AMMON
Advanced Materials Manufacturing Oost-Nederland

OPEN INNOVATIE CENTRUM ADVANCED MATERIALS

UNIVERSITY OF TWENTE.

STRUCTURING OPEN INNOVATION
IN THE ADVANCED MATERIALS SECTOR

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Master Thesis
Business Administration
Innovation & Entrepreneurship

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"Individually, we are one drop. Together, we are an ocean."

- Ryunosuke Satoro

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I. Preface

This report describes my Master Thesis at OICAM (Open Innovatie Centrum Advanced Materials), which focused on how best to improve the AMMON-network (Advanced Materials Manufacturing Oost Nederland). This thesis was done for the University of Twente and study Business Administration - Innovation and Entrepreneurship.

I chose for this assignment because of its link with technology and the link with my previous Master of Industrial Design Engineering – Emerging Technology Design. It combines the business and collaborative side of projects with the development of new products, making it an interesting challenge for me to combine these seemingly different worlds.

Since I had one last course to finish and a couple of unplanned activities I've worked part-time on this assignment till January, I look back at a good efficient project that held many challenges. Starting February I could work fulltime, which made a large difference because the bulk of the work was done in these last months. The interviews and meetings were experiences I won't soon forget. These provided me with insights in how innovative collaborations work and how important the personalities behind a company are. It has been a good experience, travelling around the Netherlands and meeting different kinds of people and hearing their stories.

This project would not have been possible without the help of those that provided me with feedback, comments and sometimes a subtle nudge in the right direction. Firstly I would like to thank my supervisors: Martin Olde Weghuis and Jeroen Kraaijenbrink. They were always willing to provide thorough feedback on my progress and were critical to get the best out of this assignment. Secondly I would like to thank Jorieke Adolfsen, Frank Gervedink, Lute Broens, Pieter Spaans, Wout Vrijkorte, Lisan ter Heijne, Galina van der Weert, Frank Leoné, Auke te Winkel, Anne-Marie van der Weijden, Jan van den Berg, Cees Timmer and many more for their input and support during the thesis. I want to thank the partners and stakeholders that I have interviewed during this thesis and the LinkedIn-groups focused on innovation that provided interesting insights in how companies try to cope with these problems worldwide. Also thanks to Tina Barnes from Warwick University, who provided me with her toolkit and research as a source of inspiration for my toolkit. Lastly of course I would like to thank friends, family and whoever I forgot to mention above. If you are reading this, you most likely know who you are.

Hopefully this report will provide you with thorough insights in my thesis. I think that this research could aid the AMMON network towards a successful future and could perhaps even have far-reaching uses for other innovative collaborations.

Have fun reading!

Kind regards,

Nick Leoné

II. Management Summary

Introduction

AMMON is a business network that develops products by combining the core competences of firms in the east of the Netherlands. The network is new, it still has to reach its full potential. Creating successful radical innovations is difficult within innovative collaborations. Combining available technologies and facilities can be faster and cheaper for all the firms involved. However, collaborations introduce problems: sharing intellectual property (IP), trust, communication issues and more.

Research Setup

This research is concerned with how AMMON can optimize their projects. This is done by finding current bottlenecks, their origins and potential solutions. By using literature and past documentation, interviews were created that asked participants about the theoretical concepts, AMMON in general and two specific projects within AMMON. The two cases were used to obtain additional factors that are specific for AMMON-projects. There were three groups of participants: partners, AMMON-managers and external stakeholders. The results have been combined into a toolkit that aims to measure commitment, trust and expectations of the partners involved. This toolkit can be used alongside existing tools, because it does not include market research and technological feasibility. The tool is tailored to AMMON, it focuses on factors within projects that up until now were not measured.

Results & Conclusions

The three groups of participants showed variation on which factors they thought were of importance for collaboration projects. The external stakeholders (which were mostly government-instances) thought subsidies were much less important than companies and AMMON regarded them. External stakeholders and the AMMON-team favoured external guidance of projects, while companies resisted this idea. There were other gaps between theory and practice: according to the theory and AMMON spin-offs and starting in smaller collaborations are essential for large projects success, partners thought this was not needed. There were differences in opinions on the optimal size of AMMON. The AMMON-team aims for a large network, whereas partners stated they wanted to keep it small and effective. The sample unanimously stated trust, speed and concrete results are most important. Partners had slightly more focus on personal contacts. The AMMON-team should consider how partners feel about their strategy, since it could affect the effectiveness of the network. The toolkit aids in finding and comparing these priorities for optimizing AMMON.

Practical & Theoretical Implications

In total six network-level recommendations have been provided. AMMON should focus on developing a clear structure for creating contracts and spin-offs within projects, look into the levels and type of communication (network-level, firm-level and updates to external stakeholders), develop a venturing fund, stimulate smaller collaborations within AMMON and negotiate their own position compared to other initiatives. The Network Theory debates on an optimal size and heterogeneity for a network, this same debate is needed within AMMON. Open Innovation focuses too little on stakeholder effects, the region of Twente and competing networks have a large effect on the performance of AMMON.

III. Table of Contents

1. Introduction

"In een sinaasappel zitten evenveel vitamines als in 60 zakken patat. Ik aan het tellen en aan het rekenen, kom ik erachter dat ik veel te weinig patat eet"

- Herman Finkers [1]

The quote above is exemplary for how projects are often managed: they focus on the technology side and neglect the importance of interpersonal and cultural factors. Herman Finkers looked at the wrong solution to solve a problem by eating more French fries. Companies and theory often focus on getting the Intellectual Property, process and technology optimal, while the communication and personal contacts are essential.

This thesis aims to look at the whole picture to optimize collaborations and this first chapter shows the background and focus of this assignment. It provides an introduction into the thesis, the main motivation, AMMON, OICAM and the research goals and questions.

1.1. Problem Background

Twente has a growing unemployment rate, about 10% of all inhabitants, and 14% of the highly educated in Twente are currently unemployed (CBS.nl, 2013). Companies are continuously announcing new cutbacks and are looking at how to counter this. There have been many initiatives to improve collaboration and spin-offs within the region, which have developed the infrastructure of Twente. For instance KennisparkTwente , OostNV and IKT are currently focused on creating a network of technological firms. Network initiatives in the past often where initiated by the government. According to Verdonck (2011), Barnes, Pashby, and Gibbons (2006) and the OECD (2012) this could be one of the reasons of the varying success. They state that government institutions lack knowledge about the actual market needs and technological side of projects (Verdonck, 2011).

On a nationwide-scale the OECD (2012) states that the Netherlands are good at innovation, but fail to successfully market products. The return on investments from these innovations is low in the Netherlands, so although highly innovative, the revenues generated per innovation is low (Astebro & Michela, 2005; OECD, 2012). The investments on innovation is low compared to other countries, with 1,84% of GDP it is well below the 3% Lisbon-goal and the European average (TNO, 2012). The Netherlands need to invest more, become better in marketing innovations and develop a good innovation framework (OECD, 2012).

Companies often look for innovations within the company, they are not used to looking outside their own borders for new product opportunities, except when it is stimulated financially (Faems, Van Looy, & Debackere, 2005; Stichting Twente Index, 2012; Verdonck, 2011). Incumbent companies in the east of the Netherlands are not used to developing complete products, but have always focused on providing

[1] Translation:
"In an orange there are as many vitamins as in 60 bags of French fries.
After counting and calculating, I discovered I eat by far not enough French fries"

base materials. This means that they focused on the start of the value chain (Hansen & Birkinshaw, 2007; Stabell & Fjeldstad, 1998; Stichting Twente Index, 2012). It is difficult to compete on materials with economies like China and India, where labour is cheaper and innovation investments are higher (Narula, 2004). Therefore new solutions for getting a competitive advantage are needed (Porter, 2008).

The innovation budgets from the government and banks are decreasing, which makes the funding of projects more difficult. The government switches on providing revolving funds instead of subsidies, which means that companies loan the money and thus have higher risks. The government focuses more on becoming a launching customer, which mean they ensure firms to buy a certain amount of products on launch. This can aid in funding demonstrators and reducing risks, but for complex innovations this is not always possible because of the long development time (Czarnitzki, Ebersberger, & Fier, 2007). Banks are hesitant to fund risky projects, making companies more reliant on private investors and their own finances (H. W. Chesbrough, 2012). Since companies themselves have to cut costs because of the crisis, the funds for new projects are slowly decreasing from three sides. Innovation thus is becoming difficult to successfully develop and market.

1.2. About AMMON

AMMON (Advanced Materials and Manufacturing Network Oost-Nederland) is a cooperative network that focuses on Industry Leaders (ILs) from the east of the Netherlands. It was founded in 2011 and aims to develop innovative technological solutions by combining the core competences of its partners (Gerring, 2004; Prahalad & Hamel, 1990). They differ from other initiatives because of their product-focus, the fact that they are industry-led and focus on combining core competences. This enables the development of new competitive products while keeping the development time low, since little to no new technology is needed. This concept of combining technologies is comparable to Procter & Gamble's Connect&Develop program (Huston & Sakkab, 2006). This program looks outside the company for innovations and redeveloped their R&D for working with technology coming from external sources. This reduces the time-to-market, reduces R&D costs and increases the chance of innovation success because it uses proven principles from external sources (Huston & Sakkab, 2006).

AMMON does not focus on growing spin-offs and smaller SME's (Small and Medium Enterprises), but aims at the larger organizations (Industry Leaders, from now on 'IL') in the east of the Netherlands. AMMON went through three phases, and is at the moment of writing just in Phase 3. Phase 1 and 2 were a test that was financed by the government, whereas Phase 3 aims to become completely financially independent and funded by the partners in the network. The companies yearly pay between €20.000 and €40.000 to the network depending on their size. This financing is used for paying the AMMON Business Development Team that coordinates and structures the network.

AMMON is driven by the Industry Leaders instead of the government and is directed by an Industry Board (IB). This board consists of six CEO’s from the network and the companies guide the network themselves. This makes it easier to get support from the companies and provides a professional view on projects.

AMMON has no formal employees; experienced managers are hired on a project basis. The personnel does the daily activities concerning communication and organizing meetings. In projects these or additional managers are hired to provide support to develop the products.

The process AMMON wants to use for evaluating projects is shown below in Figure 1.

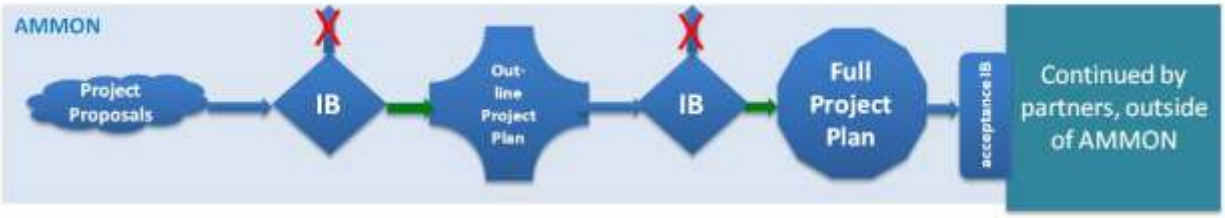

Figure 1 - The process of evaluating AMMON-projects

Companies and the AMMON-team first provide a project proposal, after which the Industry Board chooses which proposal continues and which do not. If a proposal is accepted, an outline project plan will be developed that will also be evaluated by the IB. Lastly a full project plan including demonstrators will be made, which the IB again evaluates. Afterwards the project can further be developed with less guidance by AMMON. In this stage the companies are free to develop the market themselves, but can always ask the AMMON-team when help is needed.

The complete process from initiation up to launching a product is visualized below. This image has been developed for this thesis to visualize the concept and get an overview of the steps taken. It was also used to determine on where AMMON encounters bottlenecks. A larger version of this self-developed model can be found in Appendix B.

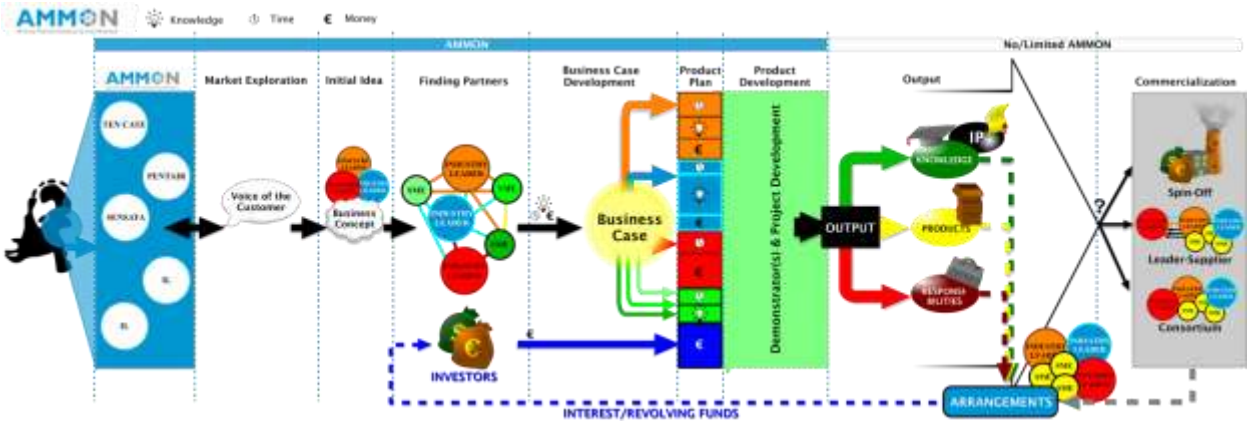

Figure 2 - The proposed Structure of AMMON Projects

The first step in the model shows that the AMMON-network is formed from companies in the East of the Netherlands. Secondly, the network responds to a market demand by defining the Voice of the Customer, this is called the Market Exploration-phase. Thirdly they develop these market ideas into an Initial Idea, which AMMON compares with the core competences in the network to develop the concept further. Fourthly, it looks for partners that are able or willing to help. This Finding Partners-phase creates a raw concept of the product and SME's are contacted. In the Business Case Development phase these partners develop a business case, which writes down the market, technologies and strategy in detail. To make a clear division in tasks and responsibilities a Project Plan is developed in the 6th phase. This project plan defines the knowledge, time and money all partners will invest in the project. When this is finished the Product Development can start and a demonstrator (proof of principle) will be developed. The output can be on multiple levels, varying from Knowledge & Intellectual Property (IP), physical products, but also responsibilities for supporting the demonstrator. The last phase is the Commercialization phase, where companies market the product. This commercialization can be done in the form of a spin-off (Braaksma & De Jong, 2005; Mayer, 2012), licensing (Teece, 1986), consortium (Ahuja, Lampert, & Tandon, 2008) or comparable structures outside of AMMON. The chosen future formal structure and marketing can greatly affect the process afterwards. Whether the product will be marketed by one of the partners, in a joint venture or spin-off can have a large effect on the project success when not properly managed (Christensen & Bower, 1996).

Within AMMON several Open Innovation Centres stimulate collaboration between these partners by providing aid in visualizing and testing concepts. OICAM is one of these centres. Within the AMMON-network the main managers and facilitators are also part of OICAM currently.

1.3. About OICAM

The Open Innovation Centre Advanced Materials (OICAM) is one of the Open Innovation Centres within the AMMON network and was founded in July 2011 to improve open innovation in the region. Within this thesis OICAM will be considered as the initiator and facilitator of the project.

