings conclusions are drawn. These conclusions form the basis of recommendations, which are presented in chapter 6. Overall project findings and conclusions are given in chapter 7. Finally, in the reflection, some personal thoughts concerning this project are shared.

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# 1 Company Description

The research project is executed at Neways Electronics International N.V., which is the holding of Neways. In this chapter Neways is introduced. Attention is given to the firm's products and market segments, some company figures and its strategy (§ 1.1). Neways is comprised of multiple operating companies, information concerning these companies is also presented (§ 1.2).

## 1.1 Neways Electronics International N.V.

Neways, a company listed on the Euronext Amsterdam Exchanges, is an internationally operating supplier of industrial and professional electronics. The Neways holding is established at the Science Park Eindhoven in Son (Netherlands). It was founded in 1969 and is now one of the largest players in its niche market in the Netherlands with a turnover of almost €190 million in 2004. Because of its international orientation, Neways has expanded its operations to Germany, Slovakia and China. Neways is but a middle-sized player worldwide (47<sup>th</sup> place of electronic manufacturing services providers in the world, ranked by sales according to Tuck 2003).

### *Products and market segments*

Neways operates in the market for electronic contract manufacturing (ECM). Its core activities are assembly processes involving the placement of electronic components on printed circuit boards (PCBs), which results in printed circuit board assemblies (PCBAs). Printed circuit board assemblies are used in nearly any product containing electronics. Neways focuses on industrial and professional applications, like PCBAs used in wafer steppers or medical scanners. Neways is also active in the market of system assembly, electronics assembly (devices), cable systems and microelectronics. An important characteristic of Neways its products is their long life cycle compared to products for the consumer market. Neways delivers its products and services to original equipment manufacturers (OEM), such as Philips, ASML, Lucent and to other industrial suppliers. The products of Neways are used in segments such as semiconductors, medical equipment, telecommunications and the automotive industry. These markets are characterized by small to medium-size required volumes and high product complexity. Figure 1.1 shows an example of a system and a printed circuit board assembly.

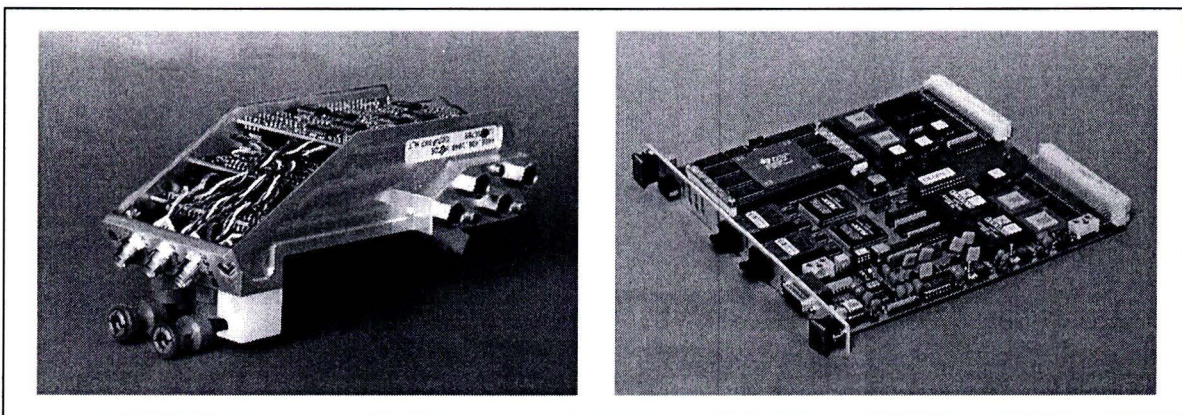


Figure 1.1: Example of a system and a printed circuit board assembly

## Company in figures

Some of the markets in which Neways operates are very volatile, like the semiconductors market. Neways was struck hard by the recession in the semiconductor market in 2002. This resulted in a decrease of turnover, negative net results and downsizing of operations. Neways was able to improve its financial position in 2004. Corporate figures, including the net turnover and number of employees of the last years, are presented in the following table.

Year	2000	2001	2002	2003	2004
Net turnover (€1.000.000)	219,9	201,9	154,7	136,5	189,7
Net result (€1.000.000)	3,1	-21,1	-4,0	-1,7	4,6
Employees (number)	2030	1837	1638	1563	1836
Net turnover / employee (€1.000)	126	135	125	127	103

Table 1.1: Neways in figures (source Neways annual report 2004)

## Strategy

Positioned between powerful OEM customers as ASML and Philips and large component suppliers as Tyco, the main focus of Neways is on mono-products and cost efficiency. Neways only has a very limited amount of own branded products or services. In essence it provides production and engineering capacity to customers. The main focus is on production. These are characteristics of a jobber (van Gunsteren 1992). But a change in the strategic position of Neways is becoming visible. In recent years, investments have been made in activities on fields like engineering. An integration process has been started with OEM customers of Neways. In this process Neways is slowly taking over outsourced activities as component management and engineering. These are activities with a presumed higher added value than mere production. This change process can be seen throughout the ECM market (Derix 1998, Hunt & Jones 1998, McIvor & Humphreys 2004). Neways is also launching its first own branded services.

The mission statement of Neways is formulated as follows: "In close co-operation with its customers, Neways is leading to develop and implement customized electronics solutions" (Neways annual report 2004). The words 'offering solutions' refer to the fact that Neways wants to be involved in the entire life cycle of a product. The life cycle of PCBAs, systems, electronics assemblies, cables and microelectronics can be presented as in figure 1.2.

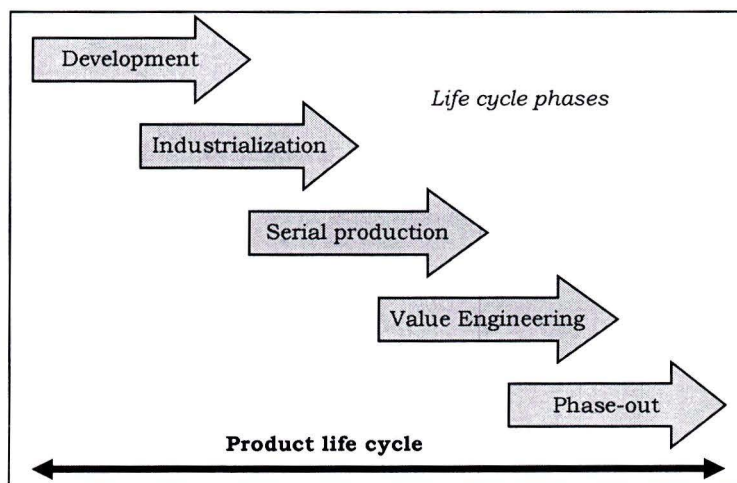


Figure 1.2: The product life cycle

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The definition of the product is created in the development phase. In this phase the application of new technologies is important. This results in a concept design of the product. Next the product enters the industrialization phase, in which the product is prepared for production in series. A detailed design (including lay-outing of PCBAs) is made with instructions for production. An important activity in this phase is the fabrication of prototypes. The product can enter the serial production phase when it is stable. The product is now ready for production in larger batch sizes. After a certain period of time in serial production, the product can enter the value engineering phase. In this phase new technologies and methods are applied to existing products to improve quality and costs. The product is moved to the phase-out phase, when improvement of the product itself is no longer relevant. The most important aim in this phase is to minimize costs. Transferring the product to low-wage countries like Slovakia or China is generally seen as a logical option (Kilpatrick & Bhangui 1997).

As mentioned earlier Neways still has many characteristics of a jobber. Neways only has a very limited amount of own branded products or services. In essence it provides production and engineering capacity to customers. The main focus is on production (van Gunsteren 1992). The majority of its turnover is realized in the serial production and logistics phases. But Neways wants to be active in all above mentioned phases of the product life cycle, in order to offer 'total solution' to its customers. Thus, Neways wants to leave its jobber existence behind. That is why Neways is expanding its activities in the industrialization and value engineering phases. In marketing terms, controlling the complete life cycle of a product is called 'life cycle management'. The majority of the costs of a product are determined in the beginning of the product life cycle. This makes life cycle management even more important for Neways (McIvor & Humphreys 2004). Being a player involved in the complete life cycle of a product, Neways tries to reduce the total cost of ownership of its products. This is done by applying knowledge from the latter phases of the product life cycle in the design and industrialization phases (Derix 1998, Ferrin & Plank 2002, McIvor & Humphreys 2004).

It is also possible to offer 'total solutions' to customers by providing completer products or even full systems (Derix 1998). This is done by integrating microelectronics or PCBAs and cables into a larger system or electronic assembly (device). The advantage for the customer is that a complete product can be purchased from one provider, making it possible for the customer to fully concentrate on its own core capabilities (Derix 1998).

In the past, management recognized that Neways alone did not possess all required capabilities to successfully enfold life cycle management and to become a full system supplier. The organization was mainly focused on serial production of PCBAs. Therefore and because of other reasons, Neways began to acquire companies with specific capabilities in the product life cycle and in full system assembly. An engineering and design service company was added to the group and companies specialized in system assembly were acquired. Activities were also expanded to the technological fields of cable & wiring and micro-electronics. The capabilities of these acquired companies can be connected to each other through collaboration. By aiming for collaboration among its operating companies, Neways tries to implement the 'total solution' principle. Realizing collaboration therefore means making first steps in fields like life cycle management, total cost of ownership and full system supply. By doing so, Neways is trying to improve its strategic position.



## 1.2 Neways operating companies

Neways is a conglomerate firm and has eight operating companies (OCs) in the Netherlands, two in Germany, two in China and one in Eastern Europe. Neways started to expand its activities in 1992 through acquisitions. Since 1992 more than fifteen operating companies (OCs) were acquired. Today some of them are no longer part of the Neways group and others were merged and integrated in exiting operating companies. The newest and largest group member is Neways Advanced Application (formally Stork Electronics), it was acquired in 2004. The majority of the OCs are active in the production of printed circuit board assemblies. Figure 1.3 shows an overview of the Neways operating companies with related technological fields. Some OCs are active in more than one technological field and are therefore mentioned twice.

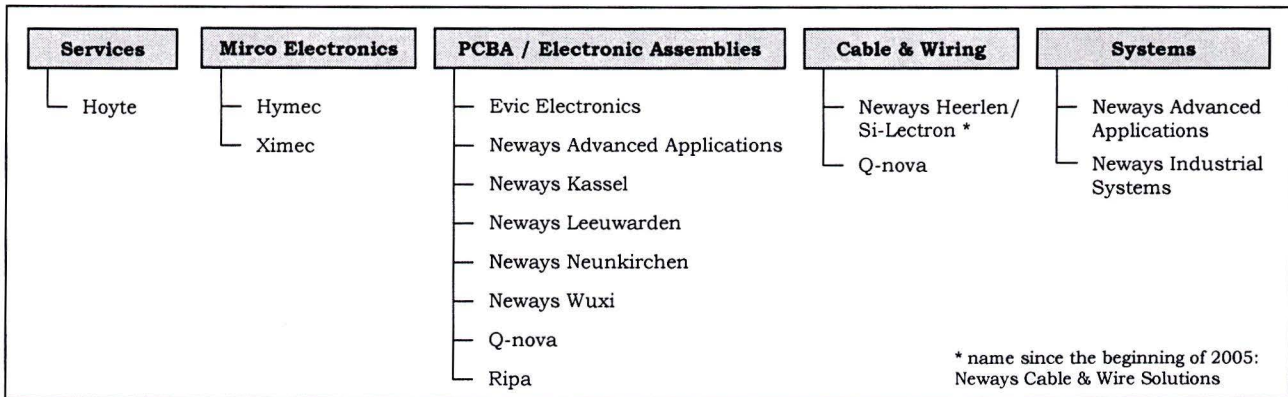


Figure 1.3: Neways operating companies and related technological fields

These operating companies are given substantial autonomy. General management is the responsibility of the management teams (MTs) of the operating companies. The OCs formulate their own strategy and business plans. The main activities of the Neways holding are in (financial) control, personnel salaries and corporate purchasing. The holding provides support in foreign operations and marketing/business development.

Besides in their technological fields, the operating companies differ from each other in size (for instance in turnover or number of employees). An overview with data on the Neways operating companies in 2004 is given in table 1.2.

\* in the six months as a part of Neways

Operating company (name)	Net turnover (€ 1.000.000)	Employees (number)	Joined Neways (year)	Location (name)
Evic Electronics	17,1	114	2000	Echt (NL)
Hoyte	2,0	18	1998	Son (NL)
Hymec	11,0	72	1998	Sittard (NL)
Neways Advanced Applications	42,9*	323	2004	Son (NL)
Neways Heerlen/Si-Lectron	22,7	69	1992/1994	Heerlen (NL)
Neways Industrial Systems	26,0	80	2000	Son (NL)
Neways Kassel	18,1	107	1996	Kassel (DL)
Neways Leeuwarden	12,6	86	1992	Leeuwarden (NL)
Neways Neunkirchen	12,4	54	2002	Neunkirchen (DL)
Neways Wuxi	0,3	147	2002	Wuxi (China)
Q-nova	3,7	331	1997	Nova Dubnica (SL)
Ripa	30,7	162	2001	Son (NL)
Ximec	1,5	193	1998	Wuxi (China)

Table 1.2: Overview of data on Neways operating companies in 2004 (source Neways annual report 2004)

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## 2 Research Formulation

This chapter presents several important aspects of the research project. First, a description is given of the events that led to the creation of this project (§ 2.1). The problem faced by Neways is defined and analyzed next, while making use of related theories (§ 2.2). The research goals and limitations are formulated in the final paragraph (§ 2.3).

### 2.1 Pre-project history

On July 19<sup>th</sup>, 2004 Neways acquired Stork Electronics, which was part of the Stork N.V. division Stork Industrial Components (abbreviated SIC, turnover of approximately € 80 million). SIC participated in a virtual organization called 'The Network Partnership', the other two participants were The Technology Partnership (TTP), a leading independent product development company located in the UK, and The Electronic Network AG (EN), which positions itself as a strong electronic full system supplier for the German market and beyond. The partnership between these companies was intended to create a class-leading supply network for the design and manufacture of mechatronic products. The Network's OEM customers could optimize their business processes by outsourcing 'life cycle management' (also see § 1.1 strategy) to a single entity, which offers expertise in all of the life cycle phases. The Network Partnership intended to work closely with OEMs at all stages of the product life cycle, drawing on TTP's strength in technology and product development, SIC's expertise and capabilities for industrialization and EN's strength in both low and high volume manufacturing and supply chain management. The Network Partnership was a success for SIC: it gained approximately € 15 million of extra turnover in 1,5 year. The life cycle phases in the electronic industry plus related network partners are shown schematically in figure 2.1.

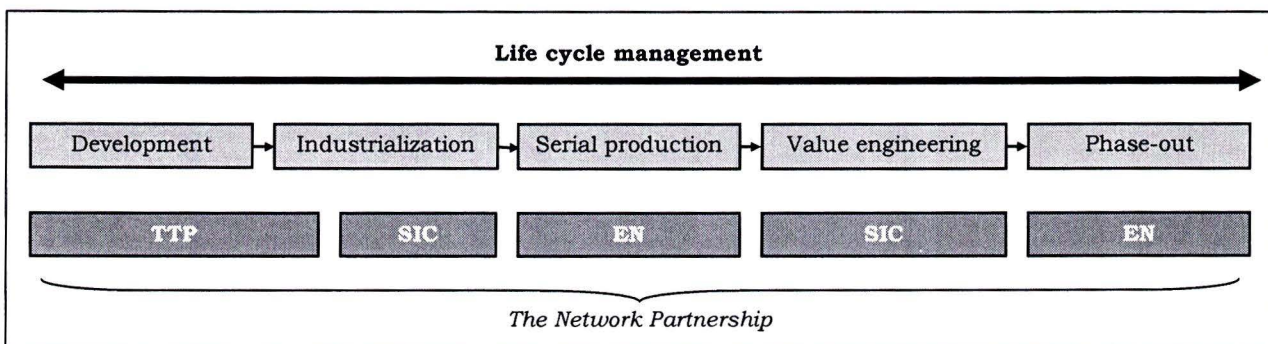


Figure 2.1: Product life cycle phases and related network partners

The Network Partnership (TNP) can be labeled as a network organization. Several scholars believe that participation of a firm in network organizations can lead to an improvement of the firm's strategic position (e.g. Jarillo 1988, Achrol 1997). Achrol (1997, p.68) states that "Successful organizations are no longer the huge, vertically integrated firms. In their place are emerging leaner, more specialized organizations that are part of a large network of close-knit alliances and partnerships with other organizations specializing in related technologies and functions. These large inter-organizational groups are more than the sum of their dyadic parts and are often referred to as network organizations".

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After the acquisition of Stork Electronics by Neways, the Network Partnership ceased to exist. Neways and Electronic Network considered themselves as competitors in the German market. The directors decided that cooperation was not an option. The new Neways operating company Stork Electronics was renamed Neways Advanced Application (NAA). After the dissolution of The Network Partnership the new operating company NAA began the integration process with the Neways organization and by doing so NAA started inserting its collaboration experience and mentality into the group.

## **2.2 Problem definition and analysis**

### ***Problem definition***

The Network Partnership shows and several scholars suggest (e.g. Jarillo 1988, Achrol 1997) that collaboration among organizations can improve the strategic position of a firm. As mentioned previously (§ 1.2), Neways comprises of thirteen operating companies, all are in possession of technological capabilities. If collaboration between Neways operating companies in technological/commercial areas is realized, the strategic positioning of the Neways group in total could be improved. In such a situation, the Neways group can be labeled as a networked organization. Bartlett and Ghoshal (1993) describe such organizations. They are comprised of multiple smaller organizational units, which find their competitive strength in complementing each other through collaboration (Bartlett & Ghoshal 1993, Hatch 1997). The terms organizational unit and operating company are used interchangeably.

By engaging in collaborations, Neways operating companies aim to enhance their performance and create value by combining their technological capabilities. By pooling their resources and capabilities with those of other operating companies, operating companies can initiate projects that they could not have successfully done by themselves (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000). If Neways Operating companies realize the opportunity for joint value creation, the networked organization can act to emphasize the individual units competitive advantage by allowing that operating company to specialize in the activities it performs best. The collaborative relationships between operating companies in a networked organization, like Neways, can be a source of its competitive strength (Jarillo 1988, Eisenhardt & Schoonhoven 1996).

As mentioned earlier offering 'total solutions' to customers is an important strategic aim for Neways. But a single Neways operating company does not have all the necessary technological capabilities to implement marketing/commercial concepts like life cycle management and full-system supply (§ 1.1 and § 2.1). Collaboration among operating companies is necessary for the Neways group in order to be able to implement its strategy. Taking the above mentioned into account, the problem currently faced by the Neways organization is formulated as follows:

There is limited collaboration among Neways operating companies in technological/commercial areas.

As a result, no advantage is taken of an important opportunity that could lead to an improvement of the strategic position of the Neways organization.

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### ***Problem analysis***

The problem manifests itself in a limited amount of joint customer projects. Operating companies seldom enter the market with joint proposals for (potential) customers. At the moment, only a few customer projects are running in which more than one operating company is involved. Even for existing customers, who do businesses with multiple Neways operating companies, limited collaboration takes place. On the other hand, operating companies seem to be competing with each other. Customers ask several operating companies for quotations. In some of these situations, operating companies are played off against each other without even knowing. The two CEOs of Neways also signal an undesirable situation. This can be concluded from their 2004 Christmas greetings letter to all employees. They state that “If we can take advantage of the synergy among Neways operating companies and are able to intensify and optimize our collaboration, then we are convinced that 2005 can become a good year for Neways”. From which is concluded that the CEOs put great value on collaboration among operating companies and wish to improve the current situation.

Problems related to realizing collaboration among operating companies are not unusual. Collaboration between two operating companies is difficult, but collaboration within networked organizations comprised of multiple operating companies offers an even greater challenge (Bartlett & Ghoshal 1993). As more actors are involved, a greater chance of conflicting interests exists, making it more difficult to realize the intended strategic goals (Brickley et al. 1997, Dyer & Nobeoka 2000). Operating companies have to cope with many kinds of difficulties to gain from exchanging technological capabilities with other units inside the organization (Tsai 2000). The frequent simultaneous collaboration and competition for corporate resources between partners can create additional complexity for operating companies facing mutual interdependence. In order to improve the strategic position of the networked organization, complementing each others technological capabilities is necessary. However, operating companies can find it difficult to complement technological capabilities because of the risk of ‘unwanted’ use of the shared knowledge, like copying (Dyer & Nobeoka 2000). Furthermore, collaboration can fail due to several divergent reasons, for instance, due to a lack of complementarity (Dyer & Singh 1998), or the absence of a certain chemistry, commitment or culture (Eisenhardt & Schoonhoven 1996, Tsai & Ghoshal 1998). Additionally, without a shared organizational identity, the centrifugal forces driving independent entrepreneurial operating companies can result in fragmentation, isolation and inter-company competitiveness to create barriers and defenses against internal flow of technological capabilities (Bartlett & Ghoshal 1993). Therefore, the following is concluded:

<p>The problem Neways faces is not unique, theory provides many reasons for failing collaboration among multiple operating companies.</p>
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In this project theory concerning collaboration is used to analyze the previously defined problem.

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## 2.3 Research goals and limitation

From the previously mentioned research problem definition and analysis can be concluded that successful collaboration is not easy to realize. While collaboration within networked organizations offers many potential benefits, the actual realization and management of collaboration proves to be difficult (Draulans et al. 2003). This gives a strong incentive to take a closer look at factors that have a positive influence on the realization of collaboration within networked organizations. Therefore, the following goals of this research project are formulated:

To gain insight in the possibility of collaboration among Neways operating companies.

To propose how collaboration among Neways operating companies could be organized.

These goals should be realized while taking into account that collaboration among operating companies should lead to an improvement of the strategic position of the Neways group in total. To support and structure this project, a framework with factors that have a positive influence on the realization of collaboration is developed. By reaching these goals, the project has the potential to contribute to a solution for one of the problems faced by the Neways organization.

Some practical limitations of the research project are made. First of all, only the eight Dutch and two German operating companies participated in this project. These are Evic Electronics (Evic), Hoyte, Hymec, Neways Advanced Applications (NAA), Neways Heerlen/Si-Lectron, Neways Industrial Systems (NIS), Neways Kassel, Neways Leeuwarden (NL), Neways Neunkirchen, and Ripa. Information from operating companies is essential for a good analysis. That is why the other three operating companies (Q-nova, Neways Wuxi and Ximec) are excluded from the project. Due to their geographic position and language differences, effective communication could have been difficult.

The main focus of this project is on collaboration in technological/commercial areas. Subjects that are specifically related to collaboration in other areas (like purchasing) are excluded. A limitation is also made to the size of the project. Real implementation of the design is not a part of this project, only suggestions for implementation are given due to time constraints.