OICAMs goal is to provide the technology and knowledge to create demonstrators for developing and testing new concepts (OICAM, 2012). They aim to form consortia of (mostly) SME's to develop new products. They also provide expert knowledge and guidance in the product development process wherever needed. Next to providing guidance and a physical production facility, OICAM also has the ability to aid in funding innovation-projects by providing Innovation Vouchers. Up to the maximum of 50%, SME's can get funding by the government for their innovations.

OICAM is one of the major players in the AMMON-network and aims to obtain a large part of their revenues from these projects by producing demonstrators. In a few years the government funding of OICAM will stop, therefore they quickly want to develop the AMMON-network. OICAM is highly flexible and has no formal fulltime employees; it hires several highly experienced people that have a broad industry network and knowledge. These employees are available part-time for AMMON and partly for OICAM, which means there is an overlap in tasks. Both OICAM and AMMON are formally a foundation that does not focus on profit.

1.4. Project Motivation

Innovative collaborations are difficult to start and maintain. The conflicting goals of companies and interdependencies make that 30-50% of all initiatives fail (Berendsen & Kuijper, 2012; Gassmann, Enkel, & Chesbrough, 2010). These differing views, priorities and goals of all parties make it a complex and slow process within AMMON to realize new products. This same problem holds for AMMON because the companies have differing backgrounds and are large organizations.

In past projects it became clear to OICAM that starting and maintaining these collaborations is difficult since companies are new to this concept and projects are often delayed. OICAM thinks there are opportunities to improve and streamline this process and use the capabilities of partners in the AMMON network better.

1.5. Research Goal

The previous paragraphs showed the background of the assignment. This chapter shows where this research will focus on and starts with stating the goal of this thesis.

Developing new products in collaboration is new for most companies within AMMON. Recommendations were requested by OICAM to optimize the network and smooth this process. The goal of this research was as follows:

Provide the AMMON-network with recommendations and a toolkit to start and maintain collaboration projects more efficiently and effectively.

The main goal is to improve the AMMON-network by finding the current bottlenecks for successful product development and propose solutions for these bottlenecks. The proposed solutions consist of two types: recommendations for AMMON and a toolkit. Recommendations will be on a network- as well as on a project level. The developed toolkit has been tailored to AMMON and aims to make the network operate more efficiently. The developed toolkit contains tools to aid communication and clarify expectations between partners and AMMON. The main reason for choosing a toolkit instead of one all-encompassing tool is that a toolkit is in general more flexible and easier to combine with presently available tools (Aken, Berends, & Bij, 2007). It can be used alongside currently available tools.

1.6. Research Questions

The previous paragraph discussed the main goal of this project; these were developed into research questions. These questions aid in structuring the thesis and show the needed answers in this thesis. The main question that will be answered is as follows:

Main Question

What bottlenecks and opportunities does AMMON currently face in starting and maintaining multi-stakeholder innovation projects and what kind of structural changes and tools can be used to solve these?

From the main question the following sub-questions were developed:

Sub-questions

1. *What bottlenecks appeared in AMMON?*
2. *Why did these bottlenecks appear?*
3. *What can be done to solve these bottlenecks in future projects?*
4. *What opportunities are there for structural improvements of AMMON on a network level?*
5. *What kind of tools can be provided to account for these problems?*

The questions above are chronological, because they start with looking at past bottlenecks for projects, followed by looking into the origins and lastly the solutions of these bottlenecks. These can either be technological or process/business specific. The aim of this research is to learn from past experiences in order to optimize future collaborations. There is a division between project-specific problems and the inert bottlenecks that arise from the structure of AMMON. Tools will be searched for or developed in order to solve the bottlenecks found. Wherever the tools are insufficient or larger changes are needed, recommendations for structural changes will be given.

Three sources are used for solving these bottlenecks: literature, past documentation from within AMMON and interviews with the stakeholders. Firstly a theoretical base was built by looking into the literature for possible bottlenecks that could be relevant for AMMON, as will be discussed in chapter 2. Secondly in Chapter 3 the methodology and used process will be explained. The final source of information was first-hand sources of AMMON-projects. By asking stakeholders of the projects for their opinions the most important bottlenecks specific for AMMON we found. These results are discussed in Chapter 4. In Chapter 5 two AMMON-cases are discussed, which describes if the variables sketched in theory and past practices are applicable in these AMMON-projects. Lastly, by combining theory, case-documentation, experts and stakeholders the most important bottlenecks and origins were distilled. This was used as a base for the toolkit and recommendations and is discussed in Chapter 5 and 6.

2. Theory & Concepts

"Value appropriation can no longer be analyzed in terms of the negotiation power of individual firms as too much fighting among the participants for a share of the pie reduces the volume of the pie" –

- Wim Vanhaverbeke

The quote above from Vanhaverbeke (Henry William Chesbrough, Vanhaverbeke, & West, 2006) shows one of the main problems with collaborations: by fighting over a large share in a project, the project success itself is slowed down. Projects often fail because of the process itself, not necessarily because of (technological) problems of the product (Barnes, Pashby, & Gibbons, 2002; Chesbrough & Teece, 2002). This chapter shows the theoretical framework of this research and provides the main definitions used to ensure consistency throughout the thesis. These were used as a base for coding the interviews and researching the AMMON-structure.

H. W. Chesbrough and Crowther (2006) distinguish five different levels in innovative collaborations:

1. Individuals
2. Firm level
3. Dyad
4. Interorganizational
5. National/regional

For this thesis network theory, strategic alliances, stakeholders and open innovation theory were most important. These were chosen because of their link with the layers shown above: it encompasses the network, project and company level. By including the stakeholder theory it includes the environment, national/regional effects and interrelated effects as well as shown in the figure 3.

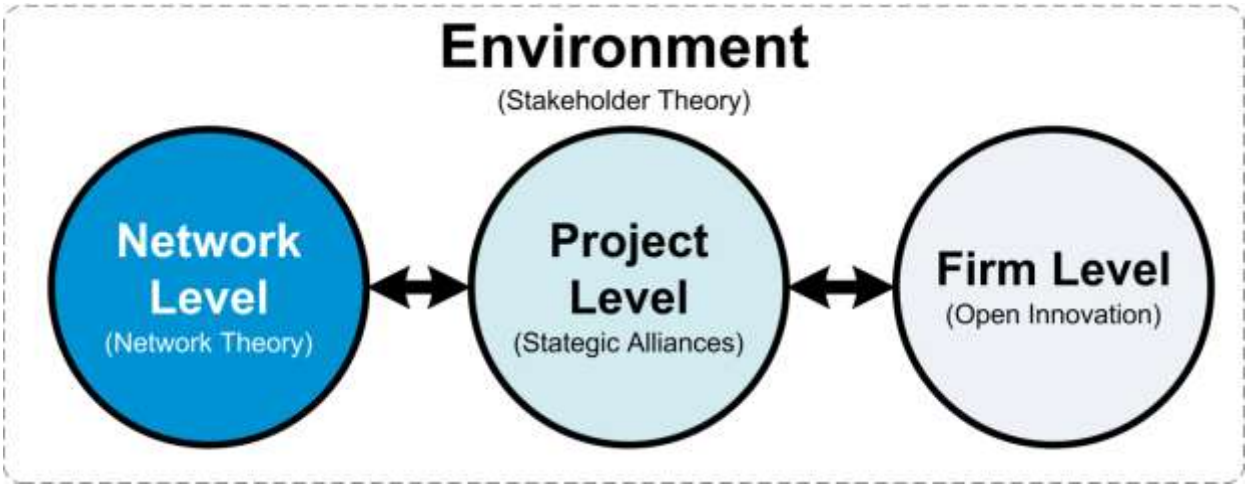

Figure 3 - The four main theories of this thesis:
Stakeholder Theory, Network Theory, Strategic Alliances & Open Innovation Theory

Open Innovation theory focuses on firm level; Strategic Alliances on dyad/project level. Interorganizational is linked with the network theory level and the stakeholder theory holds for all levels and National/Regional. Above is a simplified view, since variables are interdependent and the network

itself could be an Open Innovation environment. These interactions will not be discussed in detail in order to keep the thesis focused. An overview of the used literature can be found in the Bibliography and Appendix A. Firstly Network Theory will be discussed, followed by Strategic Alliances, Open Innovation Theory and Stakeholder Theory. In sub-chapter 2.5 the chosen variables will be discussed that followed from this literature.

2.1. Network Theory

Network Theory focuses on how networks should be structured and what is needed to realize a networks full potential. As such it provides relevant insights in potential bottlenecks of AMMON. Important factors are the broadness and type of partners (Corsaro, Cantu, & Tunisini, 2012), the importance of tie strengths and size of a network (Ahuja, 2000; Anderson, Hakansson, & Johanson, 1994) and role of SME's (Bougrain & Haudeville, 2002; Narula, 2004).

The following definition of networks from Barringer and Harrison (2000) will be used in this report: *"(...)networks are constellations of businesses that organize through the establishment of social, rather than legally binding, contracts"* (Barringer & Harrison, 2000, p. 387). In this thesis networks are thus considered as open, loose coupled systems (Anderson et al., 1994), which conforms to how AMMON is structured. This means there are not many obligations for members except for paying a yearly fee. AMMON can be considered an engineered network (Doz, Olk, & Ring, 2000), which means it emerged from a small number of hub companies. In this case OICAM can be seen as the main initiator and management for AMMON, together with the main companies: TenCate, Pentair, TKH, Bronckhorst High-Tech, Reef and Sensata.

A larger network does not necessarily mean it is better network than smaller ones. A larger network is more costly to maintain, provide less focus per partner and could leak sensitive information to competitors (Ahuja, 2000; Anderson et al., 1994; Corsaro et al., 2012). The history and stability of a network is regarded beneficial for knowledge spill-over's and entrance to new markets (Ahuja, 2000; Garud & Karnoe, 2003; Kale & Singh, 2009). This depends on the type of companies within a network: the network should in general be heterogeneous (Corsaro et al., 2012), clearly structured (Dhanaraj & Parkhe, 2006) and have a common goal (Middel, Fisscher, & Groen, 2007). Concerning the heterogeneity it could be difficult to grow without getting an overlap in partners and keep a focus (Corsaro et al., 2012) (Astebro & Michela, 2005; Nagji & Tuff, 2012; Prahalad & Hamel, 1990). This is all regarded as the strategic priority of AMMON: do they want to become large of keep small?

Opinions differ greatly on whether there is a best way to structure networks. Ahuja (2000) advocates increasing structural holes and Lowik, van Rossum, Kraaijenbrink, and Groen (2012) recommend increasing strong ties to develop trust and interdependencies. Swedberg (2000) however recommends increasing the weak ties to get new inputs. He states innovation is more likely to occur from these sources. According to Corsaro et al. (2012) there most likely is an optimum between network efforts and results and this depends on the industry and company position (Barringer & Harrison, 2000). Structural holes mean that firms are essential for reaching other nodes in the network, giving them a competitive advantage in the network. Strong ties means companies know each other well, whereas weak ties are

companies further away that are less known. Weak ties can be beneficial, because they often reside in other markets and use different networks (Ahuja, 2000). Strong ties however trust each other more and have better insights in the needs and strengths of partners, which makes collaboration and communication easier. Since AMMON is focused on Industrial Leaders and product development, strong ties can be beneficial for fast product development. More weak ties however, provide more new technologies and insights which can result in new projects. Both have its advantages and disadvantages, this depends mainly on the expectations of the stakeholders within AMMON. Opinions thus differ whether heterogeneity and a large size is beneficial or not. By changing this structure of the network, AMMON will focus on different partners and types of ties.

AMMON focuses on Industry Leaders, but also wants to include SME's where needed. For start-ups and SME's the benefits of a networks can be essential: a network can provide them with legitimacy (Zaheer, Gozubuyuk, & Milanov, 2010), visibility (Witt, 2004) and access to resources and markets they need to grow (Coviello, 2006). The downside is that a large difference in size results in a large power difference and dependency of the SME (Narula, 2004). For SME's the needed investments into AMMON could be a barrier (Narula, 2004).

A network can be regarded successful on different levels, therefore the factor perception is also of importance (Ahuja et al., 2008). Expected outcomes is tangible, whereas perception could also hold factors like mutual trust, atmosphere and the general perception of benefits (Cable & Judge, 1997; Das & Teng, 2001).

The network theory shows there are multiple bottlenecks that could come from within the network. Figure 4 shows the factors that will be used in this thesis.

Partners within a network can be a barrier for starting new projects because the strategic priorities do not match or the structure is insufficiently clear (De Man & Roijakkers, 2009). Investments and IP could be a barrier for joining AMMON, especially for smaller companies (Bougrain & Haudeville, 2002; Narula, 2004). Another problem is that expected outcomes do not match with the perception of a network. The network theory provides input to answer the first and second question; it will be used to look at the structure of AMMON and systematic problems that arise from it. These factors will all be taken into account in the following chapters.

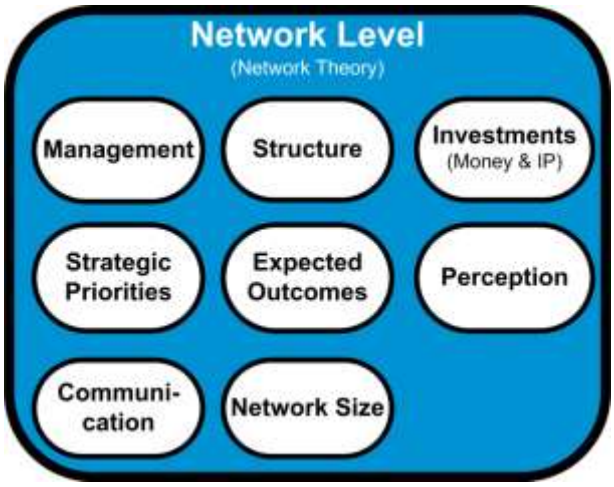

Figure 4 - Network Theory Variables

2.2. Strategic Alliances

Strategic alliances are *"voluntary interfirm co-operative arrangements"* (Das & Teng, 2001, p. 2) that in the for this thesis will be considered as AMMON-projects. This topic looks at tightly coupled arrangements; these alliances are on a project basis using a more formal structure. It could provide insights in how to structure projects and bottlenecks that follow out of this structure. This is different from Network Theory and Open Innovation, in the sense that these focus more on outside factors or less structured collaborations. Determining in what form to collaborate can greatly influence the end-result and commitments partners expect from each-other (Anand & Daft, 2007).

Collaboration means working together towards a common goal. In this case the focus will be on sharing resources to develop new solutions: *"(...) an activity where two or more partners make substantial contributions of resources and know-how to agreed aims* " (Bergek & Bruzelius, 2010, p. 1323)

Good management on a project greatly affects the successfulness of collaborations. Without an independent coordinator projects in general are delayed because of internal struggling (Berendsen & Kuijper, 2012).

Barringer and Harrison (2000) mention that there are at least six structures in which firms can collaborate: Joint Ventures, Networks, Consortia, Alliances, Trade Associations and Interlocking Directorates. These vary in how tightly the companies are coupled and how dependent on each-other the stakeholders are. The first three are focused on collaboration for finding and developing projects. The latter three are more loosely coupled, where companies are more focused on information sharing and exchange. Formal structures like collaborative spin-offs[2] in this definition will be considered a joint venture, whereas a spin-off/spin-out would be considered a part of only one of the firms. Spin-offs are proven to be important for large companies to innovate successfully, since these provide a focus on radical innovations that they wouldn't normally get (Braaksma & De Jong, 2005; Christensen & Bower, 1996). Risk is strongly associated with the type of products or market, the further in the future or newer the market, the higher the risk (Barringer & Harrison, 2000). Within these different structures the *Task clarity* (Kotter, 2007; Vasconcelos, Caetano, Sinogas, Mendes, & Tribolet, 2003), *expected outcomes, management/leadership* and *communication (Astebro & Michela, 2005)* should be consistent *(Barringer & Harrison, 2000)*.

Figure 5 - Strategic Alliances Variables

[2] Spinoffs are formal entities created next to a main firm. It is in general an independent startup, but can count on (financial) support from the mother company(Braaksma & De Jong, 2005).

Collaborations however should remain open and based on a mutual goal. Contracting can stifle innovation and in extreme cases even decrease trust (Faems, Janssens, Madhok, & Van Looy, 2008; Faems et al., 2005). The investments need and risk in a project determine the need for quality management and contracting, but also the commitment companies give to a project (Pittaway, Robertson, Munir, Denyer, & Neely, 2004).

In the early phases of a project the tasks should be as clear as possible; enabling the participants to know what is expected from each other beforehand. Within projects as well the expected outcomes (results), communication, task clarity and perception can greatly differ within a project(Barnes et al., 2002; Berendsen & Kuijper, 2012).

The project level aids in solving the third and fourth question, by solving bottlenecks with restructuring the collaborations. These factors are management, structure, investments, risk, contracting, expected outcomes, perception and task clarity (Barringer & Harrison, 2000).

2.3. Open Innovation Theory

AMMON is based on the principle of sharing information within the network and projects, with the aim of developing new innovative products. AMMON calls it "Closed Open Innovation", meaning that information is openly shared internally, but not with the outside world. Therefore this topic is included, since this provides factors for successful open innovation (Ahuja et al., 2008; Barringer & Harrison, 2000; Tidd & Bessant, 2009).

Innovation is defined by Crossan and Apaydin (2010) as *"production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome."* (Crossan & Apaydin, 2010, p. 1155). This definition will be used throughout the thesis because it covers the full spectrum of innovation: from concept to exploitation and within products as well as processes. The focus in this thesis will be on product development, but process-innovations were needed as well (Kahn, Barczak, & Moss, 2006; Tidd, 2001). The recommendations and tools that will result out of this thesis can also be considered process-innovations.

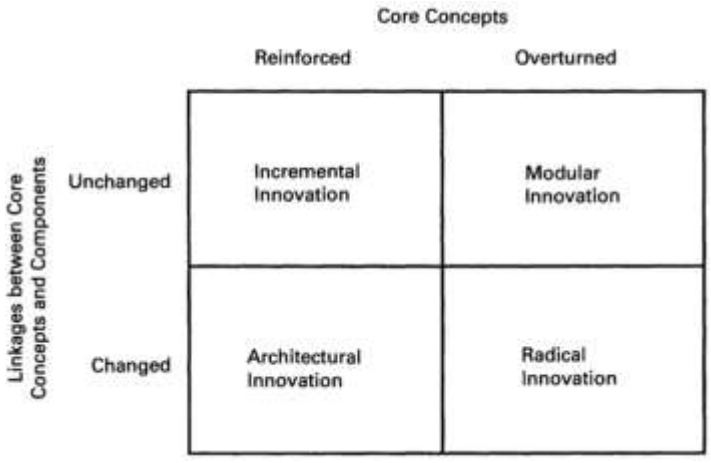

Figure 6 - Henderson & Clark (1990)

Both Henderson and Clark (1990) and Tidd (2001) state that the type of innovation affects the process needed to get to a successful innovation. For instance radical innovations are more network-driven compared to simpler, incremental innovations. The latter uses the current network and knowledge, whereas architectural and radical innovations require developing or

acquiring new competences. AMMON focuses on combining existing competences into products that are new for a specific market and are thus by definition architectural. This means that bottlenecks are likely to be different from complex innovations, since less investments and development time is needed (Henderson & Clark, 1990). These types of innovations are however harder to market because the market and companies are often not known to each-other. Furthermore it is more difficult to create the interfaces between technologies since these are new (Henderson & Clark, 1990).

In this thesis the original definition of Open Innovation from Chesbrough (2012) will be used: *"the use of purposive inflows and outflow of knowledge to accelerate internal innovation and expand the markets for external use of innovation"* (H.W. Chesbrough, 2012, p. 20). This same definition will be used throughout the thesis, since it describes the sharing of knowledge to increase innovation of a company or network which is exactly where this thesis and AMMON itself is based on.

Ahuja et al. (2008) distinguish four categories of attributes for Open Innovation: Industry Structure, Firm Characteristics, Intra-Organizational Attributes and Institutional Influences. The first (Industry Structure) focuses on the network and power of suppliers and clients, the second (Firm Characteristics) focuses on the strength of a company: the size, scope, position and performance; the stronger and larger a company is, the more likely they are able to build good internal innovation facilities. The third (Intra-Organizational Attributes) looks at the governance within a company: the quality of the managers, the incentive system and processes. Here also the culture and information sharing is included. This is an important factor of innovation, but debate that these are difficult to steer or monitor (Ring & Van de Ven, 1994). Culture and trust develops over time and cannot be changed ad-hoc (H.W. Chesbrough, 2012). The last factor (Institutional Influences) focuses on the differences between institutions and companies. Universities in general focus on patents and science, whereas companies focus on profit. Since the universities have a limited role in AMMON, this is not a factor that was included in this thesis. From (Ahuja et al., 2008) the factors structure, size and management were distilled.

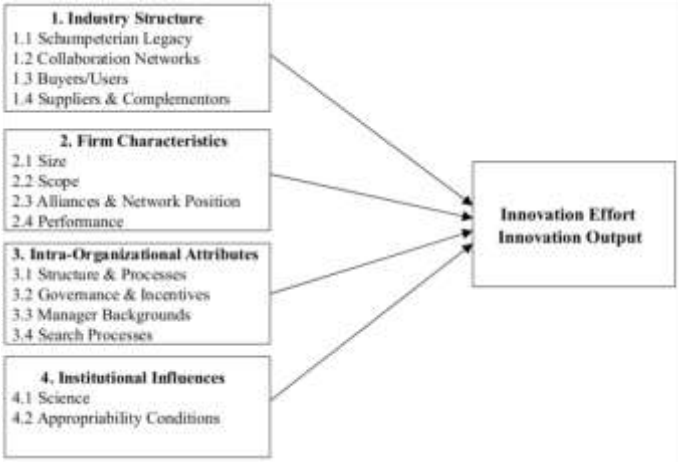

Figure 7 - The factors for successful Open Innovation according to Ahuja (2008)

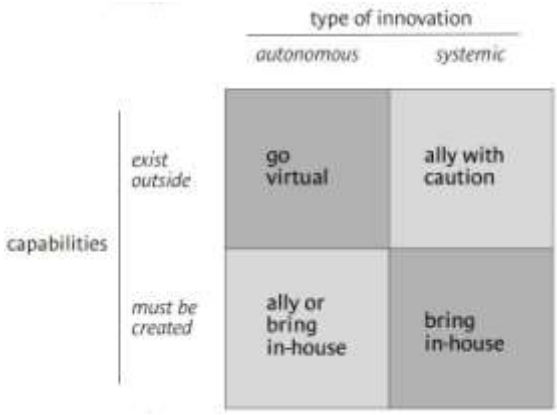

Figure 8 - Chesbrough (1996)

Companies choose whether they should develop competences in-house or use competences from partners (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2004). They try to adapt their culture and structure to changes in strategy. According to H. W. Chesbrough and Teece (1996), Tidd and Bessant (2009) and Huston and Sakkab (2006) this depends greatly on whether the technology is available outside the firm and whether this is a simple autonomous innovation or systemic innovation. If the innovation is autonomous it can be developed outside of the core processes, whereas a systemic innovation affects the core processes. For instance, changing a car engine affects the design of the complete car. A new GPS-device however, can be added instantly without the need of further redesigns. This process affects whether companies would be willing, or if it would be beneficial to develop these systems in collaboration (H. W. Chesbrough & Teece, 1996). In AMMON most innovations use existing technologies, meaning the interfaces are most important and no systemic innovations are needed.

Trust is often regarded as the cornerstone of Open Innovation, as it affects the extent to which collaborations need contracts and the freedom partners give each-other within a project (Ciborra, 1996; Kellogg, Orlikowski, & Yates, 2006). According to Ring and Van de Ven (1994) this trust grows with time, when partners get to know each other and build personal contacts. If, however, one of these central players leaves a company (because of for instance reorganizations), a gap appears showing the uncertainty that was previously hidden (Kale & Singh, 2009; Ring & Van de Ven, 1994). The effect of this depends greatly on the openness to outside influences and the culture within a companies involved (Barnes et al., 2006; Greenwood & Hinings, 1996). Barnes et al. (2006) agree to these statements, but look into the origins of these problems. He states that staff turnover is essential for good open innovation, since it keeps employees involved in the long run and thus keeps ties and knowledge within a company (Ring, Doz, & Olk, 2005). *Personal contacts*, *culture* & *previous experience* can determine the trust between people (Barringer & Harrison, 2000). This improves personal contacts as well as communication, both important factors according to Ahuja et al. (2008). There however is an optimum, since employees can hinder innovation when working too long in the same function (Beer & Nohria, 2000; Lei, Cao, Zhu, & Dai, 2000).

Figure 9 - Open Innovation Variables

The success of AMMON is of high importance for the region. SME's in the East of the Netherlands could benefit from collaboration with the Industry Leaders from the AMMON network. They have innovations to aid in projects, but are currently hard to include because of their limited capacity, stability and experience (Hormiga, Batista-Canino, & Sanchez-Medina, 2011). SME's are often at a disadvantage because of their dependency on the resources of larger firms. According to Narula (2004) and Alvarez and Barney (2001) this should be taken into account by SME's from the start. Although large partners provide access to

resources and contacts, it is difficult for SME's to reap benefits in the long run because of their limited bargaining power. SME's can counter this power struggle by increasing the knowledge dependency of larger companies, creating extensive contracts or building a large trust network (Narula, 2004).

An important question that remains is the perception when innovation can be regarded as a success. This is more difficult than expected, since it can be measured by a multitude of factors and time-scales: patents, personnel, turnover, profit and more (Barnes et al., 2006; Tidd, 2001). Not all are an equal good measurement for success. For instance patents are often developed with other companies (Bergek & Bruzelius, 2010) and a growth in personnel only shows that a technology has focus, not the success of an innovation (Astebro & Michela, 2005). AMMON focuses on profitability as the main measurement of success. Consistent with this focus the following definition for innovation success will be used in this thesis: "*proportion of technical, design or research personnel, and proportion of sales or profits accounted for by products launched in the past three or five years*." (Tidd, 2001, p. 170). This measurement is more objective compared to patents and it focuses on the main goal of companies: profitability (Kahn et al., 2006; Tidd, 2001). The time-span of three to five years is chosen because it is a likely time before investments can be earned back (Tidd, 2001). This perception will be checked with the stakeholders.

The Open Innovation Theory provides the bottlenecks that come from outside as well as within a firm. The network and collaborative factors were already discussed in the topics of Network Theory and Strategic Alliances. Therefore only the additional factors concerning innovation and collaboration on a firm-level are distilled from Open Innovation Theory. These provide the variables for answering the research sub-questions 2 to 5. In total ten variables have been chosen. The variable internal structure and strategic priorities are important since it shows how important firms find innovation within their company. Stability and capacity affects the capabilities within a project, together with previous experience are of high importance for SME's. Culture and communication determine the openness of a company. Personal contacts and perception of a firm can affect the effectiveness of collaborations.

2.4. Stakeholder Theory

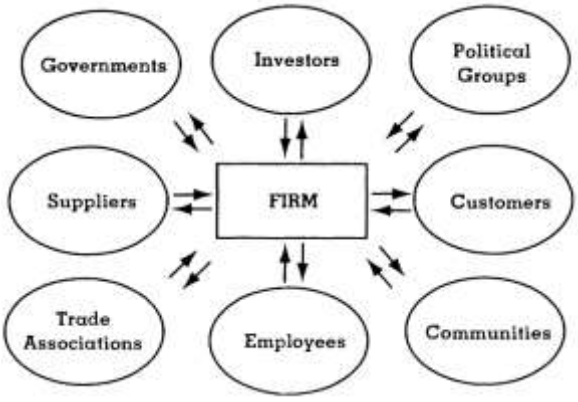

Figure 10 - The stakeholders involved in a single firm (Donaldson, 1995)

The Stakeholder Theory looks at the stakeholders that can influence or be influenced by the actions of AMMON. AMMON can be influenced by universities, other networks, (semi) government and potential clients. This makes the process much more complex, but cannot be neglected when looking for an optimal overview and strategy for AMMON. This will be considered the environment level.

Stakeholders are defined as "*any individual or group that maintains a stake in an organisation, a claim, a right or an interest*" (Bergek & Bruzelius, 2010, p. 40). In this thesis the focus will not be on individual

persons, but will be on the companies and groups affected by the network. Personal relationships between companies have already been discussed in Open Innovation theory, so the effects between dyads will be taken into account within that theory. Donaldson and Preston (1995) provides a good overview of the complexity with Figure 10. Within a network these stakeholder will be of importance for all members. This thesis limits itself to the most important factors on a project and network level: government, investors and competing networks (Casadesus-Masanell & Ricart, 2010; Donaldson & Preston, 1995).

Government and investors are important for funding. Government also has a role in legislation and becoming a launching customer. Government importance is based on research of van Beers, Berghall, and Poot (2008) and Czarnitzki et al. (2007) who showed that government funding is an important factor for companies in the Netherlands. Networks outside of AMMON networks could become competitors of AMMON as being of great help in developing the network. They could be a valuable source of information and assistance. These stakeholders are likely to be needed for future collaborations. Companies still have to take into account their own environment: current clients, shareholders and competitors. These are possibly affected when partners prioritize AMMON-projects. These however are not considered since they are highly project dependent, their participation depends on the project at hand and thus cannot be generalized to all stakeholders.

It can be difficult to determine to which extent these parties should be taken into account. As Fassin (2010) shows apparent stakeholders sometimes are not as relevant as one might expect. He shows that there are many stakekeepers and stakeseekers that are not directly a stakeholder, but in some way (falsely) try to represent a third party or have an independent motivation. Taking these all into account is impossible and would result in a sub-optimal result (Crane & Ruebottom, 2011), therefore a selection was made. In this thesis the focus is on the most relevant levels: the AMMON-team, firms and external stakeholders that have a direct stake in AMMON. In the environment level the outside networks, government and investors are included. The customers, communities, suppliers are in general highly project-dependent and are therefore not included.

Figure 11 - The environment (stakeholders) that have been taken into account in this research

The Stakeholder Theory could aid in answering all the research questions. The Stakeholder Theory provides possible bottlenecks, origins and potential solutions that come from stakeholders outside of AMMON. In this case the partners within the network are already taken into account at a Network Level. Government, investors and outside networks are considered most the important external factors. Can they influence the success of AMMON, and if so in what way?