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### 3 Research Methodology

The previous chapter introduced the main subject of this research project. It included a description of the problem Neways is currently facing and the related research goals. This chapter presents the methodology with which the research goals are to be realized. First, the research questions are formulated (§ 3.1). Next, the research model is presented, which shows how an attempt is made to find answers to the research questions (§ 3.2). The used research methodology encompasses iterative processes in which theory and practice could complement each other. It is based on several methods as described in literature (van Strien 1975, Eisenhardt 1989, Kempen & Keizer 1996).

#### 3.1 Research questions

The problem faced by the Neways organization is limited collaboration among its operating companies in technological/commercial areas (§ 2.2). As a result no advantage is taken of an important opportunity that could lead to an improvement of the strategic position of the Neways organization. This project primarily deals with the realization of collaboration within Neways. Therefore, special interest exists for the *drivers* and *enablers* of collaboration. Drivers are defined as factors that lie at the basis of collaboration. They encompass the fields on which the different parties can collaborate and the characteristics of these fields. Enablers are defined as factors that smoothen the collaboration process; they make it easier to reach the common goal. When enablers are present and drivers are not, collaboration is difficult because no field on which collaboration can take place exists. When drivers are present and enablers are not, collaboration is difficult because the process (actual interaction between parties) itself is hard. Thus, both drivers and enabler need to be present for the realization of collaboration.

Several studies address the driving and enabling factors of collaboration. For instance, Chung et al. (2000) define complementarity, status similarity and social capital as important factors in the realization of collaboration. Tsai (2000) also stresses the importance of social capital in the creation of linkages. Additionally, having good networking capabilities is mentioned as an important factor in network formation (Draulans et al. 2003).

Interesting are also the *strategic factors* that have a relation with collaboration. As was mentioned earlier, in this project collaboration is pulled into the strategic domain. It is suggested that collaboration has to lead to an improved strategic position in the market. Collaboration among operating companies has to make the total Neways organization more attractive to its environment (Achrol 1997). Several scholars dealt with strategic factors of collaboration (e.g. Orton & Weick 1990, Spekman et al. 1998), for instance Tsai (2000) stresses the importance of strategic relatedness among partners. Mentioned concepts and their presumed relations are summarized in figure 3.1.

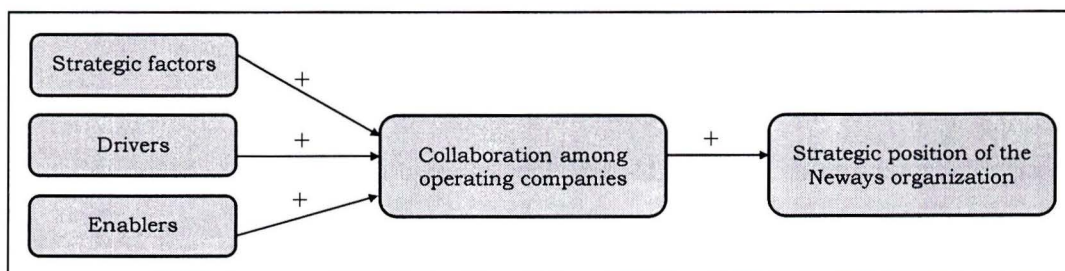


Figure 3.1: Research concepts and their presumed relations

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The theories mentioned are all valuable contributions to our research subject, but signalled is that currently no comprehensive overview of strategic factors, drivers and enablers of collaboration exists. This project aims to contribute to the creation of such an overview.

Based on an analysis of the problem (currently limited collaboration among operating companies in technological/commercial areas, § 2.2) research questions are constructed. A question is created that functions as an introduction to the remaining research questions:

**Introduction:** Why can collaboration within Neways lead to an improvement of its strategic position?

The main research questions are formulated as follows:

**1.** What are the strategic factors, drivers and enablers of collaboration within Neways for improvement of its strategic position?

Related sub-questions of research question 1 are:

**1.a.** What are the drivers of collaboration within Neways?

**1.b.** What are the enablers of collaboration within Neways?

**1.c.** What are the strategic factors of collaboration within Neways?

In order to gain insight in the possibility of collaboration among Neways operating companies, the following research question is formulated:

**2.** To what extent are above mentioned strategic factors, drivers and enablers of collaboration present within Neways?

Finally, there is a need to propose how collaboration among Neways operating companies could be organized. The related research question is formulated as follows:

**3.** How could collaboration within Neways be organized, taking into account the present state of the strategic factors, drivers and enablers of collaboration within Neways?

By answering these questions the formulated research goals are to be realized (§ 2.3).

### 3.2 Research model

A research model shows how an attempt is made to find answers to the research questions. This project is structured in three phases, namely the orientation, analysis and design & implementation phase. Finding an answer to the introducing research questions is the main activity in the orientation phase of this project. Research question 1 and 2 are answered in the analysis phase. The 3<sup>rd</sup> question is dealt with in the design and implementation phase. The project phases with related research questions are shown in figure 3.2.

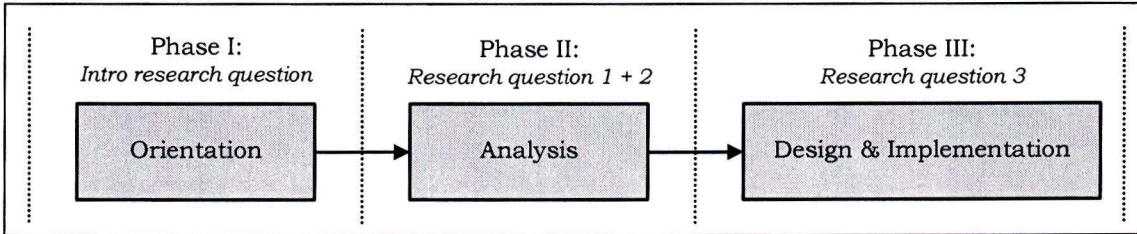


Figure 3.2: The different phases of the project and related research questions

Above mentioned phases and the related approach for answering the research questions are now discussed in more detail. A complete schematic overview can be found in appendix A.

#### **Orientation phase: approach to introducing research question**

The main goal in the orientation phase was to realize a better understanding of strategic positioning and collaboration in the industrial electronics market. This was done through six open interviews within the operating company NAA (see appendix B for names and functions of interviewees). Several subjects were discussed, like for instance, The Network Partnership (§ 2.1) and marketing concepts like life cycle management, total cost of ownership and full system supply (§ 1.1 strategy). In a parallel process, a literature research (e.g. Bartlett & Ghoshal 1993, Jarillo 1988, Eisenhardt & Schoonhoven 1996, Achrol 1997, Dyer & Nobeoka 2000) was conducted on strategic positioning and collaboration. An overview of this approached is shown in figure 3.3.

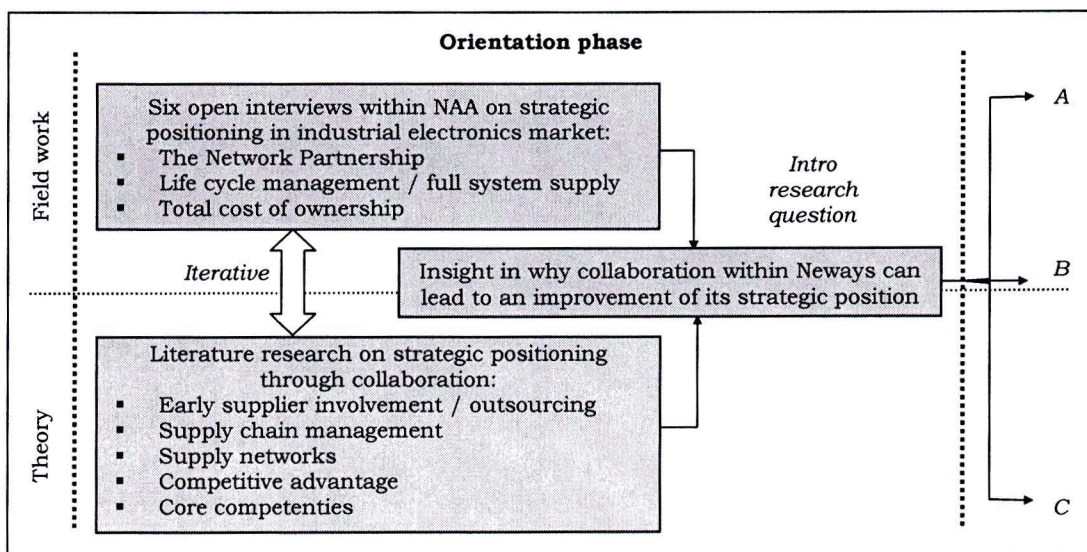


Figure 3.3: Research model part I: the orientation phase



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The findings of this phase are integrated in chapter 1 and 2. The knowledge gained helped to define and analyze the problem (§ 2.2) and helped to shed light on the research context (§ 1.1 strategy).

***Analysis phase: approach research question 1***

Research question 1 is the main question of this project and is dealt with in the analysis phase. This question was answered through a literature review and field-work. The field-work encompasses:

- Eight open interviews with employees of different Neways operating companies in management functions (names and functions in appendix B).
- Group discussions concerning collaboration within eight management teams (MTs) of Neways operating companies (names in appendix B).
- One open interview with an external senior manager with experience on (failing) collaboration among operating companies (a case description can be found in appendix C).

A summary of each interview was made, which was checked by the interviewee. The creation of a framework with strategic factors, drivers and enablers of collaboration within Neways was an iterative process. Theory (e.g. Gulati 1995, Tsai 2000, Ritter et al. 2002, Prange et al. 2004) and practice complemented each other regularly. This iterative process resulted in a framework that contains the strategic factors, drivers and enablers of collaboration within Neways. The framework is schematically represented as a construction. It consists of two layers (drivers and enablers of collaboration) and an enclosing frame (strategic factors). The general framework is presented in figure 3.4.

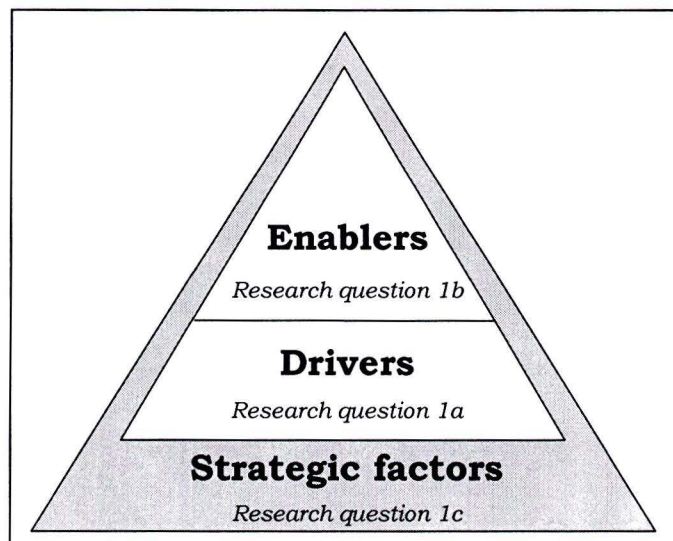


Figure 3.4: General framework with building blocks of collaboration

An overview of the approach of this first part of the analysis phase is shown in figure 3.5. Operating company is abbreviated as OC and management team as MT.

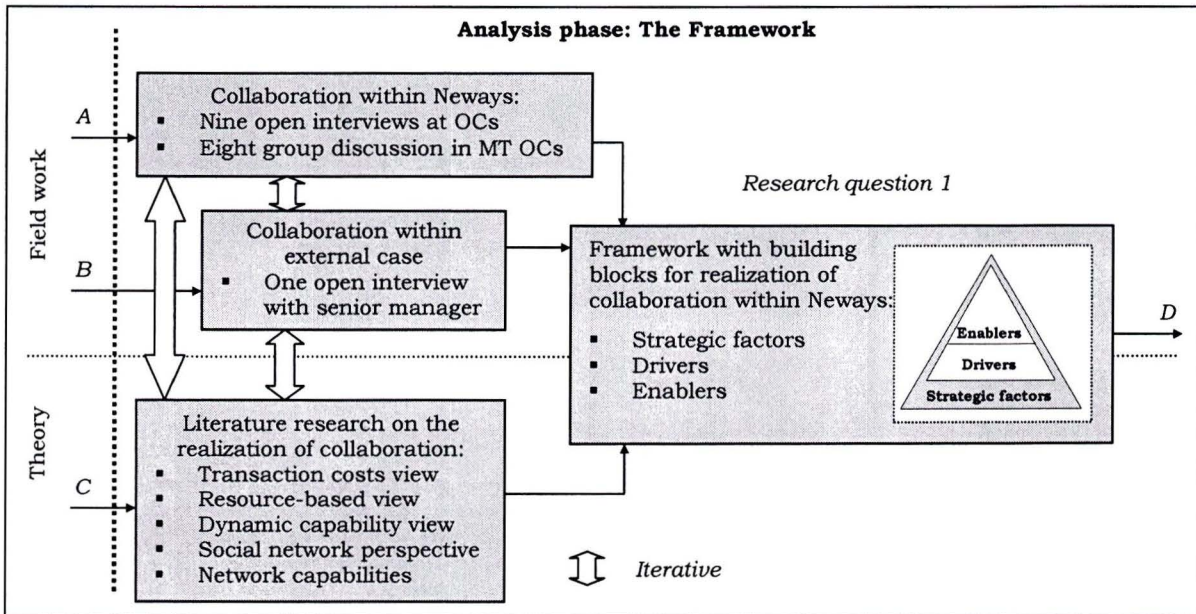


Figure 3.5: Research model part II: the analysis phase with the framework

Many theories are related to collaboration in network organizations like the mentioned Network Partnership (§ 2.1)). Some differences between networked organizations (Neways) and network organizations (TNP) are discussed in the beginning of chapter 4 to show if and how theory concerning network organizations can be applied to networked organizations (§ 4.1). The framework, which was a result from the previously mentioned approach, is presented in chapter 4.

### **Analysis phase: approach research question 2**

After the building and testing of the framework a questionnaire was created to find an answer to research question 2. The framework (figure 3.4) forms the basis of this questionnaire. Measurement should give insight into the extent that strategic factors, drivers and enablers of collaboration are present within Neways. The questionnaire is partly based on operationalizations already used in literature (e.g. Ritter et al. 2002, Tsai 2000). The questionnaire was discussed with four professionals (two from university, one from Neways and one external) and was adapted after these discussions. It was tested with one managing director of a Neways operating company. This test showed that some minor changes had to be made. After this adaptation, the questionnaire was used to gather information from twenty interviewees (names and functions in appendix B). Conclusions could be drawn from the gathered data. The approach of this part of the project is shown in figure 3.6.

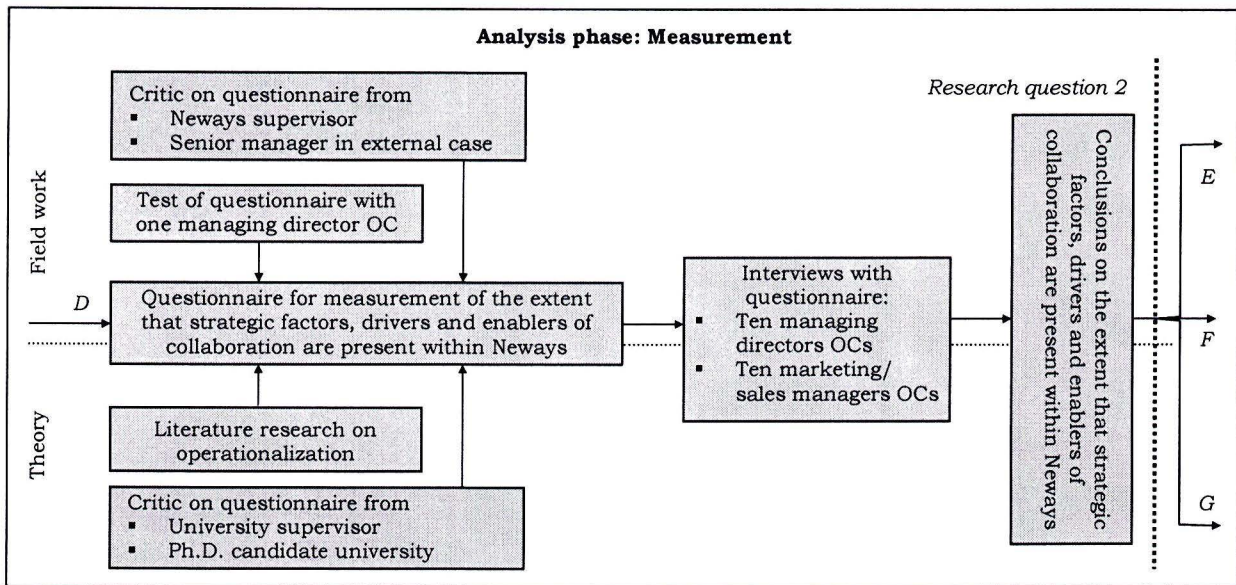


Figure 3.6: Research model part III: the analysis phase and measurement

Chapter 5 focuses on this part of the project. This chapter discusses the questionnaire itself and the results from the interviews with the questionnaire. This provides insight into the extent that strategic factors, drivers and enablers of collaboration are present within Neways.

**Design & implementation phase: approach research question 4**

The analysis phase shows which building blocks (figure 3.4) can be improved. These findings form the basis for answering research question 3, which deals with the actual organization of collaboration within Neways. The interviewed managers and CEOs were confronted with the results of the analysis and discussions took place on the recommendations for the organization of collaboration (names and functions in appendix B). A literature research was conducted to find best-practices that could help Neways to organize collaboration. Real implementation of the design is not a part of this project, only some aspects of implementation are given due to time constraints. This approach is schematically represented in figure 3.7.

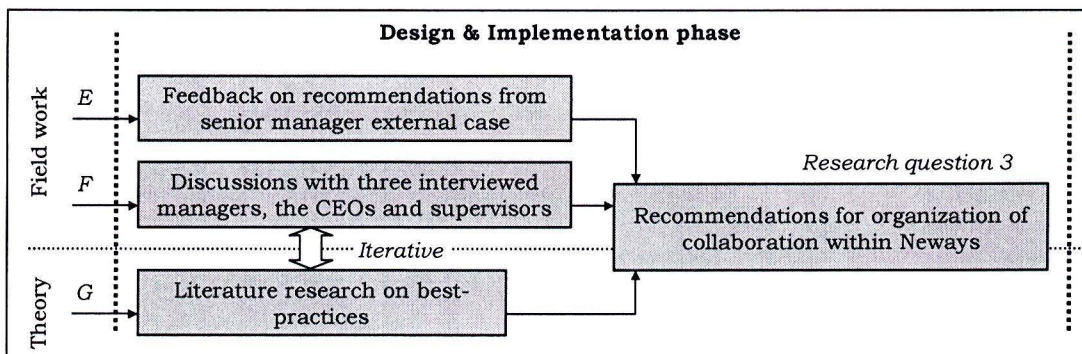


Figure 3.7: Research model part IV: the design & implementation phase

The design part of this project, which contains recommendations for the organization of collaboration within Neways, is discussed in chapter 6.

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## 4 Analysis: The Framework

This chapter presents the theoretical framework that forms the foundation of this project. The framework contains the strategic factors, drivers and enablers of collaboration within Neways. First, attention is given to the theoretical differences between network organizations and networked organizations (§ 4.1). This makes the application of theories on network organizations in a networked organization setting possible. The framework itself is introduced in paragraph 4.2. The different building blocks of the framework, being technological capabilities (§ 4.3), social capital (§ 4.4), network capabilities (§ 4.5) and overall strategy (§ 4.6), are discussed in more detail.

### 4.1 Applying theory on networked organizations

Many theories in literature are related to collaboration in network organizations, like the mentioned The Network Partnership (§ 2.1). But this project deals with collaboration in a networked organization. Some differences between networked organizations (Neways) and network organizations (The Network Partnership) are discussed here. By taking into account these differences, the assumption is made that theory concerning network organizations can be applied to networked organizations. Table 4.1 mentions four differences.

Aspect	Networked organizations	Network organizations
Group composition	More stable	More dynamic
Legal structure	Single entity	Separate entities
Decision rights distribution	More centralised	More decentralised
Role collaboration in strategy	More primary	More secondary

*Table 4.1: Four differences between networked organizations and network organizations*

Network organizations generally originated from decisions on a strategic level and can be formed in a very short time. During this formation process the group composition played an important role (Doz 1988). Network organizations are generally disbanded after a certain period of time, for instance when their purpose is fulfilled or when organizational units are no longer complementary (Duysters & de Man 2003). Therefore, group compositions within network organizations are likely to be dynamic. But networked organizations generally have a longer history and therefore have been able to grow more gradually. Group compositions that were relevant in the past can be less important today due to dynamic markets (Duysters & de Man 2003). Partners that no longer complement other organizational units cannot just leave the networked organization (Bartlett & Ghoshal 1993). It is therefore suggested that the group composition of networked organizations is in general more stable than of network organizations.

Organizational units are legally bound to each other within networked organizations. They are positioned within a holding or some similar legal construction (Bartlett & Ghoshal 1993). This is in contrast with the network organization in which the legal ties, generally written or unwritten agreements, between organizational units are less strong (Ring & van de Ven 1992).

Within a single organization, like the networked organization, decision rights are distributed along the different hierarchical layers. For instance, the power to make strategic decisions is centered at the top of the firm (the CEO or board) (Brickley et al. 1997). In general, the distribution of power and decision rights within a network organization is suggested to be less clear, because different separated organizations are involved and each organization has its own specific organizational architecture (Brickley et al. 1997).

Collaboration plays a primary role in the strategies of the organizational units within networked organizations. Organizational units in a networked organization find their competitive strength in complementing each other through collaboration (Bartlett & Ghoshal 1993). Collaboration lies at the essence of the networked organization. Within network organizations, collaboration also plays an important role in the strategies of its organizational units, but suggested is that in general this role is less essential. The primary objective of an organization that participates in a network organization is the realization of its own competitive advantage. Strategic benefits gained by other partners are suggested to be less relevant. In this situation, collaboration is mainly a vehicle with which the strategic goals can be realized.

The previously mentioned differences influence the application of theories concerning network organizations to networked organizations. In the following paragraphs, in which the building blocks of the framework are discussed, more attention is given to these differences and their implications for the framework.

## 4.2 Introduction of the framework

The framework, which contains the strategic factors, drivers and enablers of collaboration within Neways, is based on field-work and literature research (§ 3.2). In this process, theory (e.g. Gulati 1995, Tsai 2000, Ritter et al. 2002, Prange et al. 2004) and practice complemented each other regularly. The field-work encompasses of interviews and group discussions within Neways and an interview and discussion concerning an external case. A description of this case (Stork Technical Services) can be found in appendix C. The theoretical views from which the drivers and enablers originated are the transaction cost view (e.g. Williamson 1975, Jarillo 1988), the resource-based view (e.g. Eisenhardt & Schoonhoven 1996, Dyer & Singh 1998), the dynamic capability view (e.g. Hamel 1991, Teece et al. 1997) and the social network perspective (e.g. Gulati 1998, Lemmens 2003). The focus of the remaining part of this chapter is on strategic factors, drivers and enablers and their supposed positive relation with collaboration (figure 4.1).