2.5. Chosen Theoretical Variables

The previous paragraphs provided a theoretical background; this resulted in a list of relevant variables. Focusing the theory into a short, clear and usable set of variables is important to know which factors to measure and is used as an input for the interviews (Cable & Judge, 1997; DeVellis, 2003). The factors described were combined in one model.

Trust was found important in Network Theory, Strategic Alliances as well as Open Innovation literature (Barnes et al., 2006; H.W. Chesbrough, 2012). Therefore this factor will be placed in a separate section since trust works on multiple levels simultaneously (De Man & Roijakkers, 2009).

Management, strategic priority, investments and perception were found important on multiple levels as well (Barnes et al., 2006; Berendsen & Kuijper, 2012; Cozijnsen, Vrakking, & van IJzerloo, 2000). They were placed in separate groups because they consist of different sources and persons.

These factors are likely inter-related, it will be test at this stage unclear to which extend these factors affect the AMMON-network. The interviews aim to get this input, to look at which factors are of most importance.

When the tables are combined and the variable trust is added, the image becomes Figure 12:

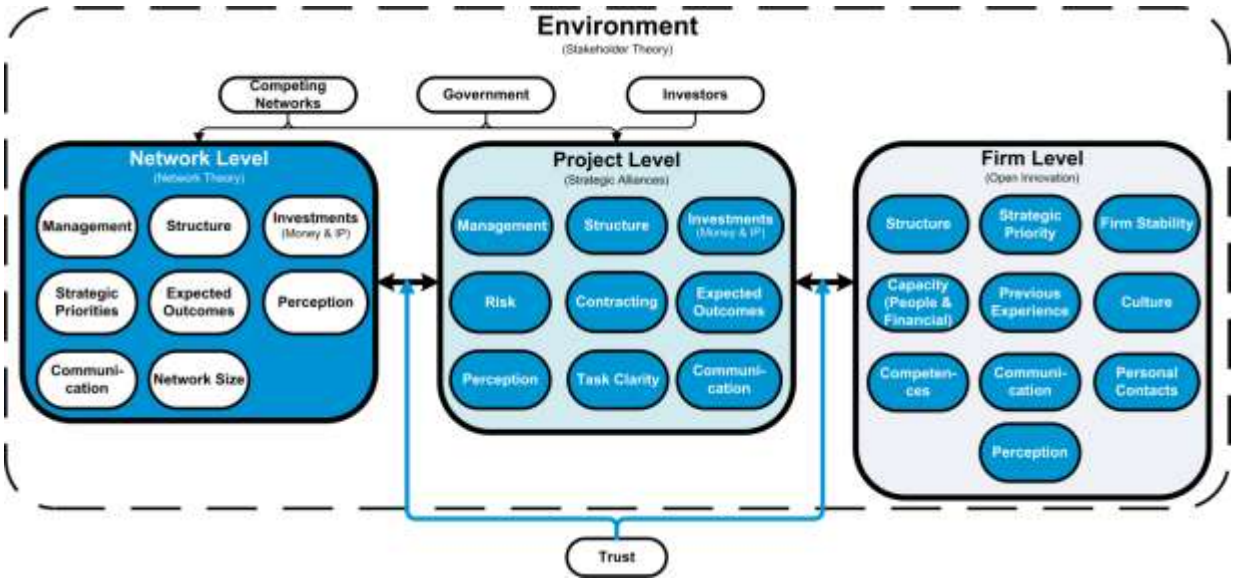

Figure 12 - The most important factors for innovative collaborations

This image shows that the stakeholders influence the internal organization of a company, as well as the project itself (Barnes et al., 2006). The main focus of the thesis will be on the literature addressed above. These variables were used as input for the interviews, as shown in Chapter 3.5.

3. Methodology

"The potential disaster lies in the (...) recipes or magic potions, such as: Combine liberal amounts of technology, entrepreneurs, capital, and sunshine. Add one University. Stir vigorously"

- Gordon Moore and Kevin Davis

The theory provided variables that determine successful collaborations. This however does not mean these can be projected directly on AMMON, just as adding money and an university doesn't guarantee successful innovation (Mayer, 2012).

In this chapter the methodology will be outlined. Firstly the design of the research is described, followed by the case selection, respondent sampling and data collection. In the Interview Setup chapter the interview questions will be revealed. Lastly the data analysis and expected results will be discussed.

3.1. Research Design

The process was as illustrated in Figure 13, which starts with finding a theoretical base and analysis of the problem by looking into literature and past projects. This provided input and known bottlenecks that could be tested by conducting interviews with stakeholders. From these interviews the toolkit and recommendations were developed, with a feedback loop from the toolkit to the stakeholders to ensure support for the chosen solution.

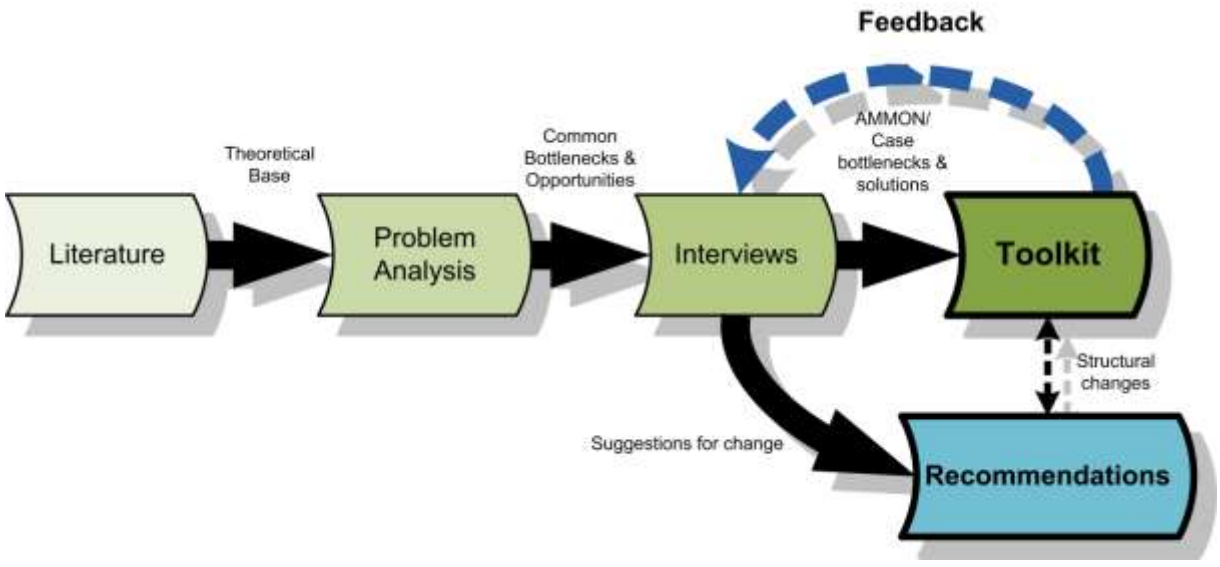

Figure 13 - The research design, starting with theory up to the results: the Toolkit and Recommendations

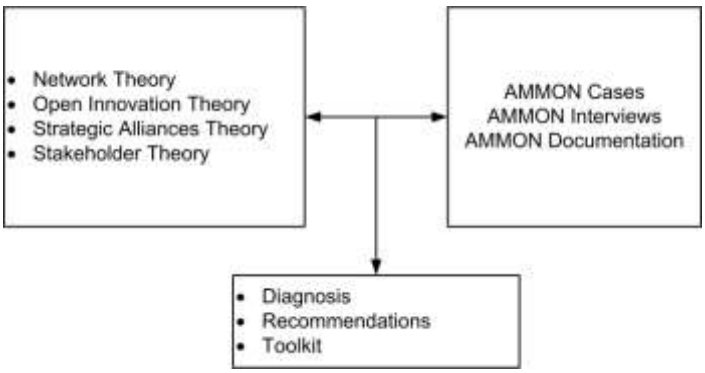

Figure 14 - The Conceptual Project Design (Aken et al., 2007)

To answer the research questions three levels of AMMON will be analyzed: AMMON as a network, the project level and firm factors. On the project level two cases (projects) will be analyzed in order to obtain information on AMMON-specific cases and to test the toolkit. Only two case-studies were done to be able to get more in-depth information per case, but still be able to determine consistencies between projects (Gerring, 2004). These two were the most prevalent projects within AMMON and had the most strategic importance. Other cases have been researched for additional information and background information for AMMON, but will not be discussed in detail for this thesis. These cases allowed testing the variables and look for new variables specific for AMMON. As shown in the conceptual project design in figure 14 (Aken et al., 2007) the setup of this research is thus a mix between a cross-case study and design research (Aken et al., 2007; Babbie, 2010). Since the recommendations and toolkit will be developed for AMMON, the low external validity of this thesis is unlikely to be a problem (Babbie, 2010).

The goal is to use this information to create a diagnosis, develop recommendations and create a toolkit. The diagnosis focuses on finding the most important variables for AMMON, which is used for creating the recommendations and the toolkit. This toolkit was developed throughout the project to simultaneously get feedback during the development. It was not planned to test the toolkit within projects since this could not be done in-depth during this thesis. The toolkit was evaluated using the cases and feedback from potential users, future research should test the toolkit in a separate thesis.

3.2. Case Selection

As stated before the AMMON network will be researched on three levels: Network, Project and Firm-level. The network level will be asked all the stakeholders; the firm-level was also asked all participants.

Concerning the project-level two cases added further input to this research. These projects were chosen to be researched: GreenSource and Smart Roads. Both cases come from within AMMON and are typical for collaborations within the AMMON network. GreenSource is nearing the end of the project, whereas the Smart Roads has recently been started. These cases allowed in-depth research. By including these AMMON-projects the future applicability of the solutions was increased. It allowed the solutions to be tailored to AMMON and include practices specific to AMMON.

The data came from documentation and interviews with stakeholders active in these projects. These are discussed in chapter 5. Other stakeholders were not interviewed about the cases, but furthermore received the same questions as will be discussed in the next chapter.

3.3. Respondent Sampling

Since the thesis focused only on the stakeholders that were directly related to the AMMON-network, indirect stakeholders like (future) clients and municipality were not interviewed. Although the latter two fit in the Stakeholder Theory, they are highly project specific and less likely to provide answers that can be generalized. This kept the research simpler and more focused. Furthermore, using multiple stakeholders enables the comparison of differences and bottlenecks that occur because of differences between these stakeholders.

In total 19 stakeholders have been interviewed. These interviews took between an hour and 1.5 hours and were done on location except for one which was done by telephone. It has been agreed with the participants not to make the answers traceable to individuals, so the persons are kept anonymous. The interviewees were divided in three distinctive groups:

1. The AMMON-Team

These were the main coordinators of AMMON, also called the AMMON Business Development Team. They steer the daily projects and strategy. Seven managers from AMMON were interviewed. The members of this group had different backgrounds, varying from two support-functions, four business developers and one process manager. All participants are actively involved in the strategy of AMMON and include the complete sample of managers from AMMON. This group will be named “AMMON”.

2. External Stakeholders

These were stakeholders that come from the government, network-organization or comparable groups that were directly or indirectly involved with AMMON. In total five respondents from this group were interviewed. One participant from the province government and four senior managers from various network organizations in Twente were interviewed. This sample includes all the external parties that have helped develop and fund AMMON. This group will be named “External Stakeholders”

3. Project partners

In total seven partners from six different companies were interviewed. The seven company respondents were chosen based on their knowledge of AMMON and position within the company. Since there were only seven companies actively involved within AMMON this meant that only one firm has not been interviewed. The respondents all were actively involved in AMMON. One Business Developer and two CEO’s were interviewed, next to two Innovation Managers and one Senior Product Manager. This group will be called “Partners” in the following chapters.

3.4. Data Collection

Data collection was done by looking into past documentation from AMMON and the two cases. Furthermore 19 stakeholders were interviewed. This provided more in-depth and objective information to add or compare. These interviews were done in person at the companies. This allowed more in-depth gathering of background knowledge from the interviewees and see the location they are based.

3.5. Interview Setup

The variables and a structure for the interview were determined based on the theory discussed in Chapter 2. These variables are based on the prior chapter and have been further tailored to additional wishes from OICAM.

The reason for choosing both scales as well as open questions is motivated by the wish to quantify factors. Most of the factors in the scales will probably be named during the interviews, but by making the interviewees deliberately choose between factors makes it more explicit. It also aids in removing interviewer-bias and enable comparisons (Babbie, 2010).

In Table 1 the division of variables between stakeholders is shown. This division was chosen to enable focus on the most important factors per stakeholder. For instance the view of the External stakeholders towards why they start collaborations is less relevant for AMMON compared to what motivates the partners.

Question	AMMON	External Stakeholders	Partners	Variable
Network Level Questions				
Main motivation for joining AMMON			X	*Strategy, Structure*
Participants Role within AMMON	X	X	X	*Strategy*
Distinction AMMON – External Stakeholder		X		*Stakeholders: Competing Networks & Government*
Perceived future challenges for AMMON	X	X	X	*Perception, Expectations*
Project Level				
Importance of contracts	X		X	*Contracting*
Termination factors for projects			X	*Requested, Expected Outcomes, Structure*
External project guidance	X	X	X	*Structure & Management*
Optimal AMMON Project financing	X	X	X	*Investments (Money & IP)*
Government role	X	X	X	*Stakeholder Theory: Government*
Definition of Project Success	X	X	X	*Expected Outcomes*

Perceived Importance of Factors for Successful Collaboration (Scale)				
Trust	X	X	X	*Trust*
Knowledge&Competences	X	X	X	*Knowledge, Competences*
Financial size & Stability	X	X	X	*Risk, Investments, Firm Stability*
Previous experience of partners	X	X	X	*Collaboration Experience*
Company culture	X	X	X	*Culture*
Leadership	X	X	X	*Management (Project)*
Personal contacts	X	X	X	*Personal Contacts*
Government funding	X	X	X	*Investments*
Clear Business Case	X	X	X	*Task Clarity, Risk*
Company Analysis				
Function + Background	X	X	X	*Additional, Perception*
Innovation focus (internal/external)			X	*Strategic Priority, Culture, Structure (Firm Level)*
Prior Collaboration Experience	X	X	X	*Collaboration Experience*
Collaboration Motivation			X	*Strategic Priority, Expected Outcomes*
Past collaboration success factors	X		X	*Additional*
Prior knowledge needed before starting collaborations	X		X	*Expected Outcomes, Risk, Investments*
Possible Solutions for Bottlenecks (scale)				
Spin-off/Joint Venture formalization	X	X	X	*Structure*
Previous smaller project experience	X	X	X	*Previous Experience*
Defining costs as early as possible	X	X	X	*Requested by AMMON, Risk & Investments*
Importance of IP	X	X	X	*Risk & Investments (IP)*
Government Funding Not Needed	X	X	X	*Stakeholder: Government*
External Guidance is Essential	X	X	X	*Management*
Financial buffer within AMMON	X	X	X	*Requested by AMMON, Investments & Risk*

Case Specific Questions (either project GreenSource or project Smart Roads)				
Own role within project	X		X	*Additional, Perception*
Current evaluation project	X		X	*Additional, Perception*
Most important events	X		X	*Additional, Perception*
Future Challenges	X		X	*Additional, Perception*

Table 1 - Interview variables sorted by group

Requested by AMMON means these questions were added because AMMON wanted to ask these questions to the participants. These requested questions have all been compared with theory to see if they could be embedded in one of the variables. Defining costs as early as possible and the financial buffer both fit in the theory of Barnes et al. (2002) and Khaire (2010). All the variables stated in chapter 2 have been used in the table above, in some cases multiple times. Additional questions were added to obtain background knowledge or factors that are specific to certain persons and cases. For instance the background and previous work experience of participants could have an effect on their focus within AMMON.

The cases were all researched by using open questions, this was done on purpose to test which factors are important in practice for AMMON, but also to able to compare the perceptions of partners of previous projects compared to these current AMMON projects. External stakeholders were not interviewed on the cases, since these were not actively involved in these projects.

All three versions of the interviews can be found in the Appendix C in the original Dutch version as well as the English translated version.

3.6. Data Analysis

The variables were divided in answers in a matrix of factors. The data from the interviews has been coded based on a coding scheme that was developed within the project. These are based on theory, factors found in the documentation and factors the AMMON-team mentioned beforehand they considered likely. An overview of the answers can be found in the Appendix D.

Since the group of interviewees is relatively small (19), limited statistical analysis was done (De Man & Roijakkers, 2009). This would have only skewed the applicability of the results and thus add little to the research itself. This thesis was based on qualitative research with a small group of participants so this is normal (Babbie, 2010). Nevertheless the differences within groups were taken into account by comparing the Likert Scales and looking at the correlations between answers. The scales were processed independently from the open questions, enabling comparisons between these factors. This was helpful to look whether interviewees responded consistently, next to strengthening their statements (Babbie, 2010).

The data was analyzed in three groups: AMMON, external stakeholders and partners. This made it possible to compare groups and find where they differ or agree with each other. If there were differences between these three groups it could be a reason for future conflicts in expectations and focus. Where these groups agreed it has strategic importance as well, since all parties focus on the same elements and thus consider it important for the success of AMMON. These results will be discussed in chapter 4 and 5.

3.7. Recommendations and Toolkit

The steps described above aim to diagnose which bottlenecks are most prevalent for collaborations within the AMMON-network, but also looked at how these differ between the parties involved. This becomes a base for the recommendations that will be given to AMMON in how to improve the network and project management. It secondly provided input for the development of the toolkit.

Recommendations will focus on the network and project levels, because this is where AMMON can make changes. The Firm Level is taken into account, but it is unlikely AMMON could account for these internal problems. Therefore these will be focused on how AMMON can account for the problems on a project of network level.

The toolkit needed to be able to provide insights and information to ease the collaborative process; and simultaneously be practical and clear in usage for AMMON and the partners. The toolkit should open up discussions between partners to discuss the biggest bottlenecks that are likely to appear. It needed to be functional, user-friendly and flexible enough to be used by managers within AMMON-projects as well as on a network-level. It should furthermore be able to aid the partners and the AMMON-team in choosing an optimal structure and division of resources & responsibilities.

The toolkit will be evaluated throughout the thesis by asking feedback from participants as well as the AMMON-team. The implementation of the individual tools will also be taken into account, looking at the Technical, Political and Cultural elements of the implementation. This is based on the TPC framework by Tichy (1983). This framework shows a solution should be clear, the users should have the power to implement the changes and the culture should be open and/or fit for it. When for instance the partners are unwilling to participate or when a tool is unclear, this could greatly affect the effectiveness of the solutions provided. This is discussed in Chapter 6.3.

This research focused on the design part of the proposed solutions, not on the changes and learning within AMMON needed to use the toolkit (Aken et al., 2007). This testing should be done properly from the start of an AMMON-project. Testing it in real projects would take longer than the proposed time of the thesis. The design part entails that the theory will be used for development of interviews, this will in turn be used as a base for the toolkit and recommendations. Suggestions for implementation and the further testing follow thereafter will however be included nevertheless.

The success of both the recommendations as well as the toolkit that will be developed is highly dependent on the commitment of the users after finishing the toolkit (Aken et al., 2007). The goal is not the toolkit by itself, but improving the performance of the target company. The solutions were developed together with the potential users. The proposed solutions should focus on procedural and constant factors of project success, thus not project-specific elements. This was done in order to make it usable for a wide variety of projects. Technological problems were purposefully not researched since AMMON and partner firms already use tools for this like QFD.

The toolkit and conclusions are discussed in chapter 6 and 7.

4. Interview Analysis

"You can read all the books you want and get all the theory you can swallow but sometimes you just have to put the book down and walk out the front door."

- Jason DeFillippo

The interviews aim to test the variables. The interviews are analyzed on three levels for every group, firstly on a company-level, network-level and lastly on a project level. The structure as discussed here is consistent with the variables as shown in the table of Chapter Interview Setup (3.5).

4.1. Firm Level Analysis

The following questions asked the participants about their own company and past. It asked how they structure innovation, how much experience they have with collaborations and what motivated them to collaborate in the past. Lastly it asked whether these projects were a success, what influenced this and what they require to know prior to starting new collaborations.

4.1.1. Innovation Focus (Internal or External)

Firstly companies were asked for their innovation focus to find their internal structure. The partners were asked how they currently developed innovations and if this was done internally or externally.

Two out of the seven partners stated they did most of their innovation internally by using their own R&D department. Five partners mentioned they did both, but only two named collaborations with companies from other branches which weren't clients or universities. This shows the companies within AMMON have little focus on the types of projects AMMON aims at. None stated they outsource most of their innovation. AMMON should take this structure into mind when developing projects since it shows if companies have dedicated functions and focus on these collaborations.

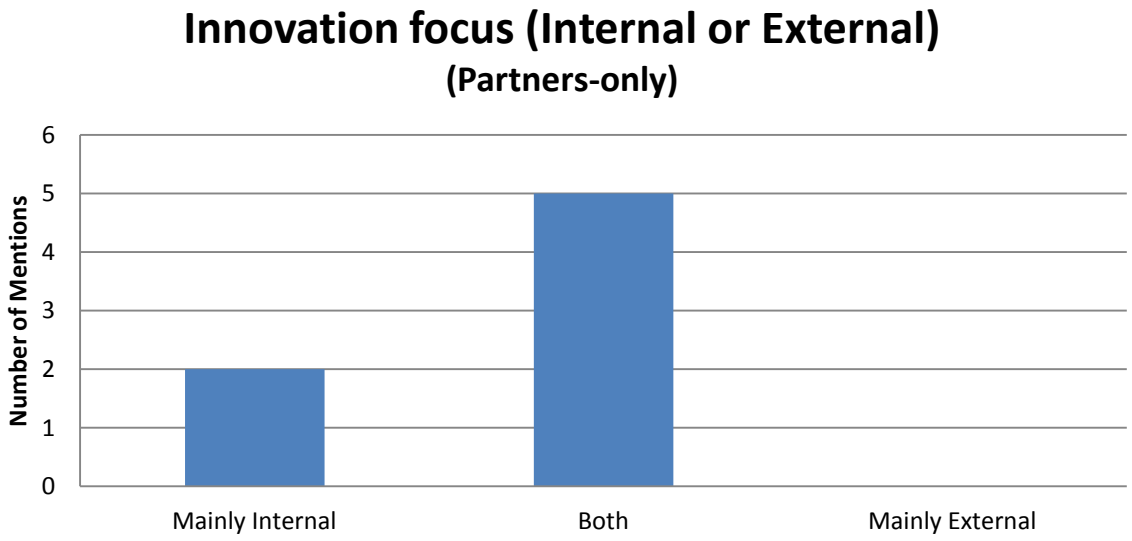

Figure 15 - The innovation focus of partners, either internal or external

4.1.2. Prior Collaboration Experience

As stated in the previous subchapter most firms are not focused on external innovation, but this does not measure the experience with collaborations. Therefore their experience with comparable collaborations was asked for. Figure 16 shows the results.

It shows the partners in general were not used to collaborate with other companies, but also not within their own branch. They mostly provided examples of projects with clients and universities, but companies from other branches were rarely named outside the current AMMON projects.

The external stakeholders and partners have been focusing on these kind collaborations in past years, so in general have more experience. They however had experience on a different level, which was mostly focused on SME's and smaller scale projects than what AMMON envisions. The managers of AMMON in general had much experience with collaborations of this scale, and the most important (project) managers could name multiple examples. Within AMMON there is sufficient experience with guiding and developing these kinds of projects.

This means that there is a difference in experience and focus of these kinds of collaborations, where the firms themselves are lacking experience. This could affect collaborations since perceptions will differ.

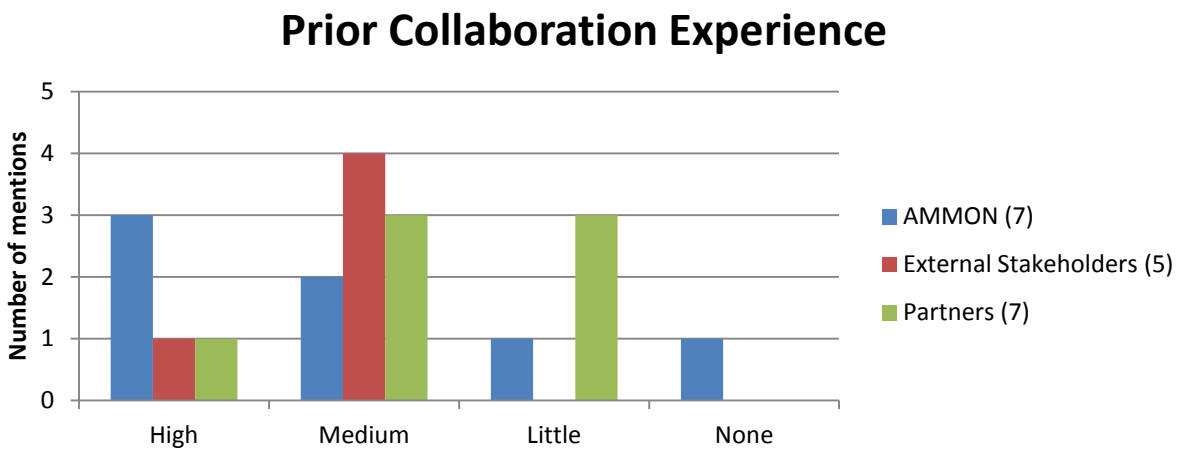

Figure 16 - The previous experience of stakeholders with innovative collaborations

4.1.3. Motivation for Past Collaborations

The partners were asked what they considered the main reason for starting collaborations in the past.

The reasons for starting collaborations in the past were constant among partners: competitive advantage was by far most prevalent. Two partners only could name examples that came out of coincidence in a sense; they knew partners already and from this tried to develop new products. The collaboration thus came from personal contacts firstly.

Only two different answers were given, which shows that the reasons for starting collaboration does not vary. This would mean that within AMMON-projects these partners will likely also focus on de competitive advantage mainly.

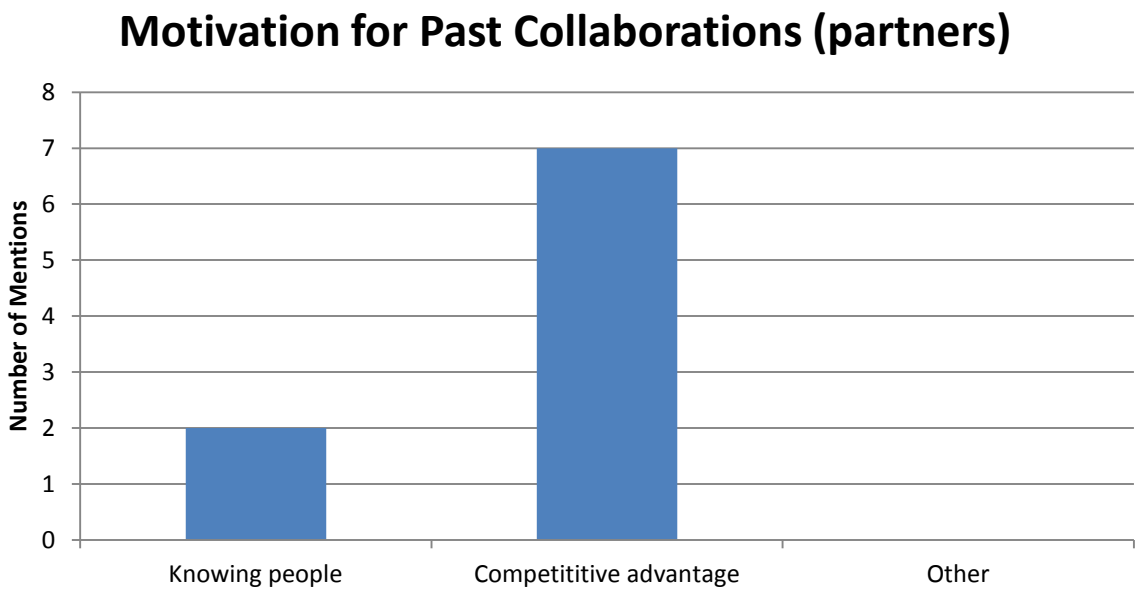

Figure 17 - The main reasons for collaborating in the past according to partners

4.1.4. Past Project Success Factors

The partners and AMMON-team were asked for their previous experiences, but also what made it so that projects became a success.

The main reason for success was a clear customer or launching customer. Eleven participants stated this. The demonstrator was considered less important according to the partners, whereas AMMON clearly found this important. Knowing each other was also considered important for the partners, because it made it easier to collaborate. The commitment was considered equally important; commitment determined whether a partner could be trusted to invest the time needed for project success. Among the two AMMON-members that stated other factors, were legislation and financing. These were factors that restricted past collaborations that had potential. Knowing eachother & expectation concerned communication mostly: knowing what to share and how. For instance one partner stated:

"Project (...) was delayed because one partner was not fluent in English, and had difficulty with reading the documentation. For this all documentation had to be translated"

- Business Developer about a previous (non-AMMON)-project

For AMMON it is important to keep their focus on launching customers, but the personal contacts are also of high important for project success. The demonstrators also have less priority according to partners, this could mean there is less a role for OICAM within AMMON.

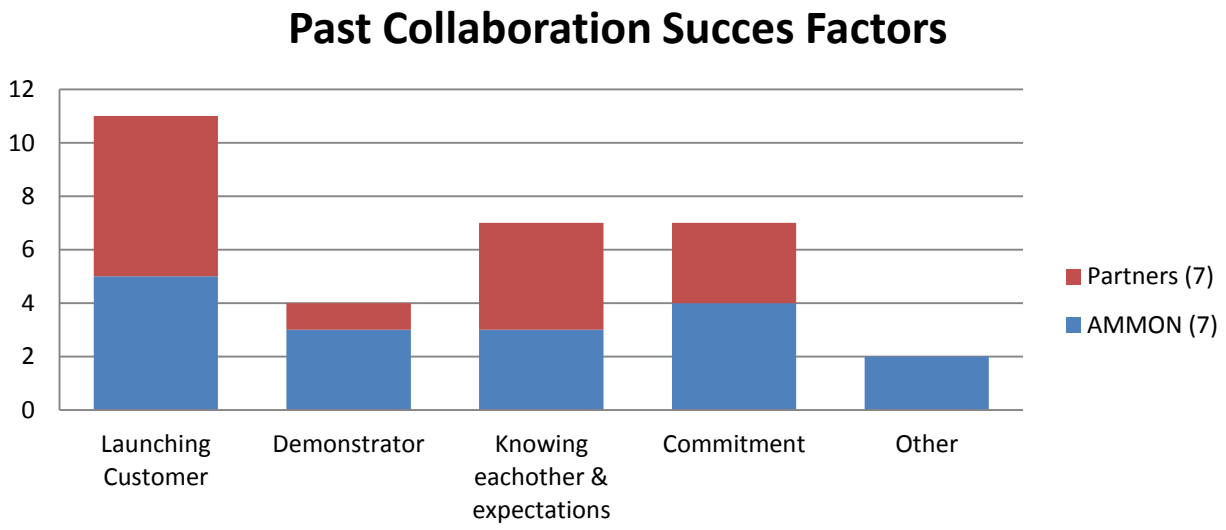

Figure 18 - The main reasons for past collaboration success according to partners and AMMON

4.1.5. Prior Knowledge Needed Before Starting Collaborations

The partners and AMMON-team were asked what they considered important before starting a new collaboration.