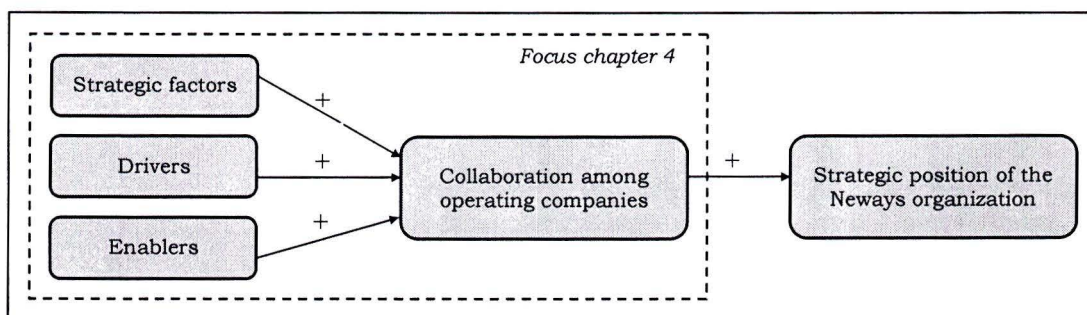


Figure 4.1: Research concepts, their presumed relations and the focus of chapter 4

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Strategic factors, drivers and enablers of collaboration are referred to as building blocks of collaboration. The foundation for collaboration in supply networks such as Neways is formed by the main drivers. Drivers are defined as factors that lie at the basis of collaboration. They encompass the fields on which the different partners can collaborate and the characteristics of these fields. In this project the drivers are related to the technological capabilities of the operating companies. These capabilities are at the roots of products and services that the operating company supplies (Prahalad & Hamel 1990). The complementarity, copyability and switching costs of technological capabilities are identified as drivers (Hamel et al. 1989, Dyer & Singh 1998, Chung et al. 2000).

Enablers are defined as factors that can smoothen the collaboration process. These enablers are categorized into two groups, namely social capital and network management. The category social capital addresses the investment in social relations to build up trust and commitment, recognizing its importance as an enabling factor of collaboration (Granovetter 1985, Gulati 1995). In this context the enabling force of transparency, group identity and prior social relations (Bartlett & Ghoshal 1993, Chung et al. 2000) is also stressed.

The second group of enablers is named network management. The possibility to combine technological and social capital of the different operating companies, in order to make the collaboration successful, depends on an organization's network management capabilities. Enablers of the group network management are therefore situated at the pinnacle of the framework. Enablers related to network management are network management task execution and the presence of a network orchestrator (Ritter et al. 2002, Prange et al. 2004). Finally, strategic factors are defined. The networked organization should be entrenched by an overall alignment of strategic goals and vision in order to make collaboration possible. The strategy functions as glue that holds the building blocks for collaboration together (Jarillo 1988, Brouthers et al. 1995, Tsai & Ghoshal 1998, Tsai 2000).

The framework or construction with building blocks of collaboration within Neways is shown in figure 4.2.

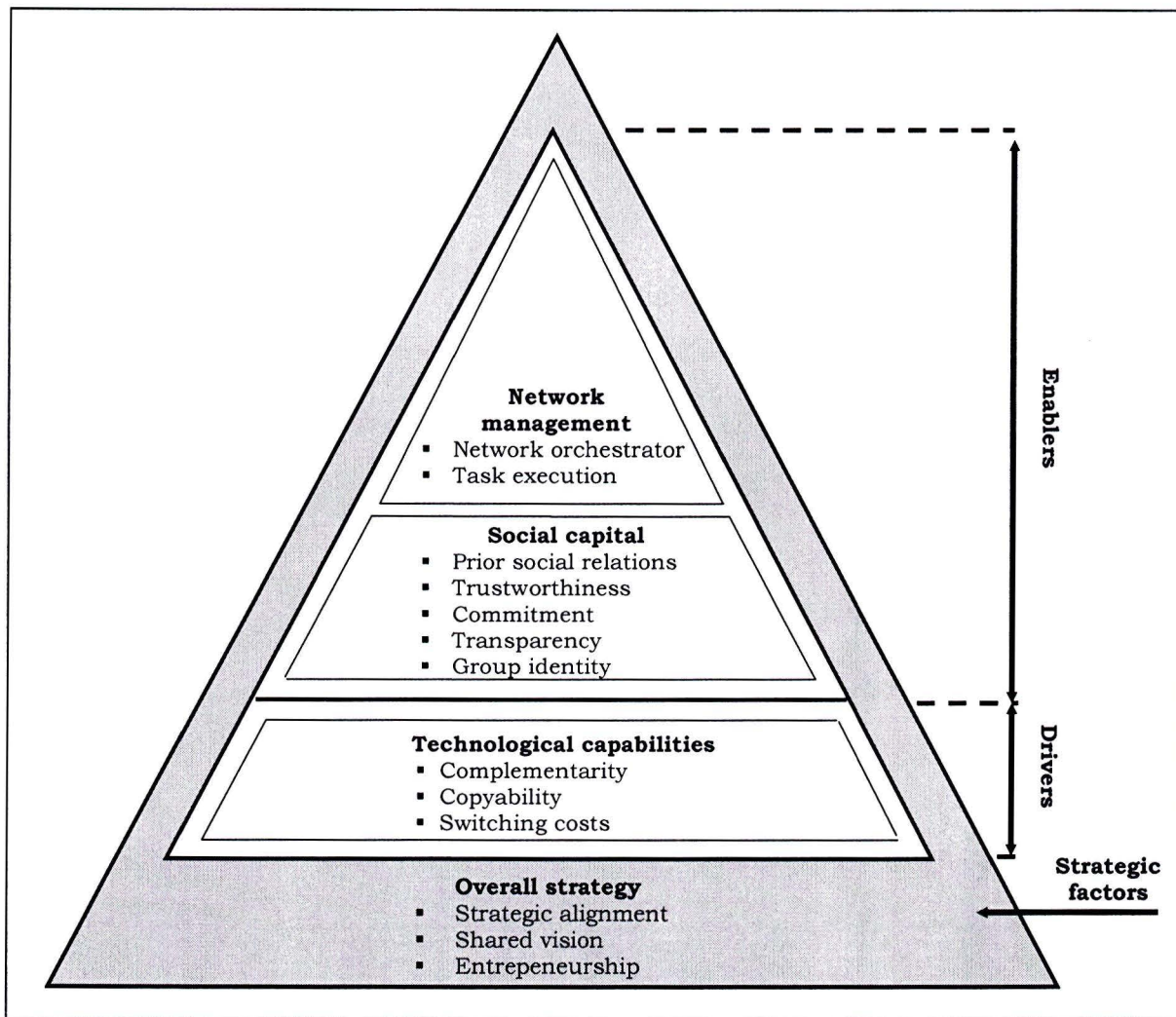


Figure 4.2: Framework with strategic factors, drivers and enablers of collaboration

Suggested is that, for improvement of the strategic position of a networked organization through collaboration among its operating companies, all mentioned building blocks of the construction need to be in order. When enablers are present and drivers are not, collaboration is difficult because no field on which collaboration can take place exists. When drivers are present and enablers are not, collaboration is difficult because the process (actual interaction between parties) itself is hard. When the overall strategic frame is weak, collaboration is difficult because of possible conflicting interests and goals. Thus strategic factors, drivers and enabler need to be present and synchronized for the realization of successful collaboration.

The terms 'organizational unit' and 'operating company' are used interchangeably. In the following theoretical overview the term 'organizational unit' is mainly used.

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### 4.3 Drivers: Technological capabilities

Drivers are defined as factors that lie at the basis of collaboration. They encompass the fields on which the different partners can collaborate and the characteristics of these fields. Technological capabilities are of importance for collaboration among operating companies in a networked organization. The three drivers of collaboration related to technological capabilities are complementarity, copyability and switching costs.

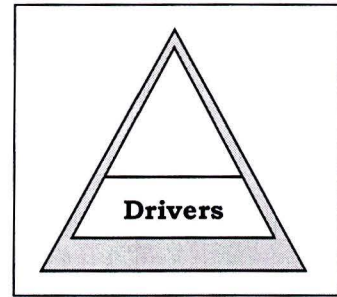


Figure 4.3: Focus § 4.3

Prahalad and Hamel (1990) introduced the concept of core competencies of a corporation, which they consider as the roots of competitiveness. These competencies are referred to as technological capabilities. An organizational unit's technological capabilities can be defined as the collective technological learning in the organization. These capabilities form the foundation from which competitive products can arise.

A networked organization can improve its strategic position through collaboration among its organizational units. By engaging in collaborations, organizational units expect to enhance their performance and create value by combining their technological capabilities. By pooling their technological capabilities with those of other organizational units in the networked organization, organizational units can initiate projects that they could not have successfully done alone (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000).

Thus technological capabilities lie at the basis of collaboration in networked organizations. Technology is the field on which different organizational units can collaborate. Still, the characteristics of technological capabilities determine if they are real drivers of collaboration. Suggested is that the technological capabilities of organizational units should be complementary to each other and hard to copy in order to drive collaboration. Also, low switching costs of technological capabilities can function as a driver of collaboration within networked organizations.

#### **Complementarity**

Ever since the work of Penrose (1959), strategic management literature has proposed that organizational units tend to create value if they access and internalize complementary capabilities. This argument extends to the realm of collaboration (Chung et al. 2000). Hamel, Doz, and Prahalad (1989) for instance, suggest that mutual gain is possible if organizational units can complement each other's weakness, since each organizational unit in networked organizations can access the complementary technological capabilities of their partner units.

Several studies have illustrated the importance of complementarity in collaborations (Chung et al. 2000, Caloghirou et al. 2003). Doz (1988) observes that the complementarity of strengths and assets between organizational units is often clear even prior to negotiations on the terms of collaboration, because it is what brings the partners together in the first place. Moreover, Gulati (1995) finds that organizational units occupying complementary niches have higher chances of initiating collaboration. Richardson (1972), in a theoretical economic account, also proposed that the presence of complementary capabilities is a key driver of inter-unit collaboration.

Complementarity of technological capabilities also means that the exchanged capabilities are of real use to the receiving organizational unit and that certain criteria such as



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acceptable quality and flexibility are met. Organizational units have an incentive to be alert to the complementarity of technological capabilities within the networked organization, because collaboration will pay off when organizational units can complement each other's weaknesses (Dyer & Singh 1998, Chung et al. 2000). Therefore, the presence of complementary technological capabilities is suggested to be an important driver of collaboration in networked organizations.

### ***Copyability***

Instead of accepting complementary technological capabilities of other organizational units in the networked organization, an organizational unit can decide to start developing the capability in-house. Thus vertical integration within a single organizational unit is realized instead of collaboration within the networked organization. In order to drive collaboration the cost of developing the technological capability internally should be higher than the external plus transaction cost (Williamson 1975, Leiblein & Miller 2003). The internal and external costs are related to the copyability of the technological capability.

The internal cost comprises of the investment in the development of the technological capability. The creation of technological capabilities is a time and capital consuming process (Pralhad & Hamel 1990). Gaining a technological capability takes collective learning in the organization units and therefore the units must have a suitable source of knowledge and sufficient absorptive capacity (Cohen & Levinthal 1990, Mowery et al. 1996).

If the technological capability is readily available externally, the investment is already made. Thus time can be saved, which can also be translated to costs. When the technological capability is very complex and hard to copy, gaining the capability externally becomes more attractive in comparison with developing the capability in-house. Therefore, the existence of hard to copy technological capabilities is suggested to be a driver of collaboration within a networked organization.

### ***Switching costs***

Organizational units in networked organizations are positioned in a larger network of organizational units. Organizational units outside the networked organization can also offer technological capabilities for exchange. Current collaboration between organizational units inside and outside the networked organization can block collaboration among units within the networked organization, because the receiving organizational unit is already complemented with the necessary technological capabilities. Organizational units invest a substantial amount of time and energy to establish these relationships with units outside the networked organization (Burt 1992). The commitment and specificity of investments required in the relationship generate sunk costs (Gomes-Casseres 1996). Therefore, changing transaction partners in the short run is not likely since it involves significant switching costs (Chung et al. 2000).

Specificity refers to investments in physical or human assets that are dedicated to a particular supplying organizational unit and whose redeployment entails considerable switching costs (Heide 1994). Examples of technology capability-specific assets include (1) organizational unit's investment in training of its own and/or the supplying organizational unit's personnel and (2) organizational unit installation of tools and equipment, production, and/or logistics processes (Joshi & Stump 1999). In these situations the organizational unit has sunk costs in the chosen technological capability of an organizational unit from outside the networked organization. Together with the switching costs that would be incurred through finding and adapting the technological capability from an alternative organizational

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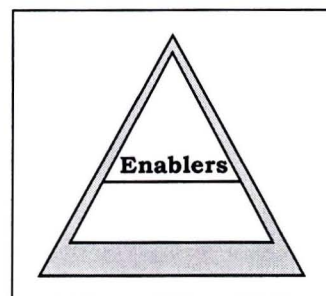
unit, this means that it will be difficult for the receiving unit to change from supplier (Joshi & Stump 1999)

The reverse is also possible. Low sunk and switching costs makes the change of supplying organizational unit from outside to inside the networked organization easier and thus functions as a driver of collaboration within a networked organization.

The assumption is made that in general the driver 'complementarity' is less strong in networked organizations compared to in network organizations, because of a more stable group composition of networked organizations (§ 4.1). Group compositions that were relevant in the past can be less important today due to dynamic markets (Duysters & de Man 2003). Partners that no longer complement other organizational units cannot just leave the networked organization (Bartlett & Ghoshal 1993), making the group less complementary in the long run. Suggested is that the drivers 'copyability' and 'switching costs' are not strongly affected by the differences between network and networked organizations.

#### **4.4 Enablers: Social capital**

The enablers are categorized into two groups, namely social capital and network capabilities. Enablers are defined as factors that can smoothen the collaboration process within networked organizations. Social capital is important for collaboration among operating companies in a networked organization. The five enablers of collaboration related to social capital are prior social relations, trustworthiness, commitment, transparency and group identity.



*Figure 4.4: Focus § 4.4*

Organizational units are situated in a network of social relations. By investing in social relations, organizational units build up social capital. Social capital captures the shared values, norms and trust between collaboration partners and is thus by its very nature dependent on history (Chung et al. 2000). As with other kinds of capital, such as plant and equipment (physical capital), knowledge and technical ability, more is generally seen as better than less. Scholars generally regard social capital, like any form of capital, as an asset that must be managed appropriately for its value is to be realized. Unlike other kinds of capital, social capital cannot be traded in an open market. Rather, it is a form of capital that can change as relationships and rewards change over time and it disappears when the relations cease to exist (Leana & van Buren 1999). Social capital has also been treated as a moral resource (Hirscham 1984), the supply of which increases rather than decreases with use (Tsai 2000).

Social capital makes it possible for organizational units to rely on both direct and indirect collaboration-experiences in partner selection (Chung et al. 2000) and hence allows them to shortcut the partnering process. In this way, social capital generates returns as it makes it easier for those organizational units to access and capture the embedded technological capabilities in their social relations (Lin 1999). By providing a shared context for social interactions, social capital enables the creation of collaborations among organizational units (Tsai 2000).

Social capital includes several components (Nahapiet & Ghoshal 1998, Tsai & Ghoshal 1998). It manifests itself in an organizational unit's position in the network of social relations and it encompasses transparency and trustworthiness. It also includes

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commitment to the relationship between organizational units and the presence of a group identity. These five components of social capital are defined as enablers of collaboration in a networked organization.

### ***Prior social relations***

An organizational unit's location in a network of social relations captures the structural component of social capital (Tsai & Ghoshal 1998). This location is determined by the prior social relations of an organizational unit. A large amount of prior social relations implies a high network centrality. In this case the reputation of the organizational unit is widely known within the networked organization, since the organizational unit is embedded in a larger network of social relations. This will enable collaboration, because there is a widespread preference for transacting with organizational units of known reputation (Granovetter 1985). In addition, Ibarra (1993) has argued that a high network centrality implies a high position in a status hierarchy and a high degree of access over valued resources (Tsai & Ghoshal 1998).

This preference for transacting with organizational units of known reputation implies that few are actually content to rely on generalized morality or institutional arrangements to guard against trouble. A organizational unit resorts to 'trusted informants' who have dealt with the potential partner and found him or her trustworthy or, even better, to information from one's own past dealings with that organizational unit (Granovetter 1985).

In the inter-organizational unit setting, suggested is that prior social relationships facilitate the establishment of future relationships (Gulati 1995) and thus enables collaboration within networked organizations.

### ***Trustworthiness***

One dimension of social capital manifests itself in trustworthiness. An organizational unit's reputation for trustworthiness is mainly determined by other units' perceptions and evaluations of the unit's integrity and reliability in inter-unit exchange (Tsai 2000). Scholars (Coleman 1990, Fukuyama 1995) have suggested that trustworthiness is an important aspect of social capital. An actor's trustworthiness signals to other parties (including both those that have interacted with the actor in the past and those that have not) its willingness to forgo short-term outcomes obtainable through opportunistic behavior (Chiles & McMackin 1996).

Several studies have challenged the traditional opportunism-based theories of the firm and have emphasized the role of trustworthiness in governing social and economic exchange (Conner & Prahalad 1996, Chiles & McMackin 1996). For instance, Jarillo (1988) sees the presence of trust as an indicator that the relationship is one of value; therefore, opportunistic behavior is less likely.

The potential benefits of collaboration within networked organizations can be achieved only if trust exists among organizational units. Between multiple organizational units, a high degree of trustworthiness is particularly important as it can achieve integration in a networked organization in which dispersed organizational units are linked to each other by more or less independent relationships (Nohria & Ghoshal 1997). An organizational unit's reputation for trustworthiness is mainly determined by other units' perceptions and evaluations of the unit's integrity and reliability in inter-unit exchange. Such a reputation for trustworthiness is an important factor that will influence a unit's preferences in selecting its exchange partners, as a unit will be more willing to exchange resources with the units that it perceives as trustworthy (Tsai 2000). Thus, trustworthiness is suggested to be an important enabler of collaboration within networked organizations.

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### ***Relational commitment***

The relational component of social capital manifests itself in commitment. The definition of Morgan and Hunt (1994, p.23) of relationship commitment is used. They define relational commitment “as an exchange partner believing that a relationship with another is so important as to warrant maximum efforts at maintaining it. That is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely”. Above mentioned is consistent with the description of Dwyer, Schurr and Oh (1987) of relational continuity between organizational exchange partners. It also has similarities with Moorman, Zaltman and Deshpande (1992, p.316) their definition of commitment: “an enduring desire to maintain a valued relationship”. However, the definition used here also suggests that organizational units are willing to invest in the relationship (Morgan & Hunt 1994).

Thus, when an organizational unit is committed to a relationship, it is willing to invest in social capital (Chung et al. 2000). As mentioned before, social capital enables the creation of collaborations among organizational units by providing a shared context for social interactions (Tsai 2000). The willingness to invest and showing this commitment to the relationship is therefore suggested to enable collaboration in a networked organization (Morgan & Hunt 1994).

### ***Transparency***

Knowledge of each others technological capabilities is needed before possible complementarity combinations of organizational units can be formed. Next, when decided is that joint action will be taken, knowledge of the own networked organization (processes, structures, hierarchies) should to be accessible for an efficient operation. This can be realized through a transparent and open attitude of organizational units (Bartlett & Ghoshal 1993, Dyer & Nobeoka 2000, Prange et al. 2004). Transparency can stimulate the flow of knowledge between organizational units. Assumed is that trust among partners can also be improved, because being transparent implies that an organizational unit is open about its strengths and weaknesses, showing its willingness to abandon opportunistic behavior (Conner & Prahalad 1996, Dyer & Nobeoka 2000). Therefore, transparency is suggested to be an enabler of collaboration within networked organizations.

### ***Group identity***

Without a shared organizational identity, the centrifugal forces driving independent entrepreneurial units, can result in fragmentation, isolation and inter-unit competitiveness to create barriers and defenses against internal flow of technological capabilities (Bartlett & Ghoshal 1993).

A shared identity establishes explicit and tacit rules of coordination (Kogut & Zander 1996). Thus technological capabilities are most effectively combined and transferred by individuals who identify with a larger collective. Creating an identity for a collective means that individual members feel a shared sense of purpose with the collective (Dyer & Nobeoka 2000). The identity of the firm is defined by the organizational boundaries which dictate who is (and who is not) a member of the organization, by shared goals and values and by patterns of interaction among individuals that give rise to a common language and common framework for action (MacDuffie & Helper 1997, Dyer & Nobeoka 2000). Group identity also manifests itself in cultural aspects like organizational customs, taboos, company slogans, heroes and social rituals (Brickley et al. 1997). A group identity and organizational norms facilitate (as a lubricant) the linkages that are required for complementation of technological

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capabilities (Bartlett & Ghoshal 1993). It is therefore suggested that the existence of a group identity enables collaboration in a networked organization.

The assumption is made that the enablers related to social capital are in general stronger in networked organizations compared to in network organizations. That is the result of a more stable group composition and the legal structure of networked organizations (§ 4.1). Due to the more stable group composition of networked organizations, organizational units generally share a longer history. Therefore, social capital with related enablers, like trustworthiness, prior social relations and group identity, were able to gradually grow (Chung et al. 2000). Due to the stronger legal ties between organizational units (Ring & van de Ven 1992), commitment is assumed to be stimulated. The legal structure of a networked organization causes problems (like bankruptcy) of a single organizational unit to easily strongly affect other organizational units. The organizational units are therefore stimulated to be committed to each other, because without a desire to maintain the relationship, they could endanger their own existence. Within network organizations the legal ties and their effects on the enablers related to social capital are suggested to be less strong.

#### 4.5 Enablers: Network management

The second group of enablers is named network management. Enablers are defined as factors that can smoothen the collaboration process within networked organizations. Network management capabilities are important for collaboration among operating companies in a networked organization. The two enablers of collaboration related to network management are network management task execution and the presence of a network orchestrator.

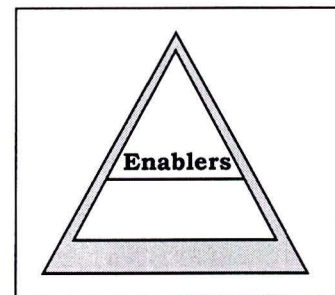


Figure 4.5: Focus § 4.5

Network management capabilities are specific capabilities involved in managing relationships (Birkinshaw 2000). This capability of managing partner relations has also been termed as 'network ability' (Håkansson 1987) and 'network capability' (Dyer et al. 2001, Draulans et al. 2003). Several scholars suggest that network management capabilities play an important role in collaboration. For instance, Duysters, De Man and Wildeman (1999: p.182) note that "strategic network management is an important source of competitive advantage, alongside the traditional company-based competencies". Others suggest that it may be that the most important success factor is not the characteristics of the collaboration but the skills of the collaboration partners in managing collaborations (Draulans et al. 2003).