Ten respondents named the customer as most important before starting a new project. They said a customer helps provide focus and the guarantee the product can be sold in the future. Other partners named commitment as an important factor. They stated that partners should be willing to invest the time and effort in the project.

The none-stated participant stated that he did not know what companies considered important in general, because he thought this differs greatly per project.

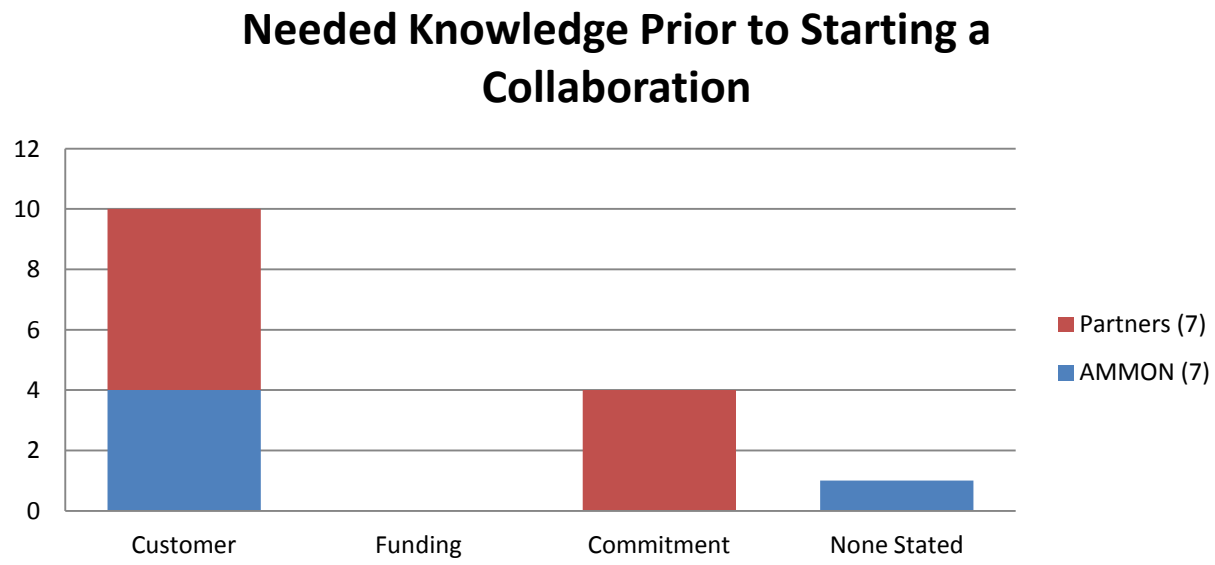

Figure 19 - The knowledge partners and AMMON need prior to starting collaboration

4.2. Network Level Analysis

This chapter will show what the parties stated on what they expect from AMMON. Firstly the main motivation for joining will be discussed, followed by their perceived role within AMMON. External Stakeholders are asked for their role within the network. Lastly the perceived future challenges were asked for.

4.2.1. Main Motivation for Joining AMMON

AMMON is a network that involves a large number of corporations with different core competences and markets. Most likely they have different reasons for joining AMMON, which is important for the strategy within the network.

This question was only asked to the partners in the network, and as expected they provide different reasons. Consistent with the project-question, the partners mostly focused on profit and image. The product-focus formula of AMMON however also was an important reason for joining. As they stated, most networks talk a lot but have little focus on developing concrete products. AMMON focuses on combining technologies for products and has the expert knowledge needed, which makes them different from most other initiatives. Another often-heard reason was that AMMON was seen as input for long-term R&D, simply put for radical innovations that firm struggle to develop internally. Since companies are currently cutting budgets of R&D departments, three partners though AMMON could to a certain extent replace this.

Other reasons that were named were one mention of no competitors within AMMON and three mentions that focus on the region. The partner stated that there were no competitors in AMMON said that other networks were less heterogeneous, and sharing IP would be much harder. The focus on the region had two pillars: development of a good infrastructure in Twente and getting to know regional firms. These companies thought that developing the region via AMMON would attract better personnel and the ease of finding partners.

This difference in focus makes it difficult for AMMON to determine one clear goal for the network. Partners should be approached differently, perhaps needing to develop multiple layers within AMMON.

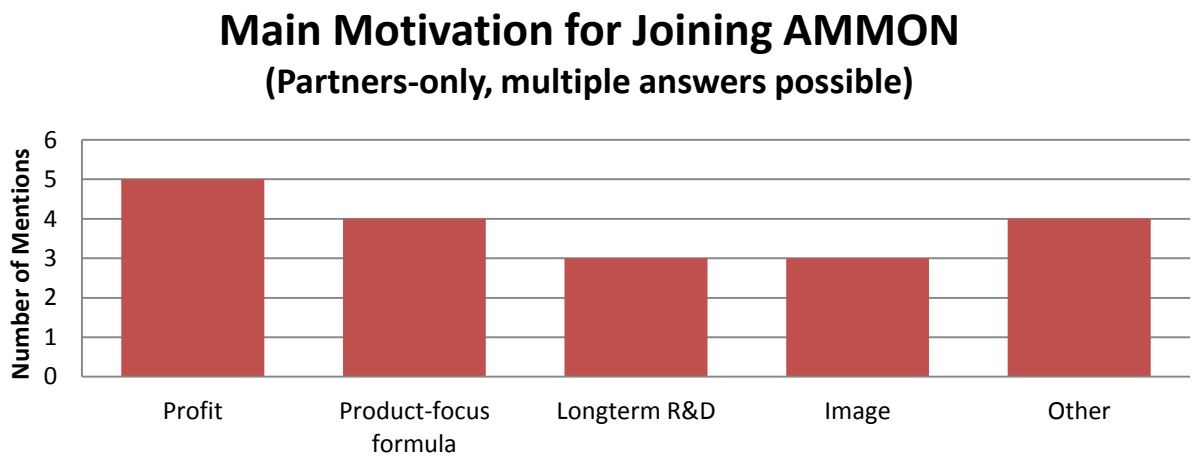

Figure 20 - The main motivation for joining AMMON according to partners (multiple answers possible)

4.2.2. Participants Role within AMMON

To determine the strategic priority of AMMON for stakeholders, their roles and shares within AMMON were asked. When they described they have an active role, this means they had much focus on AMMON and want to help in developing the network. A waiting state means they are a member of AMMON but wait for input from external parties. When participants describe themselves as unsure, their status or role within AMMON is unclear.

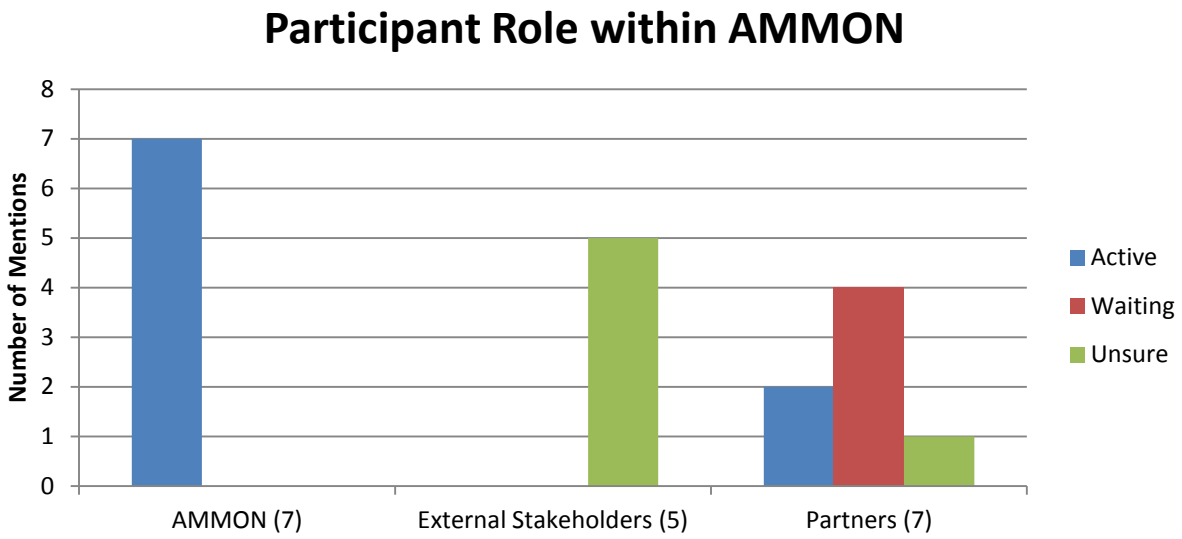

Figure 21 - Participants perceived role within AMMON

The answers from the AMMON-team were as expected, they all stated they had an active role within AMMON and gave it a high priority. They all provide active input in the strategy of AMMON. The answers from the external stakeholders was also clear, they all stated they didn't have any role currently. They all stated that if needed they could help. This shows the network is industry-driven by the partners and the AMMON team.

The partners differed, two were active and stated that AMMON had a high priority for them. One of them is currently the chairman of the AMMON Industry Board and the other two see it as a part of their change in strategy towards becoming full product developers. Four stated they were waiting for input, where three were more focused on getting to know the region and one saw it as a network that was next to their core business. One partner was unsure about their current role stated this was because he feels a lack of communication and has a wish for more regular updates.

4.2.3. Distinction between External Stakeholders and AMMON

The external stakeholders were asked how they considered the differences between themselves as a network or government and AMMON.

All five stakeholders stated they were different from AMMON, where the government stated they didn't have any role except for providing funds or being a launching customer. The four networks stated they were focused on different groups. Three networks stated they focused more on the university and SME's than AMMON. Two of these three stated they were not focused on product development, but only on connecting companies. Four however named collaboration projects from the past that were comparable to AMMON. The last network was more focused on individual companies, less on collaborations.

4.2.4. Perceived Future Challenges for AMMON

AMMON is a new network and needs time before it should be considered fully materialized. The participants were asked what they thought would be the biggest future challenges for AMMON.

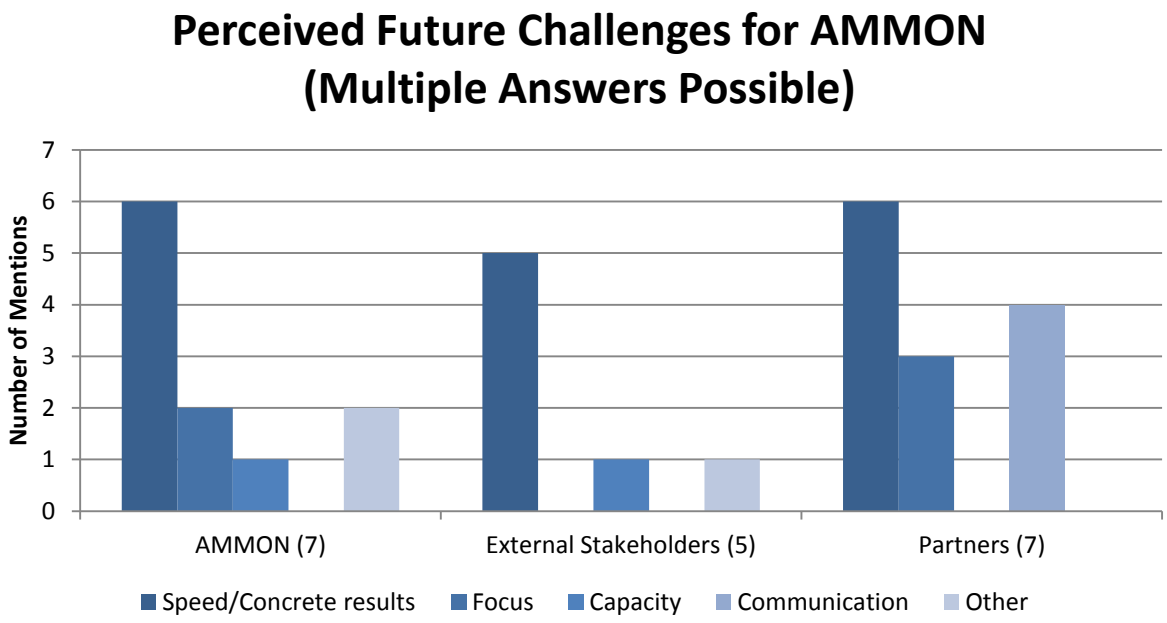

Figure 22 - The main future challenges for AMMON according to stakeholders (multiple answers possible)

The results were highly consistent between groups: nearly all participants noted that the success of AMMON depends on the speedy development of new products. They should try to avert becoming a network without any concrete results. As one participant stated:

"It is important to get a physical result, this motivates partners to continue. Talking too much is killing."

- AMMON Business Developer

Five participants in total mentioned that AMMON should get a clear focus, but on where this focus should be the opinions differed greatly. Two mentioned the focus should be on one market (e.g. water),

whereas others stated that AMMON shouldn't have a focus at all and be open to all. Partners wanted the network to stay small and heterogeneous. The AMMON team however wants the network to become as large as possible. In general they agreed that knowledge institutions would not be a default partner in the AMMON-network, since it would reduce the product-focus of AMMON.

Two AMMON-team members noted that they thought the capacity of the AMMON-management is important, stating that AMMON should develop further capabilities to truly steer projects. Three partners mentioned that the communication currently was not sufficiently organized and this could become a problem in the future. They stated that they heard little of what happens within AMMON, since the discussions were mainly on CEO-level and not everything was communicated further.

There were two additional challenges mentioned: company cultures and homogeneity of the network. Although the latter sounds comparable to "focus", there is a clear difference: he stated that the network could get competition from within if it expands too quickly and competitors join the network.

This shows that AMMON should focus on concrete results as soon as possible, but needs to rethink how they currently communicate. Concerning the focus it is recommended to discuss this with the partners, since the expectations currently differ too greatly.

4.3. Project Level Analysis

This chapter goes looks on an AMMON-project level. It describes the contract-importance, termination factors, external guidance, financing, government role and perception on project success. Lastly two Likert-scales are discussed about relative importance of a list of factors and possible solutions.

4.3.1. Importance of Contracts

The question on importance of contracts has only been asked to AMMON-managers and partners, since these parties are most relevant for AMMON concerning contracts. Here it shows that AMMON is more focused on using contracts than partners are. This is unexpected, since partners are more product-focused and also mentioned IP is important. They stated however, that contracts should only hold the information needed to not restrict collaborations. Consistent with Faems et al. (2005) they think that contracts should be made only to be used with conflicts, not to steer projects.