Top management often lacks the administrative means for assembling technological capabilities spread across multiple organizational units, resulting in the fact that capabilities cannot reach their full potential (Pralhalad & Hamel 1990). This can be prevented by strong network management capabilities, which enable collaboration within networked organizations. Network management capabilities can be considered from an individual or organizational perspective (Ritter et al. 2002, Prange et al. 2004). From an individual perspective, recommended is that a person within the networked organization possesses certain network management capabilities (Spekman et al. 1998, Draulans et al. 2003). In this paper such a person is called a network orchestrator. On an organizational level, the degree of network management capability is defined as the degree of network management task execution (Ritter & Gemünden 2003).

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### **Network orchestrator**

A network orchestrator actively aims to manage the relationships between organizational units within a networked organization. Three categories of individual network management capabilities are defined by Prange et al. (2004), namely specialist, managerial and social skills. Suggested is that the network orchestrator should possess these skills in order to enable collaboration.

Specialist skills involve knowledge of the industry, of the own networked organization and of the involved technological capabilities. They are required in order to understand the subject matter and to convey credibility (Buckley et al. 2002).

Management skills encompass knowledge of business procedures and tools, network consciousness, being a network driver and leadership skills. A network orchestrator needs to have knowledge of business procedures and tools, especially project management knowledge and cost accountability. Being aware of the complexity of managing a collaborative relation (network consciousness) and the need to actually manage it is crucial to success. Moreover, networked organizations need a rather high intrinsic motivation as they rely less on formal contracts (Prange et al. 2004). Therefore, being a network driver is a key challenge for every network orchestrator. Finally, a network orchestrator needs to be a leader. Leadership skills such as motivating people and oneself, being pro-active (Goleman 1998), seeing the big picture, balancing risk taking and risk avoiding (Gebert 2002), creative problem solving (Mumford et al. 2000) and putting together the right team (Eisenhardt et al. 1997) are crucial in a collaborative setting (Buckley et al. 2002).

Social skills refer to a broader social setting than managerial skills. They are at the centre of inter-organizational unit relations (Ritter & Gemünden 2003). Communication skills, a partner approach and social adaptability are defined as social skills. In collaborations, communication is probably one of the most important issues. It generates knowledge, enhances creativity, and improves mutual understanding (Grant & Baden-Fuller 2004). Communication skills involves being extrovert (Gebert 2002), having fun with networking, establishing a basis for understanding between partners, integrating and moderating, finding compromises and solving conflicts (Buckley et al. 2002). In short, communicative skills influence trust between partners (see also § 4.4) (Prange et al. 2004).

Next, the network orchestrator should apply a partner approach. A partner approach comprises elements such as empathy (Buckley et al. 2002) openness (Gebert 2002), respect for the partner and the ability and willingness to learn from each other (Johnson & Sohi 2003). Finally, Prange et al. (2004) identified social adaptability, "the ability to adapt to, or feel comfortable in, a wide range of social situations" (Johnson & Sohi 2003, p.110) as a key social skill in a collaborative setting. It involves the ability to establish business relations with strangers, work in teams with people from diverse backgrounds and it indicates flexibility, which is critical in the context of collaboration (Buckley et al. 2002). A network orchestrator with these network management capabilities is suggested to enable collaboration within a networked organization. This individual is skilled in managing relationships.

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### **Network management task execution**

From an organizational perspective, an organizational unit's degree of network management capability is defined as its degree of network management task execution. It is suggested that the execution of network management tasks enables collaboration within the networked organization. Network management tasks can be divided (based on Ritter & Gemünden 2003) in tasks concerning network planning, organizing and controlling.

Network planning includes the targeting of a desirable state in the future. It involves analysis of the organizational units (technological capabilities, strengths and weaknesses) and a networked organization analysis (quality of all contributors, and fit of technological capabilities). Goal setting for the networked organization sets direction for task performance, clarifies mutual expectations and increases strategic alignment (see also § 4.6) (Das & Teng 1998).

Network organizing encompasses coordination and synchronization of activities between organizations. Organizational units involved in a networked organization need to synchronize their activities so that the activities of the organizational units are in tune with each other (Mohr & Nevin 1990). Such coordination includes the establishment and use of formal roles and procedures and the utilization of constructive conflict resolution mechanisms (Ruekert & Walker 1987, Helfert & Vith 1999). Also, resource allocation to specific relationships needs to be specified, as well as the ways of communicating between people dealing with relationships inside and outside the organizational unit (Ritter et al. 2002).

Network controlling is the final activity to be executed. This activity monitors the achievement of the planned performance targets. Control activities can be focused on an organizational unit level or on the level of the networked organization. On an organizational unit level, control can for instance be executed on contributions of personnel and quantity and quality of communication activities. Control can also be executed on the contributions of the different organizational units or performance of the networked organization as a whole (Ritter & Gemünden 2003). The primary purpose of control can be described as creating the conditions that motivate partners in a networked organization to achieve desirable or predetermined outcomes (Fisher 1995). Outcome control mechanisms include incentive systems and reward structures (Dekker 2004). These should stimulate persons and organizational units to act in the interest of the networked organization as a whole. Thus, suggested is that the execution of network management tasks enables collaboration within networked organizations.

In general the enabler 'network management task execution' is assumed to be stronger in networked organizations compared to in network organizations. That is the result of a more central distribution of decision rights within networked organizations (Brickley et al. 1997) (§ 4.1). Central management therefore has the power to more easily implement decisions (like incentive pay), which can stimulate collaboration among all organizational units. Network management task execution within networked organizations is assumed to be more efficient compared to within network organizations, because fewer parties with relevant decision rights have to be involved.

The enabling force of a network orchestrator is among other things influenced by the power he or she is granted (van Eck et al. 2005). Because of the more central distribution of decision rights in a networked organization, this power of the network orchestrator can more easily be realized. Therefore, the assumption is made that in general the enabler 'network orchestrator' is stronger within networked organizations.

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## 4.6 Strategic factors: Overall strategy

In this project, collaboration is pulled in the strategic domain (see also chapter 2). The networked organization should be entrenched by an overall alignment of strategic goals and vision in order to make strategic positioning through collaboration possible. The strategy functions as glue that holds the building blocks for collaboration together. Strategic alignment, a shared vision and entrepreneurship are defined as strategic factors.

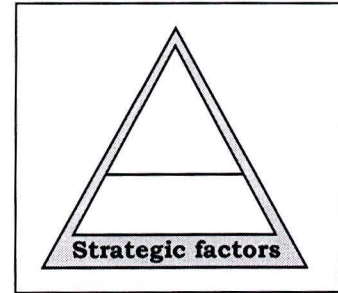


Figure 4.6: Focus § 4.6

### **Strategic alignment**

Organizational units of a networked organization generally have influence on their strategic direction. Without a strategy the organizational unit is directionless and as a consequence the possibility to realize an attractive strategic position is limited (Porter 1980). When multiple organizational units are joined in a networked organization, a joint strategy for the networked organization has to be formulated. Strategic alignment of the different organizational units is essential for reaching the preferred strategic position of the networked organization (Jarillo 1988, Brouthers et al. 1995). When the strategies of the organizational units are not aligned, there is a possibility that the goals of organizational units are in conflict, making opportunistic behavior more likely. This can lead to sub-optimization and reduces the performance of the networked organization as a whole (Bartlett & Ghoshal 1993, Dyer & Nobeoka 2000).

Spekman et al. (1998) suggest that there must be periodic reviews to assess whether there is strategic alignment between each organizational unit's strategic intent and the networked organization's purpose. In addition, Tsai (2000, p.929) states: "It is difficult to create a linkage for resource exchange between two unrelated units because of the lack of shared language and common interests, which are important for the effectiveness of their communications. When two units are strategically related, their common interests may motivate them to exchange information and resources in a way that both parties can benefit". This implies that the higher the strategic alignment between two organizational units, the higher their incentive to exchange or share their resources through an inter-unit strategic linkage. The extent that two organizational units are strategically aligned facilitates their ability to gain access to each other (Tsai 2000). This positively influences collaboration among organizational units. Thus, strategic alignment is suggested to be an important strategic factor of collaboration within a networked organization



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### ***Shared vision***

Tsai and Ghoshal (1998, p.467) state that “a shared vision embodies the collective goals and aspirations of the members of an organization”. When organization members have the same perceptions about how to interact with one another, they can avoid possible misunderstandings in their communications and have more opportunities to exchange their ideas or resources freely. The common goals or interests they share help them to see the potential value of their resource exchange and combination. As a result, organization members who share a vision will be more likely to become partners sharing or exchanging their resources (Tsai & Ghoshal 1998). Several studies have shown that a shared vision may hold together a loosely coupled system and promote the integration of an entire organization (Orton & Weick 1990).

A shared vision of members of a networked organization can thus be viewed as a bonding mechanism that helps different organizational units to integrate or to combine resources (Tsai & Ghoshal 1998). A shared vision among organizational units can positively influence collaboration. Thus, a shared vision is an important strategic factor of collaboration within a networked organization.

### ***Entrepreneurship***

Making collaboration work is also affected by the strategic attitude of the involved partners. Collaboration that stretches beyond the boundaries of the own organizational unit normally asks for an adaptation of traditional views of the firm’s environment. Instead of competing with its environment, cooperating is needed. The involved partners need to be aware that together they can offer more value than separated (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000). To achieve this value less traditional action needs to be taken. This requires an entrepreneurial attitude of partners (Hitt et al. 2001).

Strategic entrepreneurship involves identifying and exploiting opportunities in the external environment in order to achieve a competitive advantage. As such, entrepreneurial action entails creating new technological capabilities or combining technological capabilities in new ways to develop and commercialize new products and/or service new customers (Ireland & Kuratko 2001, Smith & DeGregorio 2001, Hitt et al. 2001). Creating linkages with other organizational units with complementary technological capabilities can be seen as identifying and exploiting opportunities in order to achieve a competitive advantage (Hitt et al. 2001). Therefore, entrepreneurship is assumed to be an important strategic factor of collaboration within a networked organization.

In general, the factors strategic alignment and shared vision are assumed to be stronger in networked organizations compared to in network organizations. That is the result of a more central distribution of decision rights and the more primary role of collaboration in strategies of networked organizations (§ 4.1). Due to a more central distribution of decision rights, central management can force organizational units to align their strategies. Strategic alignment and sharing a vision are also stimulated through the more primary role of collaboration in the strategy of the networked organization. This is because organizational units in a networked organization primarily find their competitive strength in complementing each other through collaboration (Bartlett & Ghoshal 1993). Collaboration lies at the essence of the networked organization. The assumption is made that the strategic factor entrepreneurship is not strongly affected by the differences between network and networked organizations.

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## 5 Analysis: Measurement

This chapter focuses on an analysis of the Neways organization. A questionnaire is used to gain insight into the extent that strategic factors, drivers and enablers of collaboration are present within Neways. The theoretical framework presented in the previous chapter forms the basis of this questionnaire. This chapter starts with an introduction to the questionnaire. The strengths and weaknesses of this data collection method and the selected target group are discussed (§ 5.1). Next, attention is given to the construction of the questionnaire (§ 5.2) and its results with related conclusions are presented (§ 5.3).

### 5.1 Introduction to the questionnaire

#### *The questionnaire as data collection method*

Instead of using a questionnaire for measurement, other data collections methods could have been used, like structured interviews. The questionnaire form is chosen because of its ease of use and its standardized nature. The same questionnaires can be used more than once, which can strengthen the research's controllability and reliability (Judd et al. 1991, van Aken et al. 2003). By using a questionnaire, results can be represented in numbers, which makes some statistical methods applicable. Because of these quantitative characteristics, the processing of data of questionnaires is generally less difficult compared to data from, for example, structured interviews (Judd et al. 1991, Jansen & Joostens 1998).

Herein lays also the danger of questionnaires. Although questionnaires give a quasi quantitative representation of the situation of interest, this does not guarantee better results compared to more qualitative approaches. Much depends on the quality of the questionnaire. For instance, are the constructs being operationalized correctly and do all interviewees interpret the questions the same (construct validity)? A low return rate is also generally seen as a problem of questionnaires. This causes generalization to be more difficult (external validity) (Judd et al. 1991, Jansen & Joostens 1998).

In order to battle some of the weaknesses of the questionnaire, action is taken. The majority of the questionnaires were not just send to individuals, but were used during interviews (70%). The other questionnaires were sent by e-mail. Prior to this, a conversation or interview had taken place with the interviewee. By doing so they got acquainted with the research subject before receiving the questionnaire. This also resulted in a 100% return rate of questionnaires.

Using the questionnaires during interviews made it possible to explain certain propositions and make additional comments when needed. In addition, there was room for discussion about dealt subjects, which enriched the data that was collected by the questionnaire. A weakness of this approach is that the interviewer can influence the interviewee and by doing so can pollute the collected data (Judd et al. 1991, van Aken et al. 2003). Special attention is paid to this possible danger to reliability in order to prevent its occurrence.

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### **The target group**

Ten operating companies participated in this project. These are Evic Electronics (Evic), Hoyte, Hymec, Neways Advanced Applications (NAA), Neways Heerlen/Si-Lectron, Neways Industrial Systems (NIS), Neways Kassel, Neways Leeuwarden (NL), Neways Neunkirchen, and Ripa. Employees, who are suspected to be acquainted to strategic subjects, like the managing directors and persons responsible for sales/marketing of the ten participating operating companies were asked to fill in a questionnaire. A list of names of these twenty interviewees is added in appendix B. These employees have the greatest influence within the operating companies concerning the realization of collaboration and they are the individuals who have to deal with collaboration a lot when realized.

The target group is not enlarged by, for instance, the production managers, because the costs outweigh the benefits. This is mainly due to time constraints. The interviewed are assumed to have sufficient knowledge of the own operating company's technological capabilities. From the scores of 20 questionnaires (10 directors and 10 persons responsible for sales/marketing) averages are calculated. The target group size was too small for application of other statistical methods.

## **5.2 Construction of the questionnaire**

### **The construction in general**

The strategic factors, enablers and drivers and their supposed positive relation with collaboration were discussed in chapter 4. Here, the focus is on the operationalization of these constructs (like complementarity, commitment and shared vision). Figure 5.1 shows the main focus of this chapter.

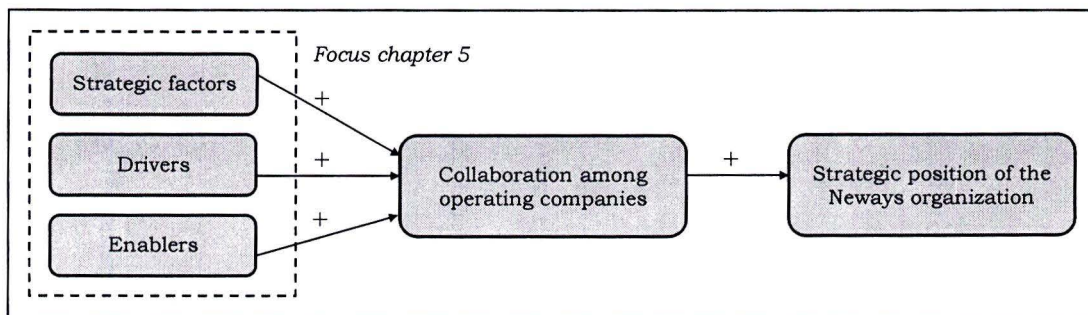


Figure 5.1: Research concepts, their presumed relations and the focus of chapter 5

The aim is to realize satisfactory construct validity. Construct validity is the extent that the constructs of theoretical interest are successfully operationalized in the research (Judd et al. 1991). Because one cannot literally put a finger on any of these constructs to measure them, concrete representations must be found that approximate what is meant when one speaks of such concepts. Variables are representations of constructs. They cannot be synonymous with a construct because any single construct can have many different variables. Therefore, variables are partial representations of constructs, and they are worked with because they are measurable. They suggest ways in which one can decide whether someone signals more or less of the construct (Judd et al. 1991).

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Besides providing definitions of the constructs, chapter 4 also provided input for the variables that can be used for measurement. Additional literature, in which examples of operationalizations of related constructs are presented, is used to strengthen the operationalizations. For instance, Tsai (2000) provides input for the operationalization of the enablers 'prior social relations' and 'trustworthiness' and the strategic factor 'strategic alignment'. Additionally, Tsai and Ghoshal (2000) present examples of operationalizations of trustworthiness and shared vision. Network management capability is already been measured empirically in Germany using a standardized questionnaire (Ritter et al. 2002). The empirical data has shown that network management capability can be measured. Some of the operationalizations used in the questionnaire of this study are adapted from the work of Ritter et al. (2002).

For each strategic factor, enabler and driver at least one proposition is formulated. The interviewees indicate to what extent they agree with this proposition. Assumed is that by doing so the related variable is being measured. These variables are to represent the underlying construct for an important part. In order to strengthen the measurement generally more than one proposition for each construct is formulated (Judd et al. 1991, van Aken et al. 2003). Each proposition is to be evaluated on a Likert scale. This Likert scale contains five categories that can be ordered by rank on a continuum.

The scale used for answering the propositions of the questionnaire is as follows:

Completely disagree	1
Mainly disagree	2
Neither agree nor disagree	3
Mainly agree	4
Completely agree	5

All propositions are formulated in a positive direction, meaning that by giving a high score to a proposition, the interviewee is suggested to indicate that he or she believes that the underlying strategic factor, enabler or driver is present. Thus, an average response of 5 is suggested to be very positive for the realization of collaboration among the Neways operating companies. A middle category is included because it does not provide a possible escape route. It is still possible to draw conclusions when the middle category is selected (Jansen & Joostens 1998). The propositions are formulated on a general and abstract level, because all ten participating operating companies had to be able to give an answer. Some of the used concepts in the questionnaire are explained in more detail during the interviews. In each interview the same explanation is given.

Consulting experts can enhance the construct validity (van Aken et al. 2003). Therefore, the questionnaire is discussed with four professionals (two from university, one from Neways and one external). It is adapted after these discussions. The questionnaire is tested with one managing director of a Neways operating company, which showed that some minor changes had to be made before its actual usage. In total, 37 propositions are formulated in order to measure 13 strategic factors, enablers or drivers. Appendix D shows the Dutch questionnaire with propositions, which is used for data collection during the interviews. The interviewee scored each propositions by themselves, generally after a short discussion or explanation.

## The propositions

The building blocks of the framework for collaboration with their related proposition numbers are shown in table 5.1. The enabler ‘group identity’ is being measured with only one proposition, this is a weakness. But suggested is that the other propositions of social capital indirectly provide additional insight in the presence of a group identity within Neways. Network management task execution is being measured with relatively many propositions (ten in total). This is a result of the multi-dimensionality of the concept. As mentioned earlier (§ 4.5), network management tasks can be divided in network planning, organizing and controlling activities (Ritter & Gemünden 2003). For each of these activities propositions are formulated in order to find out if they are executed within Neways. Theory concerning the network orchestrator also provided much possible propositions. Only two general propositions are used for the measurement of the existence of a network orchestrator, because more specific propositions would deal with very personal characteristics of individuals within Neways, which is undesirable in this research context. The two general propositions concerning overall strategy are related to the factors ‘strategic alignment’ and ‘shared vision’, this justifies the measurement of these factors with only one proposition each.

Building blocks of framework		Proposition numbers									
<b>Drivers</b>	<b>Technological capabilities</b>										
	▪ Complementarity	2	3	5	6						
	▪ Copyability	4	7								
	▪ Switching costs	8	9								
<b>Enablers</b>	<b>Social capital</b>	19									
	▪ Prior social relations	17	18								
	▪ Trustworthiness	11	12								
	▪ Commitment	15	16								
	▪ Transparency	1	13	14							
	▪ Group identity	10									
	<b>Network management</b>										
	▪ Network orchestrator	25	31								
▪ Network management tasks	20	21	22	23	24	26	27	28	29	30	
<b>Strategic factors</b>	<b>Overall strategy</b>	32	33								
	▪ Strategic alignment	34									
	▪ Shared vision	35									
	▪ Entrepreneurship	36	37								

Table 5.1: Building blocks of the framework with related proposition numbers

For sixteen directors and persons responsible for sales/marketing of Dutch operating companies a questionnaire with Dutch propositions is created. With help of a German university student in marketing, the questionnaire is translated to German for the four representatives of the German operating companies. Appendix E shows the German questionnaire with propositions. Some additional remarks, which are also made during interviews with the Dutch participants, are added to this questionnaire. A digital version is send by e-mail to the German participants. The responses to the German and Dutch forms with propositions do not significantly differ. This could indicate that the translation is successful.

### 5.3 Results and conclusions

Strategic factors, drivers and enablers of collaboration are referred to as building blocks of collaboration. The framework with building blocks of collaboration within Neways is shown in figure 5.2. This framework can also be seen as a construction with a foundation (drivers), several building layers (enablers) and an enclosing frame (strategic factors). This metaphor is used to ease the formulation of conclusions.

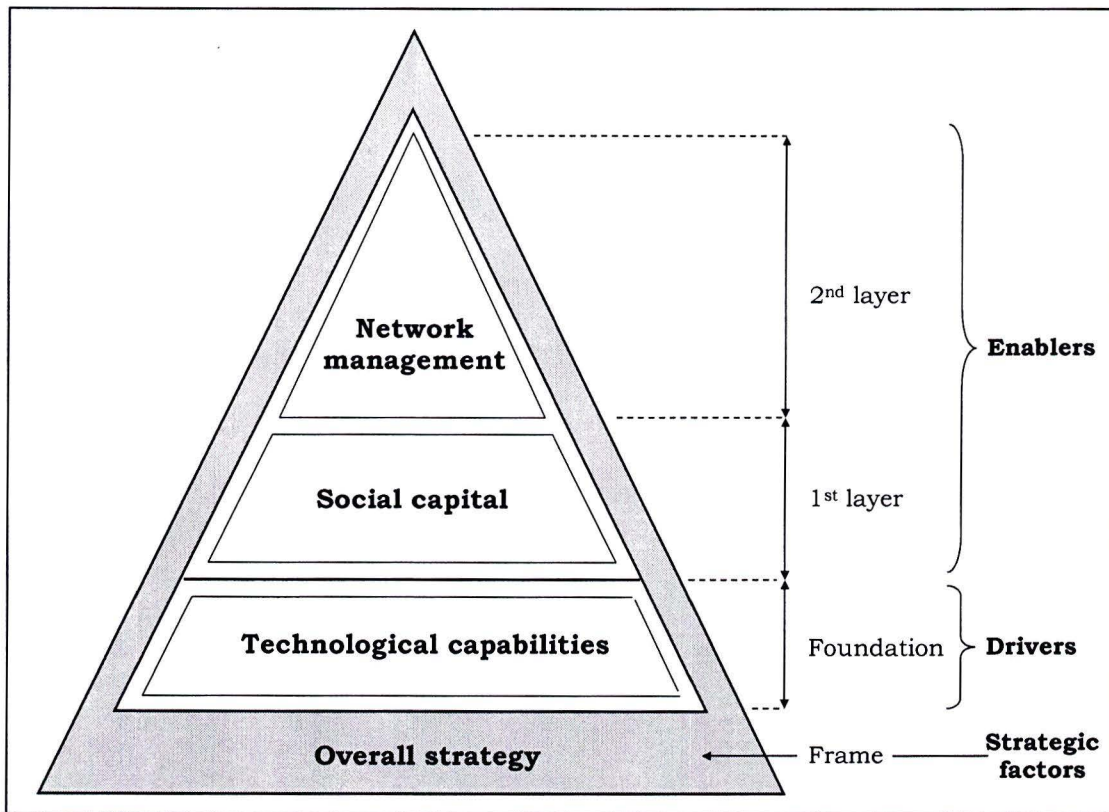


Figure 5.2: Construction with strategic factors, drivers and enablers of collaboration

In the following, reference is made to the scores of the questionnaire. (P02: 4,0) means that the average answer to proposition 2 of the questionnaire (the technological capabilities of my operating company can theoretically complement the technological capabilities of other operating companies) is 4,0 and this corresponds to the answer possibility 'mainly agree'. As mentioned earlier, all propositions are formulated in a positive direction, meaning that by giving a high score to a proposition, the interviewee is suggested to indicate that he or she believes that the underlying strategic factor, enabler or driver is present. Thus, an average response of 5 is suggested to be very positive for the realization of collaboration among the Neways operating companies. A list with Dutch and German propositions can be found in appendices F and G. The scale used for answering the propositions is shown in the previous paragraph (§ 5.2).