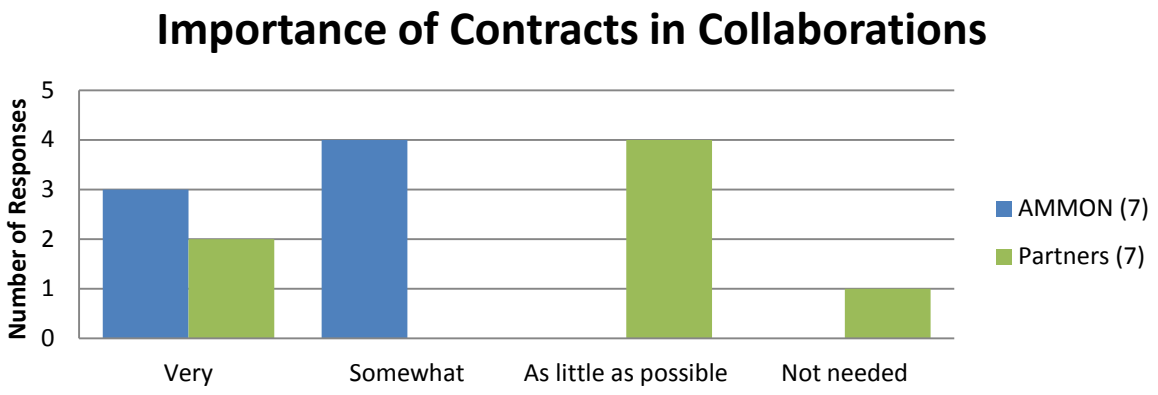

Figure 23 - The importance of contracting according to stakeholders

4.3.2. Termination Factors for Projects

The third project-level question asked when partners would consider quitting a project. The results were consistent: all partners 7 partners stated commitment & clear results were essential. Three partners also stated a lack of synergy would make them quit a project. These were thus all focused on interpersonal factors and progress in the project. Synergy is considered a perception, since it cannot be measured and was aptly named a "feeling" by the partners.

This agrees with what the AMMON-team and external stakeholders stated in other questions. They all focus on speedy development and commitment. The partners however have more focus on the interpersonal side of projects. This should be taken into account in AMMON, to see how they can improve these contacts within the network.

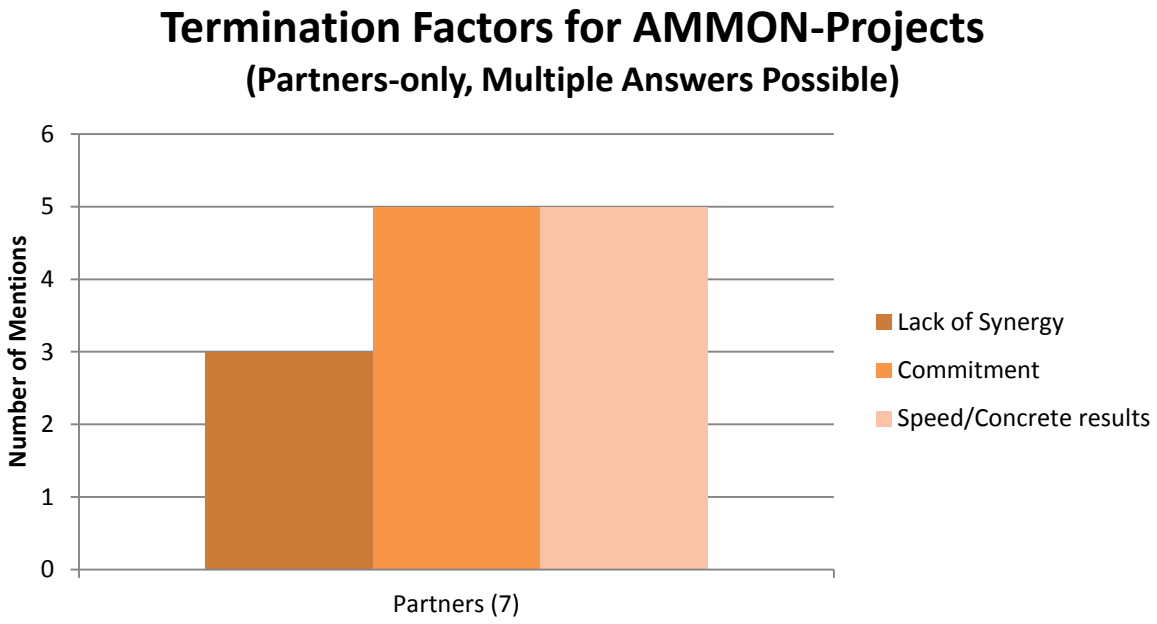

Figure 24 - The main reasons for partners to leave a project

4.3.3. External Project Guidance

All stakeholders were asked if projects needed a 3rd party to guide projects, for instance from the AMMON-team.

"Companies just can't develop products without external guidance"

- AMMON Project-manager

"External guidance shouldn't be needed, companies can do this themselves"

- CEO of firm

Whereas the AMMON-team and external stakeholders think it is essential there is an external party involved, the partner would rather do this themselves. The main reason for AMMON is that someone needs to be independent and mediate when problems arise, but partners state they would rather determine this themselves without outside influences. As they said:

"An external manager often lacks the technological background to steer projects"

- Innovation Manager

"When a capable person comes from within a company to guide a project, no external guidance is needed "

- Business Developer Partner Firm

Figure 25 shows this clear difference in view and how they both think a project should be structured.

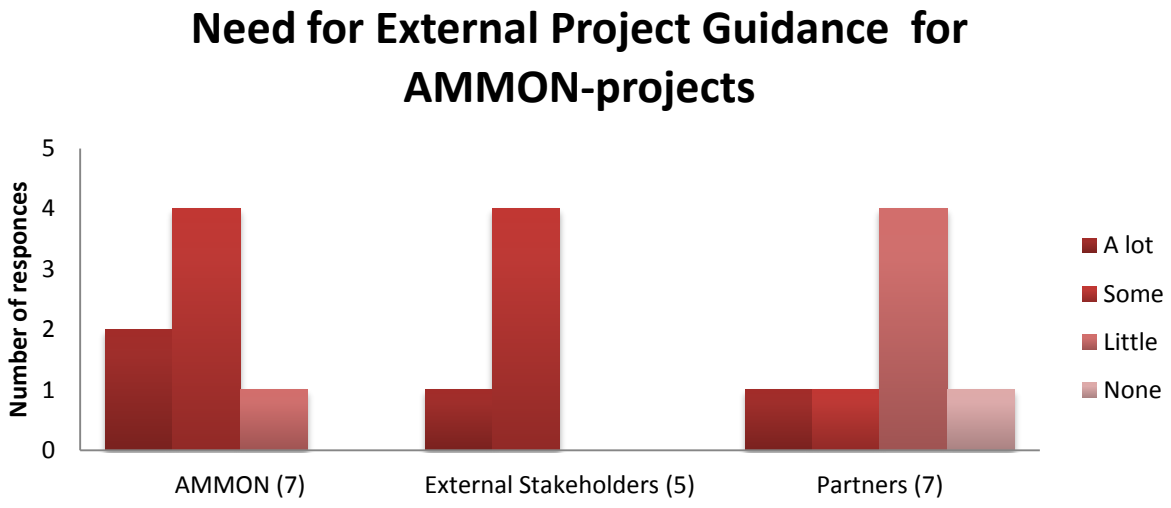

Figure 25 - The need of a 3rd party guiding a project according to stakeholders

AMMON should know on which levels they want to aid in projects depending on the needs of partners. If forced this could provide friction between partners and the AMMON-team. Before starting projects AMMON should ask which role require from AMMON.

4.3.4. Optimal AMMON Project Financing

This question was on the optimal division of project costs between government and companies. The number of respondents that think of a 50/50 division is equal between groups. Only one partner however stated that they would finance AMMON-projects themselves. They thought this would be very difficult within AMMON. They did however mention that companies could finance the greater part depending on the Technology Readiness Level (TRL). If a project has little risk and needed little investments, they would be willing to fund it themselves.

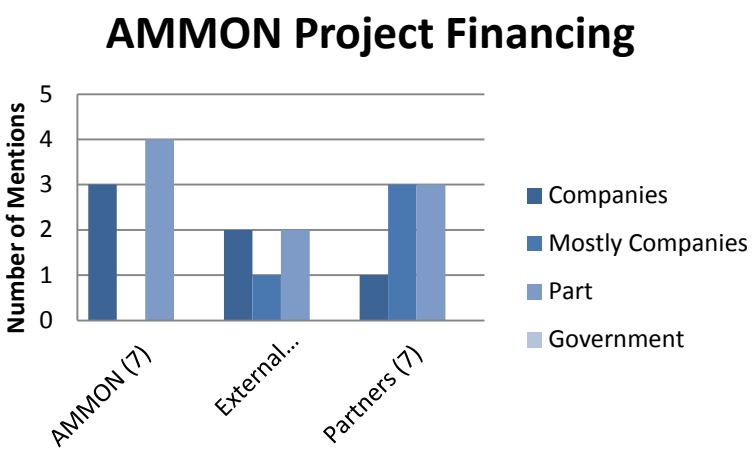

Figure 26 - The optimal division of costs according to stakeholders

AMMON should consider looking who is focused on government funding and who isn't. When no subsidies are needed it saves time and speeds up project. This question merely focused on government subsidy, later external investors are discussed.

4.3.5. Government Role

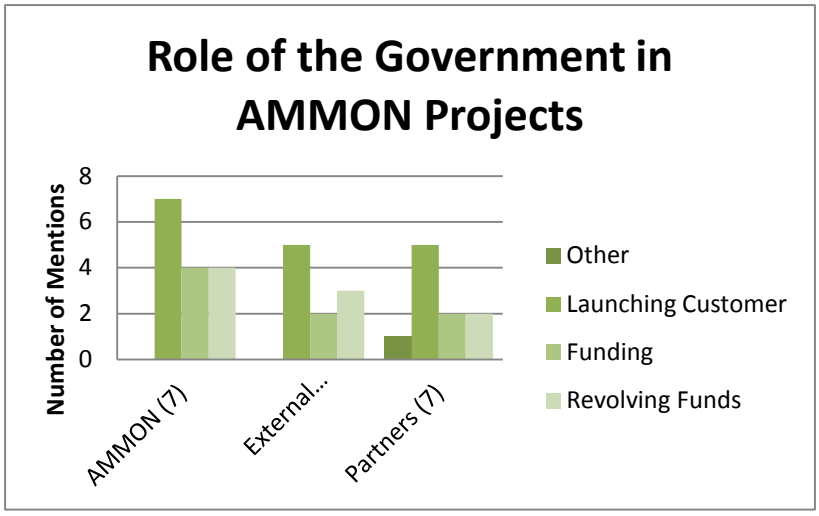

Figure 27 - The proposed role of the government in AMMON Projects according to stakeholders

Considering the role of the government all three groups were highly consistent. Most wanted the government to act as a launching customer: helping them built and buy the first demonstrator. Partners furthermore stated the government should stay out of the process within AMMON. In all groups there were people that thought revolving funds (loans) were sufficient and others thought subsidies were essential. For a low TRL subsidies were recommended. The partner that saw another role stated that the government should make it easier for products to be developed by easing regulations or providing networks. It shows that there are large differences in focus within the groups, but on average not between groups.

There was no general consensus between all stakeholders except for their view that the government needs to get a launching customer role. AMMON should keep the focus on the government as a launching customer and be hesitant to ask funding from the government. Subsidies would slow projects down and make them less flexible.

4.3.6. Definition of Project Success

The main reason for asking the definition of Project Success was based on if stakeholders had different goals in projects. There are multiple ways of measuring project success. It is difficult to objective measure innovation success; therefore it is interesting to see where groups focus on. The results were mostly consistent. Most participants immediately named profit and market success as their core goals. Nevertheless partners had a wider scale of factors they focused on, like image and if it results in something "that couldn't be done alone". AMMON-managers were consistently focused on innovation and profit.

Interestingly one of the partners from the external stakeholders stated that a clear exit of a project could also be regarded as a success since it shows a clear focus and the will to quit a project.

AMMON should focus on the profitability of projects and the innovations resulting from it. This is their current focus so needs no changes. What they could consider is to check whether the image of a project fits the companies involved and AMMON, to strengthen the profile of AMMON.

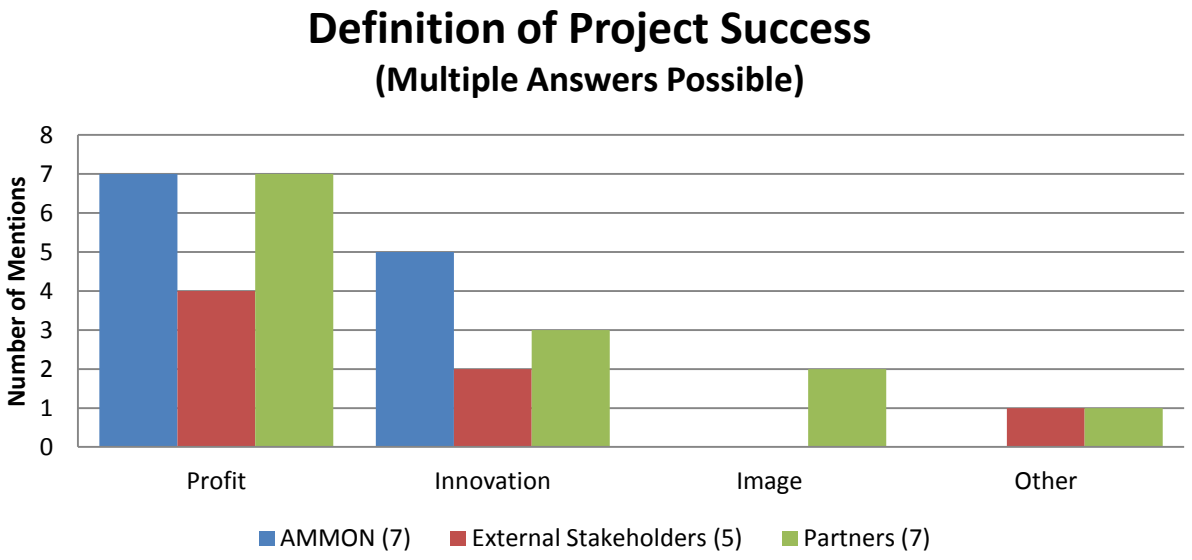

Figure 28 - When can projects be regarded a success according to stakeholders (multiple answers possible)

4.3.7. Perceived Factors of Importance for Successful Collaboration

A Likert-scale was handed on which participants could state which variables they thought were most important. This helped compare the relative importance of factors.