Appendix H presents the average scores for each proposition and the percentage of the twenty interviewees that gave a specific score. Figure 5.3 shows the minimum, maximum and average score for each proposition. For instance, it shows that in general the interviewees mainly agree with proposition 33 (circular axis) (the current strategy of my operating company is clear), the average score for this proposition is 4,1 (vertical axis).

For a more detailed investigation of the scores of the interviewees the usage of appendices F and H is preferred. Still, figure 5.3 provides a quick insight in the present state of the buildings blocks of collaboration. For instance, it can be seen that propositions related to network management are in general rated with relatively low values.

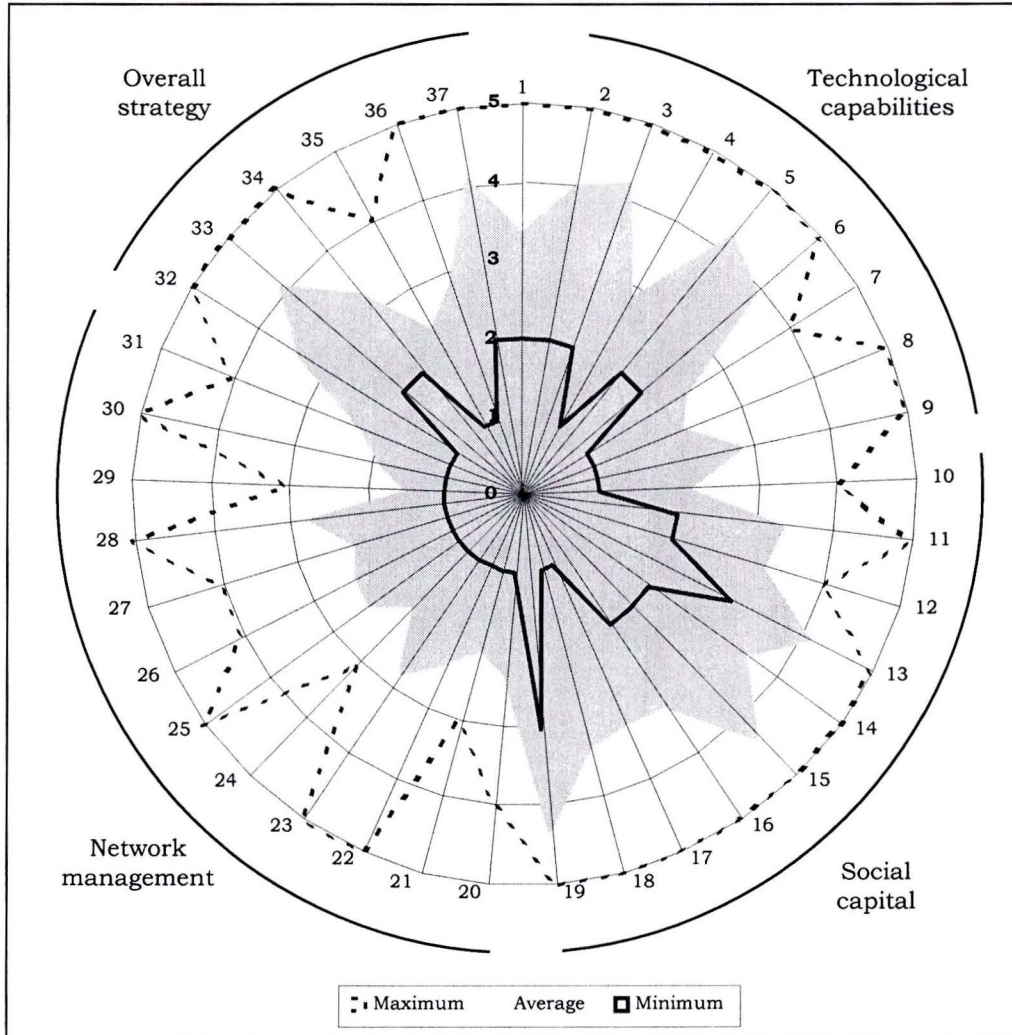


Figure 5.3: Minimum, maximum and average score for each proposition

All propositions with an average score lower than 2,1 and higher than 3,9 are used for drawing conclusions concerning the related strategic factor, enabler or driver. When the average score is more extreme the target group is more unanimous, which makes the conclusion stronger. Scores with an average around 3 are treated with more care. Attention is given to the distribution of the answers. In some cases a less strong conclusion can be drawn, in others only the remark can be made that the proposition itself was incorrect or the target group is strongly divided. Propositions 8, 9 (driver, switching costs), 17, 18 (enabler, prior social relations) and 4, 23, 36 are examples of propositions with scores from which it is hard to draw a conclusion.

Attention is also given to possible differences between scores of the directors and the persons responsible for marketing and sales. In general, the averages of these two groups do not significantly differ for the propositions related to technological capabilities, social capital and network management. Next, the scores to the propositions and the related conclusions are discussed. Operating company is abbreviated as OC.

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### **Technological capabilities**

The results show that interviewees see possibilities for OCs to complement one another on technological areas. (P2: 4,0 and P5: 4,3). Additionally, interviewees consider the offered technological capabilities as competitive in the market. The perception exists that the technological capabilities are competitive on aspects like price and quality (P3: 4,2 and P6: 4,0). Therefore, the following can be concluded concerning technological capabilities:

The foundation of the construction for collaboration is rather in order.

In general, obtaining technological capabilities from within Neways is a serious alternative for supply outside the group. However, interviewees indicate that their knowledge of the technological capabilities of other OCs is not extremely large (P1: 3,4). They do not really believe that the technological capabilities of other OCs are hard to copy (P7: 2,5). The following can be concluded concerning technological capabilities:

Improvement of the foundation of the construction for collaboration is desirable.

### **Social capital**

Interviewees indicate that, in general, the own OC has an open attitude (P13: 4,1) and shows willingness to invest in relations with other OCs (P15: 4,3). OCs expect to successfully collaborate with other OCs in the future. (P19: 4,3). Thus, for a part two for collaboration important social factors appear to be present. These are transparency and commitment. But the suspicion exists that some socially desirable answers are given, meaning that the situation is possibly presented more positive than in reality. This suspicion is based on own observations within Neways. But it cannot be proven easily and the conclusion is therefore based on the results as measured. Taking above mentioned into account, the conclusion is probably not very strong. The following can be concluded concerning social capital:

The 1<sup>st</sup> building layer of the construction for collaboration is rather in order.

The openness and willingness of other OCs to invest in relations however is rated less positive (P14: 3,5 and P16: 3,3). The interviewees are also not strongly positive nor negative about mutual trust (P11: 3,4 and P12: 3,2). Moreover, it can be stated that in the perception of the interviewees there is no common culture with shared norms and values within Neways (P10: 2,1). Therefore, the following is concluded concerning social capital:

Improvement of the 1<sup>st</sup> building layer of the construction for collaboration is desirable.



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### **Network management**

In this context on 'group level' means that representatives of different OCs and the holding are involved. The interviewees indicated that little attention is given to formulating common goals on group level (P20: 2,3). Following activities like planning, coordination and control on group level are performed to a limited extent (P21: 2,1 | P27: 2,2 | P31: 2,2 | P22: 2,4). On group level, OCs are barely financially rewarded for achieving common goals (P24: 2,0). Furthermore, on group level hardly any formal rules and procedures are formulated for mutual complementing technological capabilities (P29: 1,5). Interviewees do not really recognize a person on group level who has the task to link the technological capabilities of OCs (P30: 1,9). Concluded is that currently a certain amount of network management activities are hardly being executed within Neways. The following can be stated concerning network management:

The 2<sup>nd</sup> building layer of the construction for collaboration is rather weak.

### **Overall strategy**

The results indicate that for the interviewees the current strategic direction of the own OC is rather clear (P33: 4,1). For the OCs, the current strategic direction of the Neways group is less clear (P32: 3,4). Different opinions exist on the strength of the relation between the strategic direction of the Neways group and the own OC (P34: 3,3). The directors rate these propositions more positively than the persons responsible for marketing and sales. The average difference in score of these groups for each proposition is P32: 0,9 | P33: 0,9 | P34: 0,8 and P35: 0,8.

The account/commercial managers of the own OCs are more seen as consultants rather than as salespeople. (P37: 4,1). Finally, it can be stated that within Neways no real common strategic vision for the future exists (P35: 2,4). Especially because of the difference of opinion between the two groups and the importance of this last factor (common vision) the following can be concluded concerning overall strategy:

The enclosing frame of the construction for collaboration is rather weak.

An overview of the conclusions is given in figure 5.4. Each measured strategic factor, driver and enabler is labeled. A '+' indicates that the considered strategic factor, driver and enabler is rated positively and a '-' mainly negatively. Those that are considered to be rated neither clearly positive nor negative are labeled '+/-'. In order to create a readable overview this rough distinction is made. The driver 'switching cost' and enabler 'prior social relations' are not included in this overview, because drawing a conclusion from related proposition scores is difficult. For a more detailed examination of the results, the previously mentioned explanations of the conclusions and appendix H should be used.

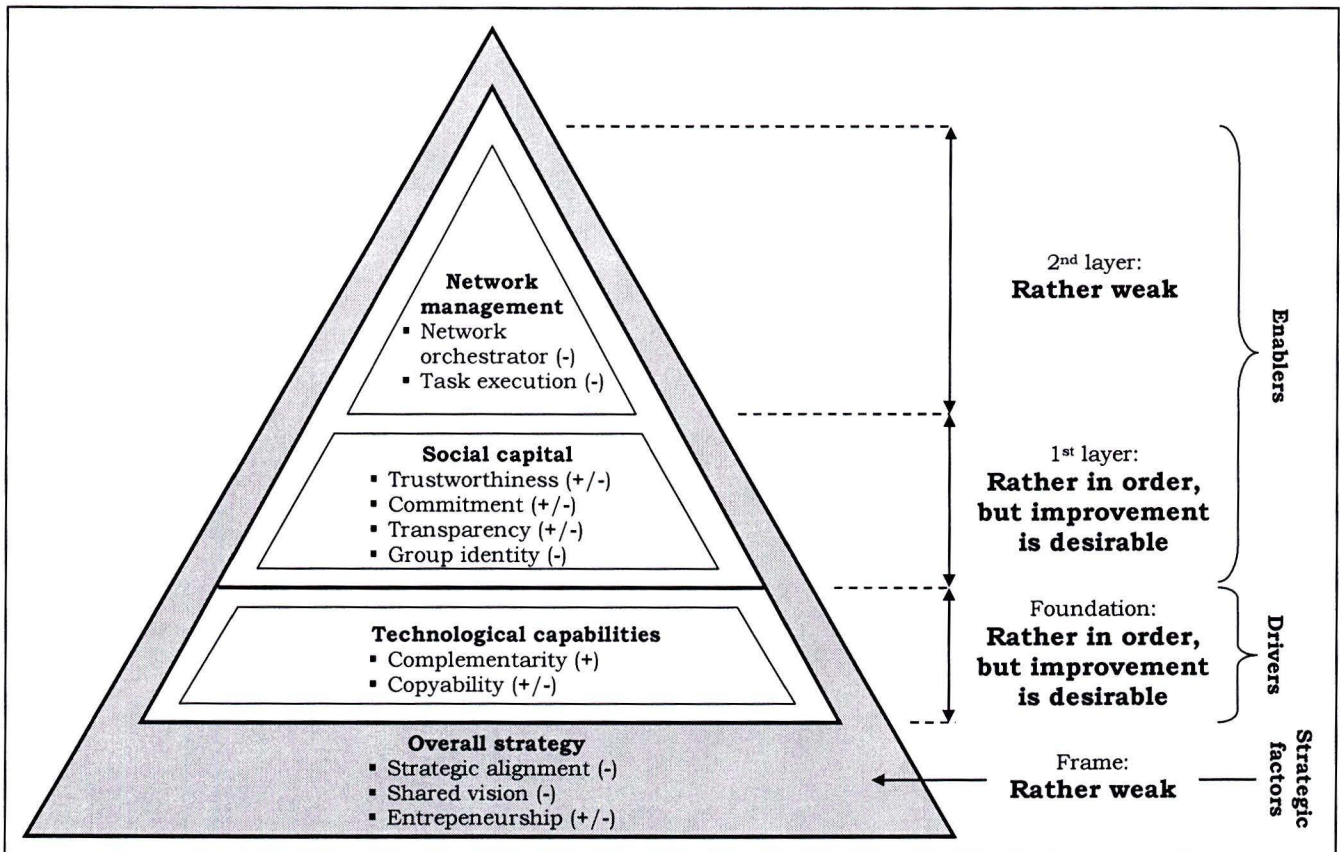


Figure 5.4: Overview of the conclusions

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## 6 Recommendations

This chapter deals with the actual organization of collaboration within Neways, while taking into account the present state of the strategic factors, drivers and enablers of collaboration within Neways. The interviewed managers and the CEOs were confronted with the results of the questionnaire and discussions took place about the recommendations for organization of collaboration (names and functions in appendix B). A literature research is conducted to find best-practices that could help Neways to organize collaboration. Several recommendations are formulated (§ 6.1 until § 6.4). While formulating these recommendations, the theoretical differences between network organizations and networked organizations are taken into account. The real implementation of the design is not a part of the project, only some aspects of implementation are given due to time constraints (§ 6.5). Operating company is frequently abbreviated as OC and management team as MT.

### 6.1 Improving technological capabilities

In the short run, the foundation of collaboration can be strengthened by OCs sharing specific knowledge concerning each others technological capabilities. Special attention can be given to technological capabilities with which an OCs can realize a competitive advantage. Possible complementarities can be identified. The exchange of knowledge can be supported by the creation of a common database with information concerning the technological capabilities of OCs (Duysters et al. 1999). This might also show OCs that technological capabilities of other OCs are harder to copy than initially believed. When OCs still believe that copying of technological capabilities of other OCs is not hard, there is a possibility that currently overlap exists between technological capabilities of some OCs or that some OCs are not strongly specialized in their own specified areas.

In the long run, the foundation can possibly be strengthened by a further specialization of technological capabilities of OCs (Achrol 1997). This is especially related to the PCBA activities of Neways. More specialization of some OCs can reduce overlap, make technological capabilities harder to copy and increase complementarity (Prahalad & Hamel 1990). Large overlap contains the danger that insufficient competitive advantage is created (Eisenhardt and Schoonhoven 1996). Specialization can take place on batch sizes or specific markets. The operating companies can be structured in such a manner that none of them can ever expect to fully develop or control all required capabilities itself (Bartlett & Ghoshal 1993). Technological capabilities which, as a result, are no longer present best-in-class within a single OC, can be complemented by another specialized OC (Bartlett & Ghoshal 1993, Caloghirou et al. 2003). Overlap of technological capabilities is obvious when geographical separated markets are served. Recommended is that clear rules are created concerning this division of markets.

Important is also to actively search for combinations of PCBA and non-PCBA activities that are complementary, so that completer solutions can be offered (Derix 1998). Moreover, continuously attention must be paid to improvement of cost and quality of technological capabilities, so that complementing of Neways OCs becomes even more attractive (Bartlett & Ghoshal 1993). Additionally, a thorough inventory and analysis of technological capabilities of OCs can possibly show that certain relevant technological capabilities are missing within Neways. In this situation, total solutions (like life cycle management or full system supply) can not be optimally offered by Neways alone. In order to remedy these shortages, alliances with external firms can be formed (Duysters et al. 1999).

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In summary, the recommendations concerning the drivers of technological capabilities are:

- Share specific knowledge
- Create a common database
- Realize more specialization of operating companies
- Actively create linkages between PCBA and non-PCBA activities
- Form alliances to battle possible deficiencies

## **6.2 Improving social capital**

It is surprising that interviewees are not very positive about certain social factors concerning other OCs (like transparency, commitment and trust), but still indicate that they expect to successfully collaborate with other OCs in the future. This can be caused by a tendency of interviewees to give social desirable answers or by the fact that several interviewees joined Neways a relatively short time ago and are eager to make a fresh start.

An improvement of the first building layer of the construction of collaboration means the generation of social capital. More personal interaction between employees of OCs can strengthen the enablers related to social capital, like trustworthiness, commitment and group identity (Larson 1992, Dyer & Nobeoka 2000). All action, including economic action, is embedded in a social fabric of opportunities to interact. Interaction and ultimately collaboration are likely to happen among people who know one another or, as Heimer (1992) writes, are “friends”. These personal relationships create opportunities for collaboration by deepening awareness, trust and commitment among Neways operating companies (Larson 1992, Nohria 1992). Therefore, the appointment of one employee per OC as a liaison for collaboration with other OCs is recommended (Dyer & Nobeoka 2000). When these persons jointly accompany projects for a longer period of time, the commitment and trust between these persons will improve (Larson 1992, Nohria 1992). Next, this commitment and trust can be spread within their own OCs. These social relations can function as a source from which new relations can emerge. Because it is suggested that prior social relationships facilitate the establishment of future relationships (Gulati 1995).

The common database (§ 6.1) can also positively influence the transparency of OCs. Such a database can stimulate the flow of knowledge between operating companies. Trust among partners is assumed to grow through this flow of knowledge, because being transparent implies that an operating company is open about its strengths and weaknesses, showing its willingness to abandon opportunistic behavior (Conner & Prahalad 1996, Dyer & Nobeoka 2000). Part of being transparent is also sharing expectations within the group at the start of a relationship. Additionally, in order to improve transparency, Neways could create a manifest with the core values of the organization. This manifest clearly defines the expectation that individuals and groups would act with mutual confidence, respect and trust (Bartlett & Ghoshal 1993). Each OC can sign this manifest and by doing so shows its openness and commitment to all other group members.

The identity of the firm is defined by the organizational boundaries, which dictate who is (and who is not) a member of the organization, by shared goals and values and by patterns of interaction among individuals that give rise to a common language and common framework for action (MacDuffie & Helper 1997, Dyer & Nobeoka 2000). Group identity also manifests itself in cultural aspects like organizational customs, taboos, company slogans, heroes and social rituals (Brickley et al. 1997). The creation of a strong group identity within Neways appears to be difficult, also in the long run, because OCs are dispersed geographically and generally functioned autonomously for a long time. Because of this they were able to create their own specific cultures and identities, which are not easily adjusted

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(Hatch 1997, Johnson & Scholes 2002). Nevertheless, stimulating the group's identity is recommended, if collaboration really needs to lead to success of Neways in total (Bartlett & Ghoshal 1993). A start can be made through emphasizing that OCs should show respect for each others identity. By linking persons together for a longer time, gradually a group identity can emerge. This process can be accelerated through circulation of employees among OCs (Hatch 1997, Dyer & Nobeoka 2000). Then customs, taboos and social rituals can spread across OCs (Brickley et al. 1997). Organizing common happenings and formulating a company slogan can also contribute to the creation of a group identity (Hatch 1997, Dyer & Nobeoka 2000). Additionally, social rituals can be introduced. For instance, the possibility to present some sort of a prize once a year to two or more OCs for the best performing joint project could be investigated.

In summary, the recommendations concerning the enablers of social capital are:

- Create a group of OC liaisons
- Create a common database
- Share what is expected of each other
- Create a manifest
- Show respect for each others identity
- Organize common happenings
- Formulate a company slogan
- Circulate employees among OCs
- Present a prize for best performing joint project

### **6.3 Improving network management**

When collaboration among OCs is of strategic importance for the Neways group, an expansion of the network management activities is a logical derivative. Several matters can be implemented within a short period of time. Recommended is to intensify network management in general and to formulate a structured collaboration process. In the current Neways situation important is to take into account the autonomy of the OCs and the desire for a not too strong central management.

#### ***Network management in general***

The absence on group level of formal rules and procedures for mutual complementing technological capabilities seems to be typical for the style of management on group level within Neways. The Neways group is not so much a network wherein strong structure and a strict distribution of responsibilities plays an crucial role. Still important is to actively manage collaboration within the Neways network (Bartlett & Ghoshal 1993). Collaboration between two or more OCs can be complex. Therefore, it is recommended that certain matters are taken care of on group level (stimulation, facilitation and support), in order to ease the collaboration process (Ritter & Gemünden 2003).

Network management can be seen as combining technological and social capital of the different operating companies in order to make collaboration successful. This includes managing the building blocks of collaboration themselves (Bartlett & Ghoshal 1993). Therefore, taking action on the recommendations presented in the two previous paragraphs is an important part of network management (§ 6.1 and § 6.2). For instance, Neways should actively manage its group composition, making sure that OCs are complementary to each other (Chung et al. 2000). If insufficient complementarity exists, action could be taken like further specialization or forming alliances (Achrol 1997). On a more social level recommended is that management actively develops and nurtures organizational values (Bartlett & Ghoshal 1993).

Previously, the management of the group composition is defined as network planning (§ 4.5), it includes the targeting of a desirable state in the future. It involves analysis of the organizational units (technological capabilities, strengths and weaknesses) and networked organization analysis (quality of all contributors, and fit of technological capabilities) (Ritter & Gemünden 2003). This network planning might lead to a completely different picture of the Neways organization, then can be seen today. In the far future, Neways could be organized in specialized production facilities, which function as cost centers. One operating company, which is specialized in marketing, functions as an integrator or consultant and comprises groups of OCs that can ideally satisfy each specific market demand (Achrol 1997).

Network management is a continuous process, because technological capabilities, social capital and strategy change over time due to multiple external and internal causes (Bartlett & Ghoshal 1993). The construction of collaboration regularly needs to be inspected and if necessary strengthened in order to make collaboration successful. Research, as presented in this paper, can contribute to such an inspection.

### Collaboration process

In order to improve network management within Neways, structuring the collaboration process is recommended. A possible collaboration process with related decision rights and responsibilities is shown in figure 6.1 (Fama & Jensen 1983, Brickley et al. 1997).

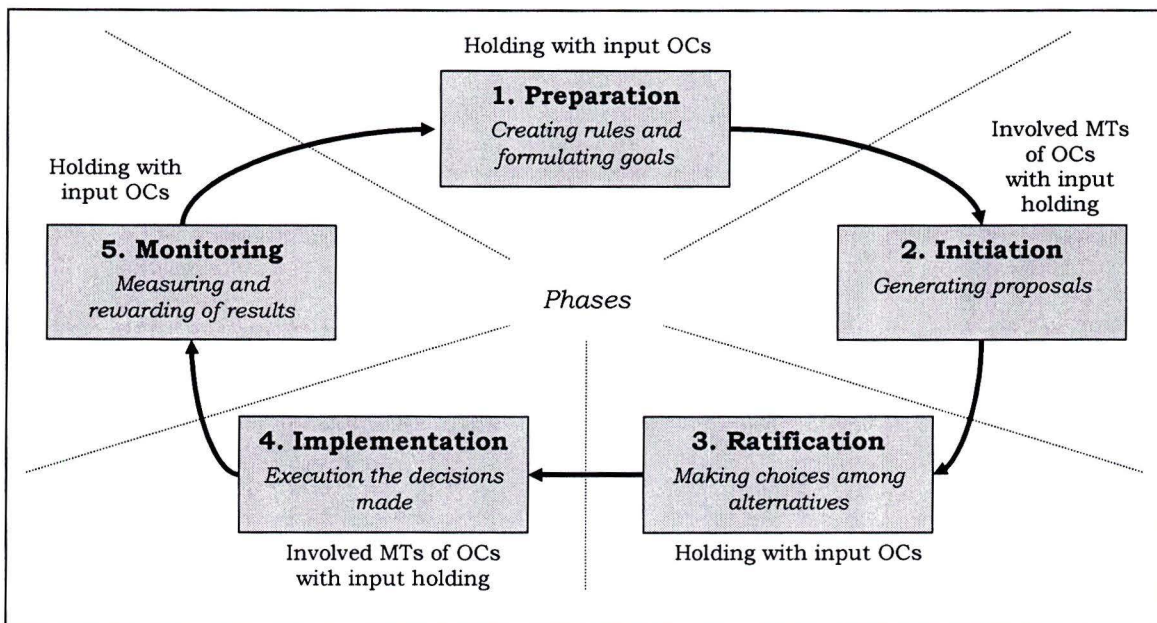


Figure 6.1: Collaboration process (based on Fama & Jensen 1983)

This process contains several network management tasks, like network organizing and controlling (see also § 4.5), that need to be executed in order to enable collaboration. Network organizing encompasses coordination and synchronization of activities between operating companies. Network controlling monitors and rewards the achievement of the planned performance targets (Ritter & Gemünden 2003). Clearly allocating decision rights shows who has the power and responsibility to make certain decision. The decision rights in this process are divided among different parties (holding and OCs). The basic principle of allocating decision rights is that if decision makers do not bear the major wealth effects of their decisions, decision management (step 2 and 4) and decision control (step 3 and 5) will

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be held by separate decision makers. By doing so agency problems within Neways can be prevented (Fama & Jensen 1983, Brickley et al. 1997). The different phases are briefly explained next.

1. Preparation: creating rules and formulating common goals

The holding can support collaboration by creating some rules and procedures (Ritter & Gemünden 2003). The OCs are to be involved in this process (van Aken 2002). One example is that for each joint project one OC is chosen that acts as the main responsible OC to the customer. The turnover of this project is realized at this OC. Next, transfer pricing between OCs takes effect. There are already rules in place concerning transfer pricing within Neways. At this moment it is important to decrease the transfer margins within joint projects (for instance with 50%). Otherwise, the danger exists that the competitive edge of the offer is negatively affected (Brickley et al. 1997). Collaborating like this has the advantage that one OC can cut purchasing costs, while the other OC can cut costs for account acquisition and management. Transfer prices have to be competitive in the market. If not, the danger exist that OCs are subsidized, which is an unhealthy situation (Brickley et al. 1997).

The holding can also, besides formulating individual goals (own OC turnover and profit), derive common goals from the group strategy (Hatch 1997) (recommendations for improving overall strategy are presented in § 6.4). These common goals should be measurable, concrete and realizable (Weggeman et al. 1999). Common goals or interests shared by OCs helps OCs to see the potential value of their technological capability exchange and combination (Tsai & Ghoshal 1998). OCs should be involved in creating these common goals (van Aken 2002). An example of such a common goal is that a certain amount of turnover (or more specific added value) of an OC is to be realized through joint projects. Turnover from joint projects is realized by two or more OCs with a joint proposal to one customer.

2. Initiation: generating proposals

A start can be made with regularly organizing meetings for representatives of OCs. The objective of these meetings is to share information concerning each others technological capabilities and customers (Dyer & Nobeoka 2000). These meetings result in possibilities or opportunities for OCs to jointly offer a more complete product (aiming for total solutions like life cycle management and full system supply) (Derix 1998). For each potential common customer a project proposal can be defined. A representative from the holding can be made responsible for supporting OCs in generating and developing these proposals. This representative can be seen as a network orchestrator. An individual with specialist, managerial and social skills should be appointed as network orchestrator. This individual is skilled in managing relationships (Prange et al. 2004).

3. Ratification: making choices among alternatives

The network orchestrator, which is made responsible for supporting joint projects, gives priority to projects that are of extra importance for Neways in total. These projects are suspected to have a strong relation with the group strategy of Neways (Duysters et al. 1999). Choices among the different proposals on which joint action can be taken are made. The involved OCs can support this selection process (van Aken 2002).

4. Implementation: executing the decisions made

The involved OCs jointly create a project planning. The contact with the customer is the responsibility of the earlier appointed OC. This OC is responsible for the project and also provides the project manager. The network orchestrator provides support and when necessary can act to settle possible conflicts (Helfert & Vith 1999, Buckley et al. 2002).

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## 5. Monitoring: measuring and rewarding of results

Network controlling monitors and rewards the achievement of the planned performance targets (Ritter & Gemünden 2003). The primary purpose of control is described as creating the conditions that motivate partners in a networked organization to achieve desirable or predetermined outcomes (Fisher 1995). Outcome control mechanisms include incentive systems and reward structures (Dekker 2004). These should stimulate persons and operating companies to act in the interest of the networked organization as a whole (Segil 1998).

Currently, in the reward structure of an OC the own turnover and profit play an important role. The reward structure for this year is already fixed. Next year, rewarding of OCs for collaborative action can be added (Weggeman et al. 1999, Ritter & Gemünden 2003). The realization of common goals should also be rewarded by the holding in order to make collaboration attractive to all OCs (Fisher 1995, Brickley et al. 1997, Weggeman et al. 1999). An OC should, for instance, be rewarded when it realizes an in advance agreed amount of turnover (or more specific added value) from joint projects (Segil 1998). This can be done by giving a financial reward (bonuses) to, for instance, management team members of OCs. In order to be able to measure the results concerning joint projects, the current administrative system hardly has to be adjusted (Brickley et al. 1997). Non-financial rewarding, like making compliments, should also be used more often.

Information concerning the realized results of joint projects functions as input for the first step of the collaboration process, namely creating rules and formulating common goals. Possibly unpractical rules and unrealistic goals can be adjusted in order to better support the collaboration process (Brickley et al. 1997).

Recommendations concerning the enablers of network management are:

- Actively manage collaboration
- Plan the network's future
- Execute network organizing and controlling activities
- Create a structured collaboration process
- Appoint a network orchestrator
- Set common goals
- Reward collaborative action

## 6.4 Improving overall strategy

### *Strategic attitude*

Offering more complete products and solutions is an important element of the strategy of Neways (see § 1.1, expressed in terms like total solutions, full system supply and life cycle management). For implementation of such a strategy, commercial employees with an entrepreneurial attitude are needed (Derix 1998). Entrepreneurship involves identifying and exploiting opportunities in the external environment in order to achieve a competitive advantage. As such, entrepreneurial action entails creating new technological capabilities or combining technological capabilities in new ways to develop and commercialize new products and/or total solutions (Ireland & Kuratko 2001, Smith & DeGregorio 2001, Hitt et al. 2001). Creating linkages with other Neways operating companies with complementary technological capabilities can be seen as identifying and exploiting opportunities in order to achieve a competitive advantage (Hitt et al. 2001).



Therefore, it is positive that the account/commercial managers of the own OCs are rather seen as consultants than as salespeople. Consultants are suggested to have an entrepreneurial attitude. Recommended is to further develop and stimulate such an entrepreneurial attitude through organizing training sessions (Thornberry 2003).

### **Strategy formulation process**

A strong enclosing frame of the construction for collaboration means that certain strategic matters are clear and coordinated throughout the organization. The following strategy formulation process can be implemented (figure 6.2).

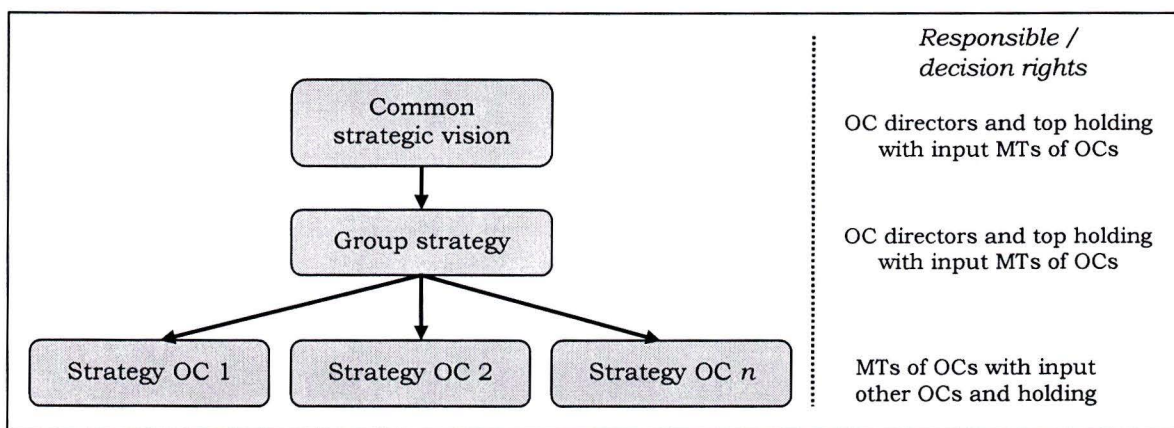


Figure 6.2: Strategy formulation process (based on Weggeman et al.1999 and van Aken 2002)

A start can be made with the realization of a common strategic vision through organizing a strategic session (several days) of OC directors and the top of the holding (Tsai & Ghoshal 1998). Before this session discussions took place within the MTs concerning subjects that are of interest for the common strategic vision. The OC directors can insert these exchanged ideas in the session with the other directors and the top of the holding. During this gathering, different groups can be formed; each creating its own strategic vision for Neways. Creativity should be stimulated in this process (Weggeman et al. 1999). Thereafter, visions can be exchanged, which will lead to a common strategic vision. This vision forms the basis of the group strategy (Weggeman et al. 1999, van Aken 2002). The group strategy can be further developed during the same session. Next, the common strategic vision and the related group strategy are spread throughout the entire organization (Bartlett & Ghoshal 1993). This can be realized through organizing strategic meetings within OCs, in which employees can participate (Bartlett & Ghoshal 1993). In these meetings the common strategic vision and group strategy are presented. During the following discussion, the OC director can defend the vision and strategy (van Aken 2002). The director can be supported by representatives of other OCs and the holding. The formulated group strategy functions as input for the strategy creation sessions of the OCs (Hatch 1997, van Aken 2002). Representatives of other OCs and the holding can be involved in this process.

It is recommended that in the vision and related strategy, collaboration is formulated as an important vehicle with which common goals can be realized (Dyer & Nobeoka 2000). By doing so, collaboration becomes more obvious for OCs. The overall strategy determines the structure of the other building blocks of collaboration (Chandler 1962, Brickley et al. 1997, van Aken 2002). The organization will also critically look at the other building blocks of the construction for collaboration, when collaboration within Neways is seen as strategically relevant. Then, the organization believes that it is important that network management

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functions well, social capital is created and that a group of OCs is formed which can complement each others technological capabilities. Thus, as Mintzberg (1990, p.183) states “structure follows strategy, as the left foot follows the right”. This translation of strategy should be improved within Neways.

The strategies of OCs contain goals and methods to realize these goals (van Aken 2002). Aligning these strategies is recommended in order for collaboration among OCs to be successful (Jarillo 1988, Tsai 2000). Moreover, a strong relation between the strategies of the OCs and the group strategy is crucial (Brouthers at al. 1995). This can be realized through following the previously mentioned strategy formulation process. By doing so, stronger relations in strategy are created within Neways. Only then everyone is facing the same direction, so one can make a start with realizing common goals (Tsai 2000).

### ***Emerging collaboration strategies***

A structured strategy formulation approach (like previously mentioned) is generally complemented by emerging strategies. Emerging strategy originated due to unforeseen problems or opportunities occurring in the firm’s environment (Mintzberg 1987, van Aken 2002). In order to deal with these problems and opportunities firm representatives take action. Together, the intended and emerging strategies form the realized strategy of Neways. As shown previously, strategic alignment (intended strategy) can enable collaboration. Additionally, unforeseen events can lead to emerging strategies, which can also have a positive influence on collaboration. An example of an event in Neways’ environment, which led to an emerging strategy that is positive for collaboration, is the implementation of new European environmental legislation. On February 13, 2003, the Waste Electrical and Electrical Equipment (WEEE) and Restriction of Hazardous Substances (RoHS) directives officially came into force. The implementation of this directive is due on July, 1, 2006. Then, all electronic products containing lead (excluding those products that are exempted) cannot be produced in or shipped to any of the EU countries (Biglari et al. 2005).

The problem the industrial electronics industry faces (including Neways) is that currently no perfect replacement for lead exists. Many companies world-wide can no longer produce reliably products in 2006 without changing their processes. This is because of the changed mechanical property of the lead-free joint and raised temperatures during production. Companies will be fully responsible for producing lead-free. The industry has to take care of guaranteed lead-free components and manufacturing processes (Biglari et al. 2005).

This legislation is a major problem for almost all Neways operating companies, but is also seen as an opportunity. By successfully managing such complex changes and being able to assist customers in the lead-free transfer process, Neways can show the market that it is leaving its jobber existence behind (van Gunsteren 1992, Derix 1998). Some operating companies already generated lead-free knowledge and capabilities. Due to the immense effects of this new legislation and the time consuming knowledge creation process, operating companies join forces in order to deal with this challenge. Management decided that lead-free is too important to ignore, indicating its strategic importance for the entire Neways group (strategic alignment). Thereafter, a management team and project teams are formed with representatives of all operating companies (network management task execution). Regular group sessions are organized in which operating companies can complement each others lead-free capabilities (drivers). This example shows that changes in the external environment can also force operating companies to collaborate. These changes have to be large enough to show operating companies that only through joint action success can be realised. Management should be watchful for such events and as a reaction should form and facilitate emerging strategy (van Aken 2002) in which collaboration plays a crucial role.

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In summary, the recommendations concerning the strategic factors of the overall strategy are:

- Organize training sessions for entrepreneurship
- Structure the strategy formulation process
- Align strategies of the OCs and the group
- Organize strategic sessions
- Realize a shared vision
- Involve employees in strategy formulation process
- Facilitate emerging collaboration strategies

## **6.5 Implementation**

The recommendations vary from relatively easy and fast to implement (create a common database) to more fundamental changes (more specialization of operating companies). Taken the state of the construction of collaboration into account (§ 5.3), starting with improving the overall strategy is recommended. Everyone has to face the same direction, so one can make a start with realizing common goals (Tsai 2000). A start with implementing the suggested changes can be made immediately. Incorporating collaboration as an important strategic tool will take some time, because the collaboration message has to be distributed and accepted throughout the Neways organization (Tsai & Ghoshal 1998). These changes are accompanied with costs, because many employees are to be involved in this strategy formulation process.

Improving network management encompasses the execution of several new tasks. Currently, sufficient knowledge concerning the execution of these tasks is assumed to be present within Neways to start implementation immediately. The most costly aspect is the appointment of a full time network orchestrator (Prange et al. 2004). Taking into account the time needed for changing the reward and control systems, the new network management tasks could be fully executed in the beginning of 2006.

Adding costs and time lines to the implementation of the recommendations concerning social capital is harder. A manifest, company slogan and a common database can be realized against relative low costs and within a short time. The majority of the costs are incurred through organizing common happenings. A start with the implementation of these recommendations can be made immediately, but significant results (like significant improvement of trust, commitment and group identity) are not to be expected soon. Social capital has the characteristic to gradually grow when time passes (Gulati 1995).

Strengthening the foundation of collaboration can start right away against relatively low costs by sharing knowledge and the creation of a common database. Because of the current investments made in technological capabilities, further specialization of operating companies is a more time and money consuming process, which can take years (Cohen & Levinthal 1990, Mowery et al. 1996). Therefore, long-term planning should be executed.

Within the proposed change process, content related and cultural interventions play an important role (Chin & Benne 1976, van Aken 2002). Recommended is that changes are openly and clearly communicated. Discussion about the proposed action should be stimulated, while focusing on the facts and leaving political aspects outside the discussion. Participation in this change process is also crucial for realizing support among all Neways employees (van Aken 2002). But power interventions should not be avoided, when strong contra-productive coalitions are formed based on individual interests (van Aken 2002).

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## 7 Research Conclusions

This chapter presents the general conclusions of the research project (§ 7.1). The summarized answers to these research questions are given in paragraph 7.2. Several ideas for future research are also included in this chapter (§ 7.3).

### 7.1 General conclusions

Collaboration between two operating companies can be difficult, but collaboration within networked organizations comprised of multiple operating companies offers an even greater challenge (Bartlett & Ghoshal 1993). Operating companies have to cope with many kinds of difficulties in order to gain from exchanging technological capabilities with other units inside the organization (Tsai 2000). Literature provides many collaboration related problems. For example, as more actors are involved, a greater chance of conflicting interests exists, making it more difficult to realize the intended strategic goals (Brickley et al. 1997, Dyer & Nobeoka 2000). Additionally, without a shared organizational identity, the centrifugal forces driving independent entrepreneurial operating companies can result in fragmentation, isolation and inter-company competitiveness to create barriers and defenses against internal flow of technological capabilities (Bartlett & Ghoshal 1993).

Within Neways, above mentioned and additional problems can be identified (§ 2.2). Thus the following general conclusion is strengthened:

Collaboration among multiple operating companies within a networked organization can be hard to realize.

As shown in the presented research, collaboration can be dealt with from different points of view. Several building blocks of collaboration are identified. These encompass strategic factors, drivers and enablers of collaboration. Recent scientific articles generally only take a few building blocks into account. For instance, Tsai (2000) mainly concentrates on social capital and overall strategy and Ritter and Gemünden (2003) solely deal with network management. The Neways case shows that all building blocks of the construction of collaboration have their weaknesses, neglecting one building block would still pose a threat to the realization of collaboration within Neways. Suggested is that collaboration is too complex to analyze from a single or two perspectives. Therefore, the following general conclusion is formulated:

Realizing collaboration among multiple operating companies within a networked organization requires a multidimensional approach.

Only by taking into account the multidimensionality of collaboration, effective tools can be designed that can contribute to solving problems related to the realization of collaboration.

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## 7.2 Conclusions concerning the used theory

Many theories in literature are related to collaboration in network organizations, like the mentioned The Network Partnership (§ 2.1). But this project deals with collaboration in a networked organization. Some differences between networked organizations (Neways) and network organizations (The Network Partnership) were mentioned. Main differences are identified in the group composition, legal structure, decision rights distribution and the role of collaboration in strategy of the two organizational forms. Theory related to network organizations, for instance concerning network management (e.g. Ritter et al. 2002) and social capital (e.g. Gulati 1995), is used for building a theoretical framework for networked organizations. This framework is tested within the Neways organization during interviews and discussions. On the basis of this field work concluded is that when identified differences are taken into account:

Many theories concerning network organizations can be applied to networked organizations.

Research on both subjects can strengthen and complement each other. It is therefore wise to be watchful for possible synergies.

The creation of a framework with strategic factors, drivers and enablers of collaboration within Neways was an iterative process. Theory (e.g. Gulati 1995, Tsai 2000, Ritter et al. 2002, Prange et al. 2004) and practice complemented each other regularly. It is interesting to see many relations between the problems faced by the Neways organization and theory in scientific articles. This is especially true for subjects related to social capital. Social capital, with related enablers as trustworthiness, commitment and group identity, is rated as very important for collaboration in both theory and within Neways. Relatively many articles can be found concerning this subject and the CEOs of Neways label it as a point of particular interest.

Some interesting cases of 'cross-fertilization' of theory and practice can be identified. Theory concerning the enabler transparency is not abundantly available, while the interviews and discussions identified it as important. This is also the case for the factor strategic alignment. Practice provided insight in its importance for collaboration, while finding support in literature initially proved to be difficult. The contrary is true concerning the drivers of technological capabilities. The drivers as switching cost and copyability are not regularly mentioned within Neways, while they are labeled as relevant in literature. After an investigation they appeared to be important within Neways also. The same remark (relevant in literature, but at first of minor relevance within Neways) can be made concerning the defined frame of the construction of collaboration. It stresses the importance of an overall strategy, which affects all other building blocks of collaboration. This is in line with the so called 'structure follows strategy principle' of Chandler (1962). This principle, which is regularly covered in literature, should become more widely known and implemented within Neways. The following conclusion concerning the application of theory is drawn:

Theory has been successfully applied for the analysis of problems in the Neways case.

Through the interaction of theory and practice both are enriched and strengthened.

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### 7.3 Answers to the research questions

Based on an analysis of the problem (currently limited collaboration among operating companies in technological/commercial areas, § 2.2) research questions are constructed. Their summarized answers are presented next.

**Introduction:** Why can collaboration within Neways lead to an improvement of its strategic position?

By engaging in collaborations, Neways operating companies expect to enhance their performance and create value by combining their technological capabilities. By pooling their resources and capabilities with those of other operating companies, operating companies can initiate projects that they could not have successfully done alone (Lorange & Roos 1992, Burgers et al. 1993, Chung et al. 2000). If parties within Neways realise the opportunity for joint value creation, then the networked organization can act to emphasise the individual units competitive advantage by allowing that operating company to specialise in the activities it performs best. The collaborative relationships between operating companies in a networked organization, like Neways, can be a source of its competitive strength (Jarillo 1988, Eisenhardt & Schoonhoven 1996).

1. What are the strategic factors, drivers and enablers of collaboration within Neways for improvement of its strategic position?

This main research question is answered by answering related sub-questions:

1.a. What are the drivers of collaboration within Neways?

Technological capabilities lie at the basis of collaboration in networked organizations, like Neways. Technology is the field on which different operating companies can collaborate. Still, the characteristics of technological capabilities determine if they are real drivers of collaboration. Suggested is that the technological capabilities of operating companies should be complementary to each other and hard to copy in order to drive collaboration. Also, low switching costs of technological capabilities can function as driver of collaboration within networked organizations (Doz 1988, Dyer & Singh 1998, Chung et al. 2000)

1.b. What are the enablers of collaboration within Neways?

The enablers are categorized into two groups, namely social capital and network capabilities. The category social capital addresses the investment in social relations to build up trust and commitment, recognizing its importance as an enabling factor of collaboration (Granovetter 1985, Gulati 1995). In this context the enabling force of transparency, group identity and prior social relations (Bartlett & Ghoshal 1993, Chung et al. 2000) is also stressed.

The possibility to combine technological and social capital of the different organizational units, in order to enable collaboration, depends on an organization's network management capabilities. Enablers related to network management capabilities are network management task execution and the presence of a network orchestrator (Ritter & Gemünden 2003, Prange et al. 2004).

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**1.c. What are the strategic factors of collaboration within Neways?**

Three important strategic factors that play a role in collaboration within networked organizations are defined, namely entrepreneurship, strategic alignment and a shared vision. Concluded is that a networked organization, like Neways, should be entrenched by an overall alignment of strategic goals and vision in order to make strong strategic positioning through collaboration possible. The strategy functions as glue that holds the building blocks for collaboration together (Jarillo 1988, Brouthers et al. 1995, Tsai & Ghoshal 1998, Tsai 2000).

These strategic factors, drivers and enablers are combined in a framework that is schematically represented as a construction. This construction consists of two building layers (drivers and enablers of collaboration) and an enclosing frame (strategic factors). The framework or construction with building blocks of collaboration within Neways is shown in figure 4.2.

Suggested is that, for improvement of the strategic position of Neways through collaboration among its operating companies, all mentioned building blocks of construction need to be in order. When enablers are present and drivers are not, collaboration is difficult because no field on which collaboration can take place exists. When drivers are present and enablers are not, collaboration is difficult because the process (actual interaction between parties) itself is hard. When the overall strategic frame is weak, collaboration is difficult because of possible conflicting interests and goals. Thus strategic factors, drivers and enabler need to be present and synchronized for the realization of successful collaboration.

**2. To what extent are above mentioned strategic factors, drivers and enablers of collaboration present within Neways?**

A questionnaire is used as data collection method. Strategic factors, drivers and enablers are measured within Neways through asking twenty employees to score 37 propositions, which are suggested to be usable operationalizations of the constructs. The results of this questionnaire show the following concerning the construction of collaboration within Neways:

- The foundation of the construction for collaboration (technological capabilities) is rather in order, but improvement is desirable.
- The 1<sup>st</sup> building layer of the construction for collaboration (social capital) is rather in order, but improvement is desirable.
- The 2<sup>nd</sup> building layer of the construction (network management) for collaboration is rather weak.
- The enclosing frame of the construction for collaboration (overall strategy) is rather weak.

An overview of the conclusions is given in figure 7.1. Each measured strategic factor, driver and enabler is labeled. A '+' indicates that the considered strategic factor, driver and enabler is rated positively and a '-' mainly negatively. Those which are considered to be rated neither clearly positive nor negative are labeled '+/-'. In order to create a readable overview this rough distinction is made. For a more detailed examination of the results, the mentioned explanations of the conclusions (§ 5.3) and appendix H should be used.

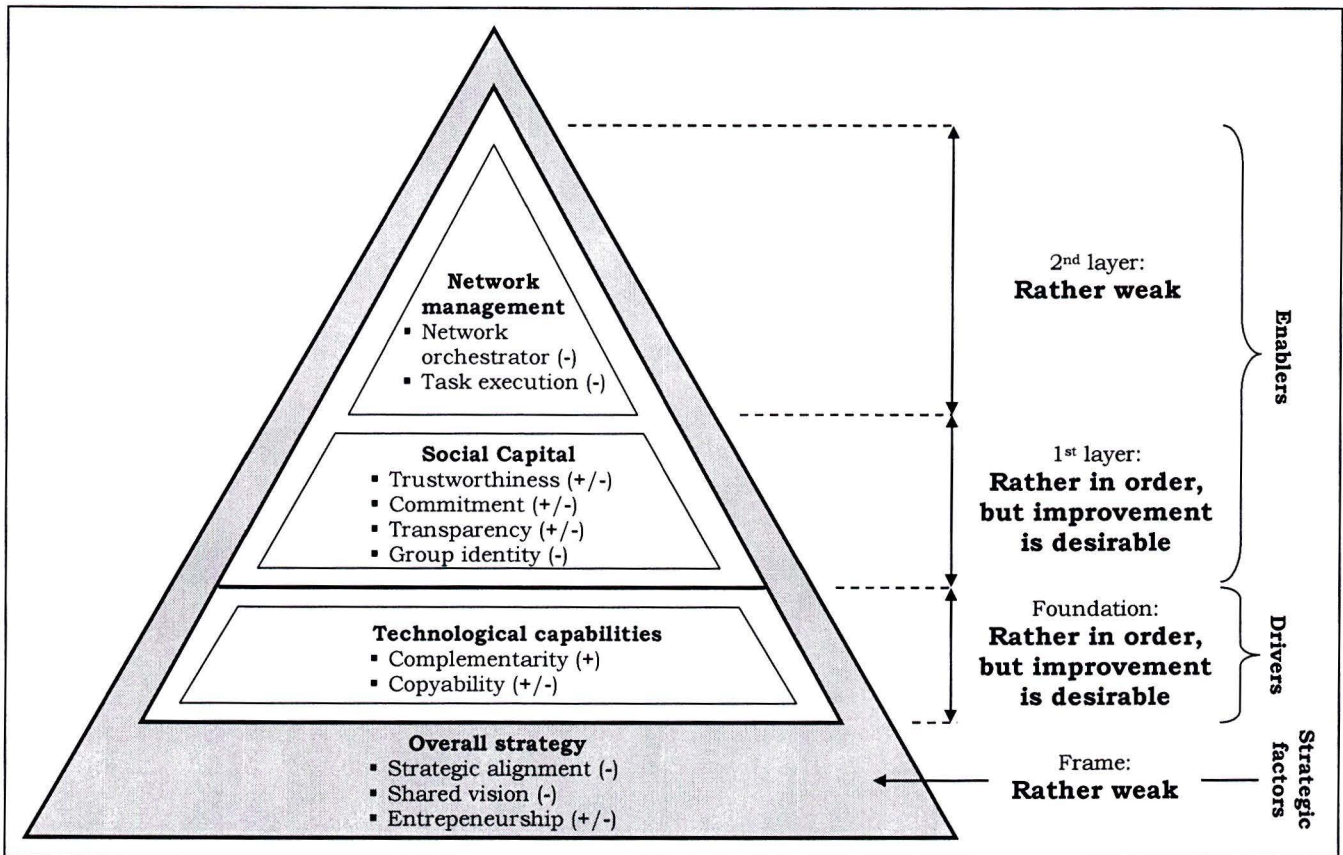


Figure 7.1: Overview of the conclusions

**3. How could collaboration within Neways be organized, taking into account the present state of the strategic factors, drivers and enablers of collaboration within Neways?**

All building blocks of the construction of collaboration need to be improved in order to successfully realize collaboration within Neways. Several recommendations are formulated. It is recommended to start with improving the strategic formulation process within Neways. The strategies of the operating companies should be aligned and a shared vision created. Only then everyone is facing the same direction, so one can make a start with realizing common goals (Tsai 2000). Next, the structure of the organization should follow this collaboration strategy (Chandler 1962, Mintzberg 1990, van Aken 2002). Recommendations are presented that can contribute to structuring and improving the building blocks of collaboration. For example, create a common database, realize more specialization of operating companies, create a manifest and appoint a network orchestrator. Participation of employees is important for realizing support for the necessary changes. Therefore, discussion should be stimulated. But power interventions should not be avoided, when strong contra productive coalitions are formed based on individual interests (van Aken 2002).

Through answering these research questions insight is gained in the possibility of collaboration among the Neways operating companies. Additionally, the provided answers propose how collaboration among the Neways operating companies could be organized. Therefore, the goals of this research project are realized (§ 2.3).



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## 7.4 Future research

Theory related to network organizations, for instance concerning network management (e.g. Ritter et al. 2002), is used for building a theoretical framework for networked organizations. More research is needed in order to test the assumption that theory on network organizations can be applied to networked organizations, when mentioned differences are taken into account. Additional differences and their implications should be identified. By doing so, science directed on networked organizations can possibly profit from the current interest and gained theoretical insights in network organizations.

It is recognized that by assembling many concepts in one construction of collaboration, some richness of original concepts may be lost. It is also realized that such an overview can never be complete, because not all theories are known to the author of this paper, and more in general, still much about collaboration is currently unknown. Additionally, more testing is necessary for the validation of the framework (Judd et al. 1991). Until now the testing of the framework is done within a single networked organization, making its use outside this Neways context limited (van Aken et al. 2003). Finally, it is suspected that direct and indirect relations between different building blocks exist. These are not analyzed and suspected relations are highlighted in only in a few occasions.

Future research should concentrate on searching additional building blocks and relations between them. Special attention could be given to strategic factors, like strategic alignment, because they are suspected to be undervalued in current collaboration literature. Additionally, network management related enablers, like incentive pay within collaborations, could be investigated more closely. Next, the framework has to be intensively tested in a business environment at several networked organizations. This research can lead to a comprehensive overview of strategic factors, drivers and enablers of collaboration in networked organizations and can also provide a more validated method or tool for their measurement. Such a tool can make the problem identification process easier and enhances the probability that the right action is taken in order to realize collaboration. Future research can provide new scientific insight and understanding and by doing so enriches our view on collaboration. This research can possibly assist managers who face collaboration realization problems while building a networked organization.

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## Reflection

This research project has proven to be one of the most challenging and instructive parts of my study at the Eindhoven University of Technology. I have been given the opportunity to experience the subjects from the front-line, which enriched the theoretical part of the project and made the work even more exciting. All operating companies were visited in order to get acquainted with the different parts of the organization. One of the most notable observations during these visits was the strong operating company related identity of each unit and the absence of a Neways group identity. This manifested itself in many ways, like different symbols, clothing and procedures. This made me realize even more that a large improvement in collaboration among operating companies is not going to be realized soon. Neways is a company that is comprised of acquired operating companies, that all have their own history and identity. Because of this and many other factors identified in this report, the focus is mainly directed on the own operating company. Building bridges between operating companies will take a lot of effort and conscious interventions. I hope that Neways will soon find the will and power to act, because improving Neways' strategic position is essential to its survival.

Besides the visits to the operating companies, I was allowed to participate in four purchase and sales meetings. These meetings of purchase and sales representatives of all Dutch and German operating companies are organized to discuss issues like collaboration among the disciplines and for introducing new products and services to the own organization. Several topics that are discussed in this report (like limited commitment and limited network management task execution) were observed during these sessions.

I was also privileged to witness the formation of a think-tank named 'Troy' and I was allowed to attend eight Troy sessions. This group consists of representatives of important customers (PMS, ASML and Nyquist) and partners (Mat-Tech) of Neways. Troy was created to share knowledge concerning the lead-free transition (see also § 6.4 emerging strategies). The members recognized that finding and implementing solutions related to lead-free requires joint action of all parties in the supply chain. These sessions were open, intensive and very dynamic. Troy is the tangible proof of the attempt of Neways to strategically reposition itself from jobber to a full partner in all product life cycle phases. It shows that Neways has the knowledge and capabilities to, in cooperation with its customers, implement concepts like life cycle management and total cost of ownership (see also § 1.1). Unfortunately, not all Neways employees recognize the importance of such events.

A relatively large part of this project is dedicated to the analysis of the problems faced by Neways, compared to the design of a solution. I believe that a thorough analysis is essential for realizing the best results. Before action is taken within Neways, the bottlenecks need to be clearly identified, otherwise the danger of sub-optimization exists. Being able to contribute to a solution for one of the problems faced by the Neways organization was very interesting for me. This project provided me with an opportunity to improve my social and analytical skills and showed me aspects of organizations, like politics and power, which are hard to teach during university lectures. Still, I believe that my university study prepared me well for this assignment. The learned mindset, research methodology and analytical skills were very useful in practice. This research project strengthened my conviction that Industrial Engineering and Management Science is a very interesting field of science to be specialized in.

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# **Building a Networked Organization**

*Improving Neways' strategic position through collaboration  
among its operating companies*

## Appendices

**NIET  
UITLEENBAAR**



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## Appendix B: names and functions interviewees

Six Neways employees were interviewed for an orientation on strategy and collaboration. These employees are:

Name operating company	Name interviewee	Function interviewee
Neways Advanced Applications	Theo Alsemgeest	Manager NBD
	Gert Gerrits	Business consultant NBD
	Kees Klaassen	Account manager
	Bastiaan van der Touw	Sales support
	Erik Vermeulen	Account manager
	Fred van der Zwart	Manager technology/design

Eight Neways employees were interviewed in order to get information for the creation of the framework with strategic factors, drivers and enablers of collaboration. A summary of each interview is made, which was checked by the interviewee. These employees are:

Name operating company	Name interviewee	Function interviewee
Evic Electronics	Albert Boerma	Director sales/marketing
Holding	Pieter van Kuyvenhoven	Corporate purchasing
Holding	Nick Klein	Manager NBD
Hoyte	Tom van Wanrooij	Managing director
Neways Advanced Applications	Theo Alsemgeest	Manager NBD
Neways Advanced Applications	Adrie van Bragt	Managing director
Neways Heerlen/Silectron	Jack Kromhof	Managing director
Neways Leeuwarden	Keimpe van der Hoeven	Managing director
Ripa	Peder Jaspers	Controller

After a presentation concerning new business development within management teams (MTs) of eight operating companies, generally subjects like collaboration and strategy were discussed. These group discussions provided information for the creation of the framework with strategic factors, drivers and enablers of collaboration. These groups are:

Name operating company	Number of MT members present
Evic Electronics	5
Hoyte	4
Hymec	6
Neways Heerlen/Silectron	4
Neways Kassel	7
Neways Leeuwarden	6
Neways Neunkirchen	5
Ripa	4

Twenty employees scored a questionnaire with propositions concerning strategic factors, drivers and enablers of collaboration. These employees are:

Name operating company	Name interviewee	Function interviewee
Evic Electronics	Jean Daenen	Managing director
	Albert Boerma	Director sales/marketing
Hoyte	Tom van Wanrooij	Managing director
	Claudia Tschöke	Manager sales/marketing
Hymec	Johan Lecoutere	Managing director
	Geert van Doorn	Manager customer service
Neways Advanced Applications	Adrie van Bragt	Managing director
	Gert Gerrits	Business consultant NBD
Neways Heerlen/Silectron	Jack Kromhof	Managing director
	Etiënne Souren	Account manager
Neways Industrial Systems	Sytze Westerhof	Managing director
	Paul Spronk	Director sales/marketing
Neways Kassel	Lothar Auerswald	Managing director
	Thomas Klettenheimer	Manager sales/marketing
Neways Leeuwarden	Keimpe van der Hoeven	Managing director
	Johan Dijksman	Director sales/marketing
Neways Neunkirchen	Alois Fuchs	Managing director
	Jörg Neukirch	Manager sales/marketing
Ripa	Jan v/d Vorstenbosch	Managing director
	François Brouwers	Director sales/marketing

With six employees the recommendations were discussed in more detail. These employees are:

Name operating company	Name interviewee	Function interviewee
Holding	Theo Alsemgeest	Manager NBD
Holding	Vincent de Bok	Financial CEO
Holding	Huub van de Vrande	Operational CEO
Neways Industrial Systems	Paul Spronk	Director sales/marketing
Neways Industrial Systems	Sytze Westerhof	Managing director
Ripa	Jan v/d Vorstenbosch	Managing director

---

## **Appendix C: external case description**

An external case is used for complementing and testing the framework with strategic factors, drivers and enablers for collaboration. The use of several data collection methods can improve the reliability and validity of the research (van Aken et al 2003). The provider of the information of this case is Joost Krul, a former senior marketing/sales manager of Stork Maintenance Management. Currently he is active as an independent business consultant. This case description aims to present the view of Joost Krul on realizing collaboration among the operating companies of Stork Technical Services.

### ***Stork Technical Services***

Stork Technical Services is a knowledge-intensive, professional supplier of integrated technical services for installations and machines in the industrial and utilities markets. The group, which consists of the Industry Services, Industry Specialists and WorkSphere strategic units (40 in total), achieved a turnover of € 796 million in 2004 with 6.333 employees. Stork Technical Services is a system integrator and partner in technical services. The basic principle is ensuring maximum availability of installations/machines at transparent (lowest possible) costs per unit of product through the entire life cycle of the installation/machine.

An important strategic aim is to offer a complete service. In the ideal situation the customer provides information concerning the function of the desired process and its input and output. Next, the design and creation of such a process is completely outsourced to Stork Technical Services. In order to reach this goal, multidisciplinary services need to be provided with optimum customer contact, an integrated tender and a focus on a long-term relationship. For this purpose, a new operating company was created, named Stork Maintenance Management (SMM). This operating company was to offer complete services to its customers. In order to accomplish this, SMM aimed to realize collaboration among several operating companies of Stork Technical Services. These operating companies (for instance Stork Industry Services and Stork Materials Technology) were to combine their technological capabilities, from which complete services could arise.

### ***Problems faced***

Collaboration among operating companies was hard to realize by Stork Maintenance Management. Jointly offering complete services wasn't completely successful, because:

- Operating companies mainly defended their own profit
- Disagreement arose concerning the ownership of common customers
- Operating companies believed that joint profit was hard to divide
- Some operating companies considered themselves competitors
- The customer wasn't ready yet for the complete service concept
- The role of SMM as coordinator wasn't correctly appreciated
- No common culture existed
- Traditionally, operating companies operated autonomously
- Commitment and trust among operating companies were absent

As a result only limited joint action was taken.

---

### ***Lessons learned***

An important element in successful collaboration is a shared strategic vision. This vision is leading in the creation of a strategy in which collaboration is important. When the shared strategic vision doesn't encompass the need to collaborate with other operating companies, collaboration will not be realised. The creation of such a shared vision can prevent conflicting interests.

Additionally, creating financial incentives for collaboration can contribute to success. Top management can create a suitable environment for collaboration. But a too strict structure and many rules should be avoided because operating companies can see this as an attack on their autonomy. Cultural aspects, like a masculine attitude (power is important, creating fear and uncertainty), also negatively influences collaboration. Such cultural aspect need to be taken into account, but are hard to manage. Transparency and having an open attitude should be stimulated.

Several strategic factors, drivers and enablers are enforced by this case, these are:

- Complementarity
- Trustworthiness
- Commitment
- Transparency
- Group identity
- Network management task execution
- Strategic alignment
- Shared vision

---

## Appendix D: Dutch questionnaire with propositions

Code lijst: X

Antwoordmogelijkheden:

Helemaal mee oneens	1
Grotendeels mee oneens	2
Noch eens of oneens	3
Grotendeels mee eens	4
Helemaal mee eens	5

Helemaal  
mee oneens

Helemaal  
mee eens

1	2	3	4	5
---	---	---	---	---

### De vragenlijst

1. Mijn OC heeft veel kennis van de technische vaardigheden van andere OCs.
2. Technische vaardigheden van *mijn* OC kunnen in principe de technische vaardigheden van andere OCs aanvullen.
3. De technische vaardigheden van *mijn* OC kunnen concurreren met de technische vaardigheden van externe leveranciers.
4. De technische vaardigheden van *mijn* OC zijn moeilijk door andere OCs te kopiëren.
5. Technische vaardigheden van *andere* OCs kunnen in principe de technische vaardigheden van mijn OC aanvullen.
6. De technische vaardigheden van *andere* OCs kunnen concurreren met de technische vaardigheden van externe leveranciers.
7. De technische vaardigheden van *andere* OCs zijn moeilijk door mijn OC te kopiëren.
8. Binnen mijn OC worden momenteel technische vaardigheden verkregen via een externe leverancier, die ook door een *andere* OC geleverd kunnen worden.

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

1	2	3	4	5
---	---	---	---	---

Helemaal  
mee oneens

Helemaal  
mee eens

1	2	3	4	5
---	---	---	---	---

9. Het wisselen van een externe leverancier van technische vaardigheden naar een OC brengt voor *mijn* OC weinig kosten met zich mee.

1	2	3	4	5
---	---	---	---	---

10. Binnen de Neways groep is er sprake van één gezamenlijke cultuur met gedeelde normen en waarden.

1	2	3	4	5
---	---	---	---	---

11. Andere OCs handelen integer en betrouwbaar in de relatie met mijn OC.

1	2	3	4	5
---	---	---	---	---

12. Andere OCs zetten zich in voor het realiseren van win-win situaties in de relatie met mijn OC.

1	2	3	4	5
---	---	---	---	---

13. Mijn OC stelt zich open op ten aanzien van andere OCs.

1	2	3	4	5
---	---	---	---	---

14. Andere OCs stellen zich open op ten aanzien van mijn OC.

1	2	3	4	5
---	---	---	---	---

15. Mijn OC toont bereidheid om te investeren in relaties met andere OCs.

1	2	3	4	5
---	---	---	---	---

16. Andere OCs tonen bereidheid om te investeren in de relatie met mijn OC.

1	2	3	4	5
---	---	---	---	---

17. Mijn OC heeft in het verleden frequent succesvol samengewerkt met *andere* OCs in het onderling aanvullen van technische vaardigheden.

1	2	3	4	5
---	---	---	---	---

18. Mijn OC heeft in het verleden frequent succesvol samengewerkt met *externe bedrijven* in het onderling aanvullen van technische vaardigheden.

1	2	3	4	5
---	---	---	---	---

19. Mijn OC verwacht in de toekomst weer succesvol samen te gaan werken met *andere* OCs in het onderling aanvullen van technische vaardigheden.

1	2	3	4	5
---	---	---	---	---

Helemaal  
mee oneens

Helemaal  
mee eens

1	2	3	4	5
---	---	---	---	---

20. Op groepsniveau worden gezamenlijke doelen van OCs geformuleerd.

1	2	3	4	5
---	---	---	---	---

21. Er vindt op groepsniveau planning plaats voor het realiseren van de gezamenlijke doelen van OCs.

1	2	3	4	5
---	---	---	---	---

22. Er vindt op groepsniveau controle plaats op het behalen van gemeenschappelijke doelen door OCs.

1	2	3	4	5
---	---	---	---	---

23. Er vindt op groepsniveau controle plaats op de bijdrage van elke OC aan het behalen van gemeenschappelijke doelen.

1	2	3	4	5
---	---	---	---	---

24. Op groepsniveau worden OCs vooral financieel beloond op het behalen van gemeenschappelijke doelen.

1	2	3	4	5
---	---	---	---	---

25. Op groepsniveau is een persoon verantwoordelijk voor het ondersteunen van samenwerking tussen OCs.

1	2	3	4	5
---	---	---	---	---

26. Op groepsniveau is een goede inventarisatie gemaakt van de technische vaardigheden van OCs, die de technische vaardigheden van andere OCs kunnen aanvullen.

1	2	3	4	5
---	---	---	---	---

27. Het onderling aanvullen van technische vaardigheden wordt op groepsniveau gecoördineerd.

1	2	3	4	5
---	---	---	---	---

28. Voor het coördineren van het onderling aanvullen van technische vaardigheden zijn effectieve communicatiekanalen beschikbaar.

1	2	3	4	5
---	---	---	---	---

29. Voor het onderling aanvullen van technische vaardigheden zijn op groepsniveau formele regels en procedures opgesteld.

1	2	3	4	5
---	---	---	---	---

30. Op groepsniveau is een persoon actief bezig met het verbinden van technische vaardigheden van OCs

1	2	3	4	5
---	---	---	---	---

31. Voor het onderling aanvullen van technische vaardigheden worden regelmatig bijeenkomsten van OCs georganiseerd.

1	2	3	4	5
---	---	---	---	---



Helemaal  
mee oneens

Helemaal  
mee eens

1 | 2 | 3 | 4 | 5

32. De huidige strategische richting van de Neways groep is voor mijn OC duidelijk.

1 | 2 | 3 | 4 | 5

33. De huidige strategische richting van mijn OC is duidelijk.

1 | 2 | 3 | 4 | 5

34. De strategische richting van de Neways groep en de strategische richting van mijn OC hebben een sterke relatie met elkaar.

1 | 2 | 3 | 4 | 5

35. Binnen de Neways groep bestaat er een gezamenlijke strategische visie voor de toekomst.

1 | 2 | 3 | 4 | 5

36. Mijn OC komt regelmatig met nieuwe product- en procesinnovaties.

1 | 2 | 3 | 4 | 5

37. De account/commerciële managers van mijn OC zijn meer consultants dan verkopers.

1 | 2 | 3 | 4 | 5

---

## Appendix E: German questionnaire with propositions

Dieser Fragebogen ist anonym.

Nach Abschluss meiner Untersuchung werden Sie einen Überblick über die durchschnittliche Bewertung für jede Frage der teilnehmenden Personen erhalten. An dieser Untersuchung nehmen 10 leitende Direktoren sowie 10 Verkaufs- bzw. Marketingdirektoren von Neways OC's teil. Die nachfolgenden Daten zeigen, welche Faktoren der Zusammenarbeit besonderer Aufmerksamkeit bedürfen und werden gleichzeitig als Einstieg für mein Design verwendet.

Fragebogennummer: X

### Antwortmöglichkeiten:

Überhaupt nicht einverstanden	1
Stimme eher nicht zu	2
Weder Zustimmung noch Ablehnung	3
Stimme eher zu	4
Trifft voll und ganz zu	5

### Anmerkung:

In diesem Fragebogen wird häufig die Bezeichnung ‚technische Fähigkeiten‘ verwendet. Technische Fähigkeiten in diesem Kontext sind zum Beispiel:

- Die Fähigkeit, kleine Reihen von PCBA's (Printed Circuit Board Assemblies) zu produzieren
- Die Fähigkeit, Systeme zusammenzubauen
- Die Fähigkeit, Kabelsätze herzustellen
- In der Lage sein, Prototypen zu produzieren
- Spezielle Test zu haben
- Der Green Scan
- Layout- oder Designfähigkeiten
- Etc.

Überhaupt nicht  
einverstanden

Trifft voll  
und ganz zu

1	2	3	4	5
---	---	---	---	---

## Der Fragebogen

1. Meine OC hat viel Wissen hinsichtlich der technischen Fähigkeiten von anderen OC's.

1	2	3	4	5
---	---	---	---	---

2. Die technischen Fähigkeiten *meiner* OC können theoretisch die technischen Fähigkeiten anderer OC's vervollständigen.

1	2	3	4	5
---	---	---	---	---

**Anmerkung (2):** Sollten beispielsweise die Qualität oder die Kosten der technische Fähigkeiten nicht akzeptabel sein, wird keine Nachfrage nach diesen Fähigkeiten bestehen. Solche Faktoren werden hier vernachlässigt.

3. Die technischen Fähigkeiten *meiner* OC können mit denen externer Lieferanten konkurrieren.

1	2	3	4	5
---	---	---	---	---

**Anmerkung (3):** Konkurrenzfähig zu sein, schließt Preis, Qualität und Standort etc. ein

4. Die technischen Fähigkeiten *meiner* OC sind schwer durch andere OCs zu kopieren.

1	2	3	4	5
---	---	---	---	---

5. Technische Fähigkeiten *anderer* OCs können theoretisch die technischen Fähigkeiten meiner OC vervollständigen.

1	2	3	4	5
---	---	---	---	---

6. Die technischen Fähigkeiten *anderer* OCs können mit denen externer Lieferanten konkurrieren.

1	2	3	4	5
---	---	---	---	---

7. Die technischen Fähigkeiten *anderer* OCs sind schwer durch meine OC zu kopieren.

1	2	3	4	5
---	---	---	---	---

8. Innerhalb meiner OC werden zur Zeit technische Fähigkeiten mittels eines externen Lieferanten erworben, die von einer *anderen* OC ebenfalls zur Verfügung gestellt werden können.

1	2	3	4	5
---	---	---	---	---

9. Die Kosten des Wechsels von einem externen Lieferanten für technische Fähigkeiten zu einer OC sind niedrig für *meine* OC.

1	2	3	4	5
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**Anmerkung (9):** Die Kosten des Wechsels beinhalten auch ‚weiche Kosten‘ oder Sozialkosten.

Überhaupt nicht  
einverstanden

Trifft voll  
und ganz zu

1 | 2 | 3 | 4 | 5

10. Innerhalb der Neways Gruppe gibt es eine gemeinsame Kultur mit geteilten Normen und Werten.

1 | 2 | 3 | 4 | 5

**Anmerkung (10):** Eine gemeinsame Kultur äußert sich beispielsweise durch das Tragen des Neways Namens auf der Kleidung oder der Umgangsformen der Mitarbeiter untereinander.

11. Andere OCs agieren zuverlässig und mit Integrität innerhalb der Beziehung zu meiner OC.

1 | 2 | 3 | 4 | 5

12. Andere OCs zeigen Einsatz bei dem Erreichen von Win-Win-Situationen in der Beziehung zu meiner OC.

1 | 2 | 3 | 4 | 5

13. Meine OC hat eine offene Einstellung gegenüber anderen OCs.

1 | 2 | 3 | 4 | 5

14. Andere OCs haben eine offene Einstellung gegenüber meiner OC.

1 | 2 | 3 | 4 | 5

15. Meine OC zeigt Bereitschaft, in die Beziehungen zu anderen OCs zu investieren.

1 | 2 | 3 | 4 | 5

16. Andere OCs zeigen Bereitschaft, in die Beziehung zu meiner OC zu investieren.

1 | 2 | 3 | 4 | 5

17. In der Vergangenheit hat meine OC häufig und erfolgreich mit *anderen* OCs hinsichtlich dem Ergänzen technischer Fähigkeiten zusammengearbeitet.

1 | 2 | 3 | 4 | 5

18. In der Vergangenheit hat meine OC häufig und erfolgreich mit *externen* Firmen hinsichtlich dem Ergänzen technischer Fähigkeiten zusammengearbeitet.

1 | 2 | 3 | 4 | 5

19. Für die Zukunft erwartet meine OC ebenfalls eine erfolgreiche Zusammenarbeit mit anderen OCs hinsichtlich dem Ergänzen technischer Fähigkeiten.

1 | 2 | 3 | 4 | 5

Überhaupt nicht  
einverstanden

Trifft voll  
und ganz zu

1	2	3	4	5
---	---	---	---	---

20. Gemeinsamen Ziele von OCs werden auf Gruppenniveau formuliert.

1	2	3	4	5
---	---	---	---	---

**Anmerkung (20):** Ein allgemeines Ziel zum Beispiel ist, daß OC 1 und OC 2 zusammen einen bestimmten Kunden erwerben müssen. Oder dieser OC 1 und OC 2 müssen zusammen die Anlieferung Leistung für einen Kunden verbessern.

21. Die Planung und Realisierung der gemeinsamen Ziele von OCs findet auf Gruppenniveau statt.

1	2	3	4	5
---	---	---	---	---

22. Die Kontrolle der angestrebten gemeinsamen Ziele der OCs erfolgt auf Gruppenniveau.

1	2	3	4	5
---	---	---	---	---

23. Die Kontrolle des Beitrags der einzelnen OCs zur Erreichung gemeinsamer Ziele findet auf Gruppenniveau statt.

1	2	3	4	5
---	---	---	---	---

24. Für das Erreichen gemeinsamer Ziele durch die OCs erfolgt eine finanzielle Belohnung hauptsächlich auf Gruppenniveau.

1	2	3	4	5
---	---	---	---	---

**Anmerkung (24):** Hier sollte eine Abwägung vorgenommen werden, ob hauptsächlich eine Belohnung auf Basis von Gruppenresultaten oder Resultaten der einzelnen OCs erfolgt.

25. Auf Gruppenniveau ist eine Person zur Unterstützung der Zusammenarbeit zwischen den OCs verantwortlich.

1	2	3	4	5
---	---	---	---	---

26. Auf Gruppenniveau wurde ein gutes Niveau an technischen Fähigkeiten der OCs erreicht, welches die technischen Fähigkeiten anderer OCs ergänzen kann.

1	2	3	4	5
---	---	---	---	---

27. Das gegenseitige Vervollständigen technischer Fähigkeiten wird auf Gruppenniveau koordiniert.

1	2	3	4	5
---	---	---	---	---

28. Die für die Koordination der gegenseitigen Vervollständigung technischer Fähigkeiten erforderlichen wirkungsvollen Kommunikationskanäle sind vorhanden.

1	2	3	4	5
---	---	---	---	---

Überhaupt nicht  
einverstanden

Trifft voll  
und ganz zu

1	2	3	4	5
---	---	---	---	---

29. Für das gegenseitige Vervollständigen technischer Fähigkeiten wurden auf Gruppenniveau formale Richtlinien und Verfahren eingeführt.

1	2	3	4	5
---	---	---	---	---

30. Auf Gruppenniveau ist eine Person aktiv damit beschäftigt, die technischen Fähigkeiten der OCs zu verbinden.

1	2	3	4	5
---	---	---	---	---

31. Für das gegenseitige Ergänzen technischer Fähigkeiten werden regelmäßig Sitzungen der OCs organisiert

1	2	3	4	5
---	---	---	---	---

32. Die gegenwärtige strategische Richtung der Neways Gruppe ist für meine OC klar.

1	2	3	4	5
---	---	---	---	---

33. Die gegenwärtige strategische Richtung meiner OC ist klar.

1	2	3	4	5
---	---	---	---	---

34. Die strategische Richtung der Neways Gruppe und meiner OC haben eine enge Beziehung zueinander.

1	2	3	4	5
---	---	---	---	---

35. Innerhalb der Neways Gruppe besteht eine gemeinsame strategische Vision für die Zukunft.

1	2	3	4	5
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**Anmerkung (35):** Der Begriff Vision bezieht sich auf einen längerfristigen Zeitraum, wie beispielsweise 5 Jahre.

36. Meine OC kommt regelmäßig mit neuen Produkt- und Verfahrensinnovationen auf den Markt.

1	2	3	4	5
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37. Die Account Manager und Commercial Manager meiner OC sind eher Consultants als Verkäufer.

1	2	3	4	5
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**Anmerkung (37):** Consultants versuchen, Probleme bei den Kunden zu lösen. Verkäufer wollen vordergründig ihre Produkte verkaufen.

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## Appendix F: list with Dutch propositions

Answer possibilities:	Helemaal mee oneens	1
	Grotendeels mee oneens	2
	Noch eens of oneens	3
	Grotendeels mee eens	4
	Helemaal mee eens	5

Questions related to **technological capabilities** are:

1. Mijn OC heeft veel kennis van de technische vaardigheden van andere OCs.
2. Technische vaardigheden van *mijn* OC kunnen in principe de technische vaardigheden van andere OCs aanvullen.
3. De technische vaardigheden van *mijn* OC kunnen concurreren met de technische vaardigheden van externe leveranciers.
4. De technische vaardigheden van *mijn* OC zijn moeilijk door andere OCs te kopiëren.
5. Technische vaardigheden van *andere* OCs kunnen in principe de technische vaardigheden van mijn OC aanvullen.
6. De technische vaardigheden van *andere* OCs kunnen concurreren met de technische vaardigheden van externe leveranciers.
7. De technische vaardigheden van *andere* OCs zijn moeilijk door mijn OC te kopiëren.
8. Binnen mijn OC worden momenteel technische vaardigheden verkregen via een externe leverancier, die ook door een *andere* OC geleverd kunnen worden.
9. Het wisselen van een externe leverancier van technische vaardigheden naar een OC brengt voor *mijn* OC weinig kosten met zich mee.

Questions related to **social capital** are:

10. Binnen de Neways groep is er sprake van één gezamenlijke cultuur met gedeelde normen en waarden.
11. Andere OCs handelen integer en betrouwbaar in de relatie met mijn OC.
12. Andere OCs zetten zich in voor het realiseren van win-win situaties in de relatie met mijn OC.
13. Mijn OC stelt zich open op ten aanzien van andere OCs.
14. Andere OCs stellen zich open op ten aanzien van mijn OC.
15. Mijn OC toont bereidheid om te investeren in relaties met andere OCs.
16. Andere OCs tonen bereidheid om te investeren in de relatie met mijn OC.
17. Mijn OC heeft in het verleden frequent succesvol samengewerkt met *andere* OCs in het onderling aanvullen van technische vaardigheden.
18. Mijn OC heeft in het verleden frequent succesvol samengewerkt met *externe bedrijven* in het onderling aanvullen van technische vaardigheden.
19. Mijn OC verwacht in de toekomst weer succesvol samen te gaan werken met *andere* OCs in het onderling aanvullen van technische vaardigheden.

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Questions related to **network management** are:

20. Op groepsniveau worden gezamenlijke doelen van OCs geformuleerd.
21. Er vindt op groepsniveau planning plaats voor het realiseren van de gezamenlijke doelen van OCs.
22. Er vindt op groepsniveau controle plaats op het behalen van gemeenschappelijke doelen door OCs.
23. Er vindt op groepsniveau controle plaats op de bijdrage van elke OC aan het behalen van gemeenschappelijke doelen.
24. Op groepsniveau worden OCs vooral financieel beloond op het behalen van gemeenschappelijke doelen.
25. Op groepsniveau is een persoon verantwoordelijk voor het ondersteunen van samenwerking tussen OCs.
26. Op groepsniveau is een goede inventarisatie gemaakt van de technische vaardigheden van OCs, die de technische vaardigheden van andere OCs kunnen aanvullen.
27. Het onderling aanvullen van technische vaardigheden wordt op groepsniveau gecoördineerd.
28. Voor het coördineren van het onderling aanvullen van technische vaardigheden zijn effectieve communicatiekanalen beschikbaar.
29. Voor het onderling aanvullen van technische vaardigheden zijn op groepsniveau formele regels en procedures opgesteld.
30. Op groepsniveau is een persoon actief bezig met het verbinden van technische vaardigheden van OCs
31. Voor het onderling aanvullen van technische vaardigheden worden regelmatig bijeenkomsten van OCs georganiseerd.

Questions related to **overall strategy** are:

32. De huidige strategische richting van de Neways groep is voor mijn OC duidelijk.
33. De huidige strategische richting van mijn OC is duidelijk.
34. De strategische richting van de Neways groep en de strategische richting van mijn OC hebben een sterke relatie met elkaar.
35. Binnen de Neways groep bestaat er een gezamenlijke strategische visie voor de toekomst.
36. Mijn OC komt regelmatig met nieuwe product- en procesinnovaties.
37. De account/commerciële managers van mijn OC zijn meer consultants dan verkopers.



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## Appendix G: list with German propositions

Answer possibilities:	Überhaupt nicht einverstanden	1
	Stimme eher nicht zu	2
	Weder Zustimmung noch Ablehnung	3
	Stimme eher zu	4
	Trifft voll und ganz zu	5

Questions related to **technological capabilities** are:

1. Meine OC hat viel Wissen hinsichtlich der technischen Fähigkeiten von anderen OC's.
2. Die technischen Fähigkeiten *meiner* OC können theoretisch die technischen Fähigkeiten anderer OC's vervollständigen.
3. Die technischen Fähigkeiten *meiner* OC können mit denen externer Lieferanten konkurrieren.
4. Die technischen Fähigkeiten *meiner* OC sind schwer durch andere OCs zu kopieren.
5. Technische Fähigkeiten *anderer* OCs können theoretisch die technischen Fähigkeiten meiner OC vervollständigen.
6. Die technischen Fähigkeiten *anderer* OCs können mit denen externer Lieferanten konkurrieren.
7. Die technischen Fähigkeiten *anderer* OCs sind schwer durch meine OC zu kopieren.
8. Innerhalb meiner OC werden zur Zeit technische Fähigkeiten mittels eines externen Lieferanten erworben, die von einer *anderen* OC ebenfalls zur Verfügung gestellt werden können.
9. Die Kosten des Wechsels von einem externen Lieferanten für technische Fähigkeiten zu einer OC sind niedrig für *meine* OC.

Questions related to **social capital** are:

10. Innerhalb der Neways Gruppe gibt es eine gemeinsame Kultur mit geteilten Normen und Werten.
11. Andere OCs agieren zuverlässig und mit Integrität innerhalb der Beziehung zu meiner OC.
12. Andere OCs zeigen Einsatz bei dem Erreichen von Win-Win-Situationen in der Beziehung zu meiner OC.
13. Meine OC hat eine offene Einstellung gegenüber anderen OCs.
14. Andere OCs haben eine offene Einstellung gegenüber meiner OC.
15. Meine OC zeigt Bereitschaft, in die Beziehungen zu anderen OCs zu investieren.
16. Andere OCs zeigen Bereitschaft, in die Beziehung zu meiner OC zu investieren.
17. In der Vergangenheit hat meine OC häufig und erfolgreich mit anderen OCs hinsichtlich dem Ergänzen technischer Fähigkeiten zusammengearbeitet.

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18. In der Vergangenheit hat meine OC häufig und erfolgreich mit externen Firmen hinsichtlich dem Ergänzen technischer Fähigkeiten zusammengearbeitet.
  19. Für die Zukunft erwartet meine OC ebenfalls eine erfolgreiche Zusammenarbeit mit anderen OCs hinsichtlich dem Ergänzen technischer Fähigkeiten.

Questions related to **network management** are:

20. Gemeinsamen Ziele von OCs werden auf Gruppenniveau formuliert.
21. Die Planung und Realisierung der gemeinsamen Ziele von OCs findet auf Gruppenniveau statt.
22. Die Kontrolle der angestrebten gemeinsamen Ziele der OCs erfolgt auf Gruppenniveau.
23. Die Kontrolle des Beitrags der einzelnen OCs zur Erreichung gemeinsamer Ziele findet auf Gruppenniveau statt.
24. Für das Erreichen gemeinsamer Ziele durch die OCs erfolgt eine finanzielle Belohnung hauptsächlich auf Gruppenniveau.
25. Auf Gruppenniveau ist eine Person zur Unterstützung der Zusammenarbeit zwischen den OCs verantwortlich.
26. Auf Gruppenniveau wurde ein gutes Niveau an technischen Fähigkeiten der OCs erreicht, welches die technischen Fähigkeiten anderer OCs ergänzen kann.
27. Das gegenseitige Vervollständigen technischer Fähigkeiten wird auf Gruppenniveau koordiniert.
28. Die für die Koordination der gegenseitigen Vervollständigung technischer Fähigkeiten erforderlichen wirkungsvollen Kommunikationskanäle sind vorhanden.
29. Für das gegenseitige Vervollständigen technischer Fähigkeiten wurden auf Gruppenniveau formale Richtlinien und Verfahren eingeführt.
30. Auf Gruppenniveau ist eine Person aktiv damit beschäftigt, die technischen Fähigkeiten der OCs zu verbinden.
31. Für das gegenseitige Ergänzen technischer Fähigkeiten werden regelmäßig Sitzungen der OCs organisiert.

Questions related to **overall strategy** are:

32. Die gegenwärtige strategische Richtung der Neways Gruppe ist für meine OC klar.
33. Die gegenwärtige strategische Richtung meiner OC ist klar.
34. Die strategische Richtung der Neways Gruppe und meiner OC haben eine enge Beziehung zueinander.
35. Innerhalb der Neways Gruppe besteht eine gemeinsame strategische Vision für die Zukunft.
36. Meine OC kommt regelmäßig mit neuen Produkt- und Verfahrensinnovationen auf den Markt.
37. Die Account Manager und Commercial Manager meiner OC sind eher Consultants als Verkäufer.

## Appendix H: scores interviewees on propositions

In the table below, in the third column to the left, the group averages (GA) are shown. The final five columns show which percentage of the 20 interviewees gave a specific answer. For example the percentage of the group that gave answer possibility 3 (Neither agree nor disagree) to a question is abbreviated as % A3.

	<b>Prop. Nr.</b>	<b>GA</b>	<b>% A1</b>	<b>% A2</b>	<b>% A3</b>	<b>% A4</b>	<b>% A5</b>
Technological capabilities	<b>1</b>	3,4	0	20	30	45	5
	<b>2</b>	4,0	0	10	20	30	40
	<b>3</b>	4,2	0	10	10	30	50
	<b>4</b>	2,9	20	30	10	25	15
	<b>5</b>	4,3	0	5	5	50	40
	<b>6</b>	4,0	0	10	15	45	30
	<b>7</b>	2,5	10	50	25	15	0
	<b>8</b>	2,2	40	25	15	15	5
	<b>9</b>	2,9	20	25	20	20	15
Social capital	<b>10</b>	2,1	30	45	10	15	0
	<b>11</b>	3,4	0	20	30	45	5
	<b>12</b>	3,2	0	20	40	40	0
	<b>13</b>	4,1	0	0	25	40	35
	<b>14</b>	3,5	0	5	50	35	10
	<b>15</b>	4,3	0	5	5	45	45
	<b>16</b>	3,3	0	25	30	40	5
	<b>17</b>	3,2	5	25	30	25	15
	<b>18</b>	3,4	10	20	20	25	25
	<b>19</b>	4,3	0	0	15	40	45
Network management	<b>20</b>	2,3	20	45	20	15	0
	<b>21</b>	2,1	25	45	30	0	0
	<b>22</b>	2,4	15	50	25	5	5
	<b>23</b>	2,8	10	35	30	20	5
	<b>24</b>	2,0	25	55	20	0	0
	<b>25</b>	2,4	25	45	5	15	10
	<b>26</b>	2,4	20	30	45	5	0
	<b>27</b>	2,2	20	50	20	10	0
	<b>28</b>	2,7	10	40	30	10	10
	<b>29</b>	1,5	60	35	5	0	0
	<b>30</b>	1,9	40	45	10	0	5
	<b>31</b>	2,2	15	60	15	10	0
Overall strategy	<b>32</b>	3,4	10	15	20	40	15
	<b>33</b>	4,1	0	15	10	30	45
	<b>34</b>	3,3	0	20	40	30	10
	<b>35</b>	2,4	20	35	30	15	0
	<b>36</b>	2,8	10	35	25	25	5
	<b>37</b>	4,1	0	10	15	30	45