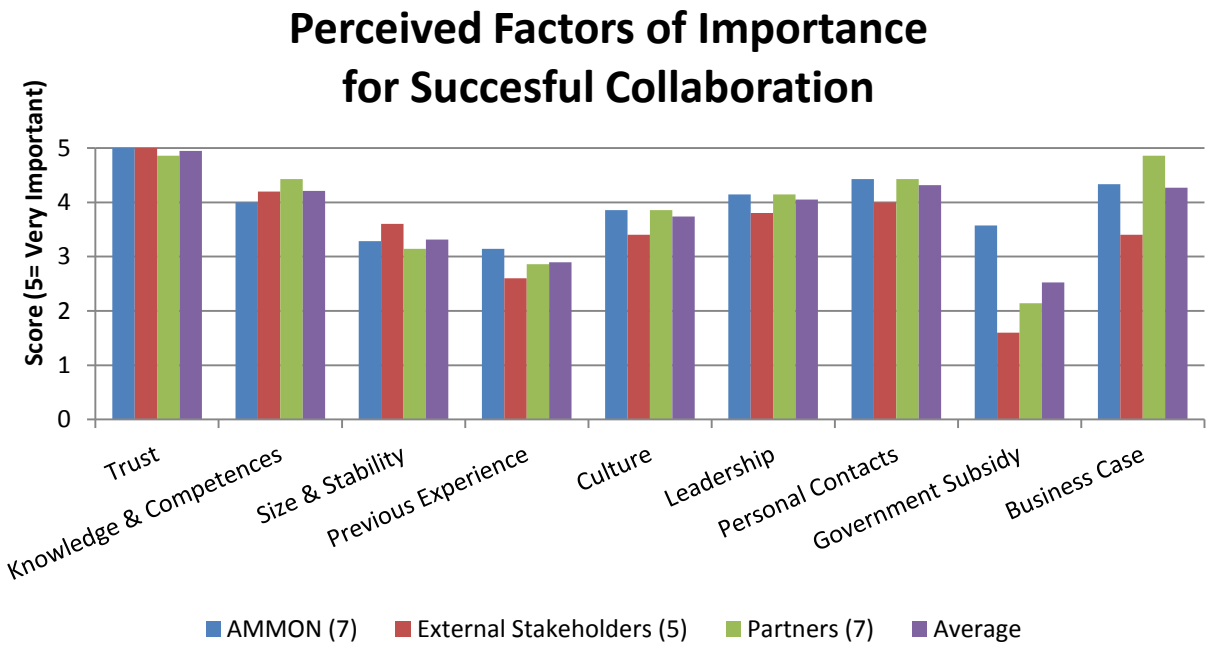

Figure 29 - The scores of factors within collaborations according to participants

Although on average differences were quite small between groups, there were some unexpected conclusions and differences between factors. The averages are included in this graph to get a better overview of the deviation between the groups.

Scales	AMMON (7)	External Stakeholders (5)	Partners (7)	Average (19)
Trust	**5.00 (0)**	**5.00 (0)**	4.86 (.38)	4.95 (.26)
Knowledge & Competences	4.00 (1.15)	4.20 (.84)	**4.43 (.79)**	4.21 (.96)
Size & Stability	3.29 (.49)	**3.60 (1.14)**	3.14 (.90)	3.32 (.88)
Previous Experience	**3.14 (.69)**	2.60 (1.14)	2.86 (1.07)	2.89 (1.01)
Culture	**3.86 (1.35)**	3.40 (.89)	**3.86 (.90)**	3.74 (1.03)
Leadership	**4.14 (1.21)**	3.80 (.84)	**4.14 (.90)**	4.05(.88)
Personal Contacts	**4.42 (.79)**	4 (.71)	**4.42 (.79)**	4.32 (.72)
Government Subsidy	**3.57 (.98)**	1.6 (.55)	2.14 (.69)	2.53 (1.11)
Business Case	4.33 (1.15)	3.40 (1.34)	**4.86 (.38)**	4.27 (1.10)

Table 2 - The factors scored per group and on average, with between brackets the standard deviation

The scores for *trust* (M=4.95, sd=.26)), *business case* (M=4.27, sd=1.10), *knowledge & competences* (M=4.21, sd=.96) *and personal contacts* (M=4.32, sd=.72) were scored highest on average. *Business case* had a high deviation in answers (sd=1.10), whereas trust was very consistent (.26) highly consistent between all three groups. There are some slight differences like for instance that AMMON and Partners focus more on personal contact, but this effect is relatively small.

Ranked highest in general was by far *trust* (M=4.95, sd=.26)), with only one partner grading this with 4 out of 5 points. Respondents said that when trust is lacking, a project cannot succeed, since partners will be unwilling to share information, help each other and dedicate time to a project. They also stated that there is no way to circumvent trust, since it is an essential factor that cannot be changed quickly, this mostly depends on the personal level and past experiences of partners. *Personal Contacts* (M=4.32, sd=.72) was scored higher by AMMON and Partners, but the differences are not large. It is the second highest score next to *trust.* As shown in Chapter 2 these are to an extent interchangeable, so this was to be expected.

The third highest score was for *Business Cases* (M=4.27, sd=1.10), here a clear difference between external stakeholders and the other groups becomes apparent. AMMON and Partners do not want to start projects without a clear business case, while external stakeholders would. Partners state that there should be a clear market, process and financial distribution before truly investing in a project. The external stakeholders think this is not needed before developing new projects. This is consistent with the focus on Knowledge & competences of partners, where firms again focus on the likelihood of success instead of the process itself. The standard deviation was 1,10 here, showing that opinions differed.

Knowledge & Capabilities (M=4.21, sd=.96) was scored high and consistently (.96) as well. The partners scored this a bit higher (M=4.43), but only slightly. The partners mentioned that firm competences are essential otherwise the AMMON-concept wouldn't function properly. The AMMON-team and external stakeholders thought in general these knowledge and capabilities could be obtained by getting additional partners involved.

Leadership (M=4.05, sd=.88) was ranked relatively high, all groups stated that a clear leader is needed for letting a project succeed. This is consistent with the theory, but later in this chapter it becomes clear that opinions differ on how this leadership should be organized.

Culture (M=3.74, sd=1.03) was ranked on a medium high level, this was explained that it is important for communication and understanding each other. It was not considered a termination factor; they stated differences in culture could be overcome.

Size & stability (M=3.32, sd=.88) *was* rated only above average. Participants stated that a lack of size of stability wouldn't be a problem for collaboration. It would only be a limitation if a partner wouldn't be able to provide the needed investments. These results are not consistent with the theory that stated that most SME's are hesitant to collaborate with IL's. It can be explained by the fact that the parties interviewed were part of larger firms. A CEO stated however, that it is not really the size of a company, but mostly the availability of personnel that is essential. What should be noted further is that during the

interviews partners had different interpretations of this factor. Some focused on differences in scale, while others focused on the effect of reorganizations.

Previous Experience (M=2.89, sd=1.01) was ranked second lowest. All groups thought this was something that is not essential for collaborations. They thought new projects could be started without the partners having experience in collaborations. The standard deviation of this group however was large (1.01), meaning opinions differed greatly. The external stakeholders thought this less important, showing again the partners focus on personal contacts.

External stakeholders rated the importance of government subsidies consistently lower (M=1.6, sd=.55) than AMMON (M=3.57, sd=.98) and partners (M=2.14, sd=.69). On average *government subsidies* (M=2.53, sd=1.11) was rated the lowest, the standard deviation was also highest here: 1,11. Firms are not likely to start new innovations without subsidies, while government thinks they would. AMMON-managers think these subsidies are essential for starting new innovations (M=3.57, sd=0.98). This shows a gap between how the different parties observe the role of subsidies. This matches with question 4.3.4., where partners stated that subsidies are needed for projects. AMMON stated that companies are often waiting for subsidies before starting a project. Interestingly three participants gave two grades, with the note that there is a difference between what they wished was so and reality. The latter scores were used in the table above. Partners and AMMON stated the government should not intervene too much in development processes and make the process of obtaining funding more transparent and faster.

4.3.8. Possible Solutions for Bottlenecks (Statements)

To check how the stakeholders thought of different possible solutions a couple of statements were provided to the participants. This urged had them to state priorities to different solutions.

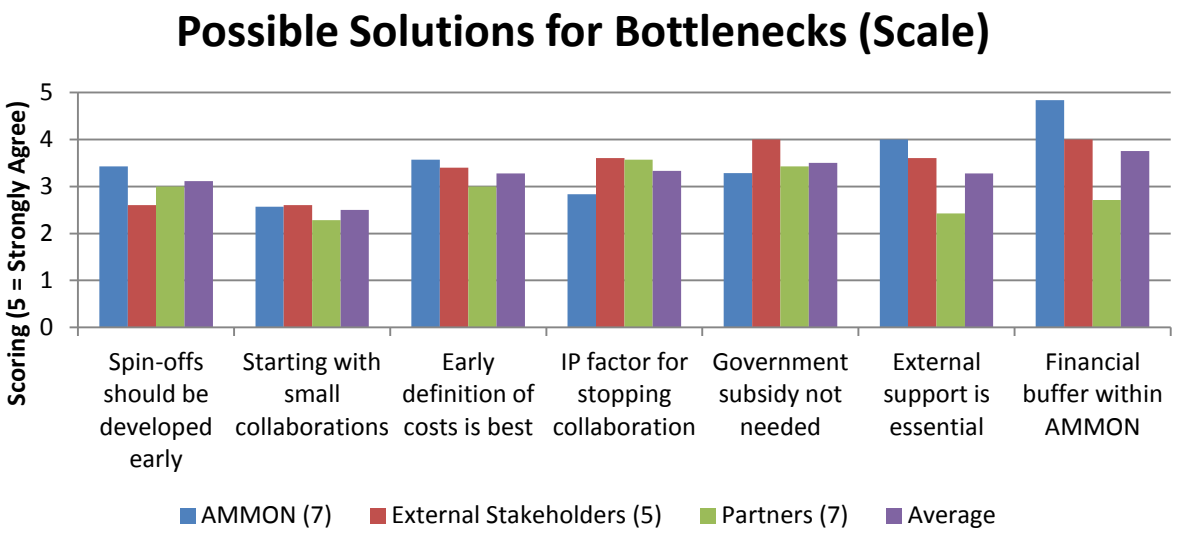

Figure 30 - The scores from stakeholders on the different statements of possible solutions

Improvements	AMMON (7)	External Stakeholders (5)	Partners (7)	Average (19)
Spin-offs should be developed early	**3.43 (1.40)**	2.60 (.89)	3.00 (1.29)	3.05 (1.22)
Starting with small collaborations	2.57 (1.51)	**2.60 (1.14)**	2.29 (1.25)	2.47 (1.26)
Early definition of costs is best	**3.57 (.98)**	3.40 (1.34)	3.00 (1.00)	3.32 (1.06)
IP factor for stopping collaboration	2.83 (1.72)	**3.60 (1.14)**	3.57 (1.51)	3.33 (1.46)
Government subsidy not needed	3.29 (1.11)	**4.00 (1.22)**	3.43 (1.40)	3.53 (1.22)
External support is essential	**4.00 (1.55)**	3.60 (1.14)	2.43 (1.27)	3.28 (1.45)
Financial buffer within AMMON	**4.83 (.41)**	4.00 (0)	2.71 (1.25)	3.76 (1.25)

Table 3 - The scores per group

The *financial buffer* was scored highest (M=3.76, sd=). This statement is that AMMON creates a fund (financed by external investors or partners) from which innovations can be financed. Although AMMON unanimously was in favor, the companies and external stakeholder were more hesitant. The main concern was whether AMMON could organize this and if funds would become large enough. If however,

the funds would be monitored by an external party, most would be in favor. Consistent with the factors measured earlier, *no governments subsidies* (M=3.53) was scored high. Again external stakeholders mentioned this was less important compared to high partners ranked it. In general it was scored second-highest.

Concerning the *importance of IP* (M=3.33) there were some clear differences between the groups. AMMON thought this was not an issue, while the partners and external stakeholders thought it was. It should be noted that differences within groups were fairly large. In the AMMON-group the differences were most clear, showing that within AMMON it is not consistent how important they consider IP for the successfulness of projects. The standard deviation of this variable is very high (sd=1.46), indicating that opinions differed greatly across the whole sample. Especially within the AMMON group. For instance one of the partners stated that:

"IP is not at all important for us, speed is more essential. Developing IP only costs a lot of time".

- Partner

Whether *costs should be defined as early as possible* (M=3.32) opinions differed (sd=1.06). Although many thought this was wise, they also stated that it is not always possible. Participants stated it provides clarity, but also false security when done too early.

Whereas both (semi) government and AMMON think that *external support* (3.28) within projects is essential, partners would like to guide projects themselves. This has been explained in the previous sub-chapter. The deviation within (sd=1.55, 1.14 and 1.27) as well as in the whole sample (sd=1.45) is high

The *Spin-offs* statement was rated mediocre (M=3.05). Participants stated that the early creation of spin-offs or joint ventures could help make tasks clearer. This statement was received moderately positive, which some clear differences within groups: some were clearly opposed, while other thought it was the solutions for many problems. In general AMMON employees and partners thought this a more interesting solution than external stakeholders thought it was. The reasons for choosing it was mostly because it gave focus to a product and a spin-off had clear leadership. Partners were against because according to them it does not solve problems in task-divisions and is difficult to formally structure. All companies confessed they had little to no experience collaborations as well as creating spin-offs and perhaps made them hesitant to support this solution.

Contrary to what was expected *starting small* was scored lowest (M=2.47), all parties thought this was not needed. This was mostly motivated by the fact that large collaboration from the start would work as well, and have worked in the past.

On average, the *financial buffer, no government subsidy* and *importance of* IP were rated highest. Spin-offs and financial buffer are the focus of AMMON-team, whereas partners focus on IP and external stakeholders on *no government subsidy.*

For AMMON this means they should seriously consider developing the financial buffer, which at the same time decreases the need of government subsidy. The importance of IP could be countered by

clearly defining where in projects the IP is needed and shared. Starting with small collaborations should not be a high priority for AMMON, but could nevertheless aid in developing personal contacts.

4.4. Conclusions

The following table shows the conclusions from this research in an overview.

Question	AMMON (7)	External Stakeholders (5)	Partners (7)	Variable
Network Level Questions				
Main motivation for joining AMMON			**Profit & Product-focus**	*Strategy, Structure*
Participants Role within AMMON	**Active**	**Unsure**	**Active, Unsure & Waiting**	*Strategy*
Distinction AMMON – External Stakeholder		**Unclear**		*Stakeholders: Competing Networks & Government*
Perceived future challenges for AMMON	**Speed**	**Speed**	**Speed**	*Perception, Expectations*
Project Level				
Importance of contracts	**Very**		**In general low**	*Contracting*
Termination factors for projects			**Strategic Priority & Speed**	*Requested by AMMON, Expected Outcomes, Structure*
External project guidance	**High**	**Medium**	**Low**	*Structure & Management*
Optimal AMMON Project financing	**Companies**	**Companies**	**50/50**	*Investments (Money & IP)*
Government role	**Launching customer**	**Launching customer**	**Launching customer**	*Stakeholder Theory: Government*
Definition of Project Success	**Profit**	**Profit**	**Profit**	*Expected Outcomes*
Perceived Importance of Factors for Successful Collaboration (5 = maximum)				
Trust *(AVG= 4.95 (.26))*	**5.00 (0)**	**5.00 (0)**	4.86 (.38)	*Trust*
Knowledge&Competences *(AVG=4.21 (.96))*	4.00 (1.15)	4.20 (.84)	**4.43 (.79)**	*Knowledge & Competences*
Financial size & Stability *(AVG=3.32 (.88))*	3.29 (.49)	**3.60 (1.14)**	3.14 (.90)	*Firm Stability*
Previous experience of partners *(AVG=2.89 (1.01))*	**3.14 (.69)**	2.60 (1.14)	2.86 (1.07)	*Collaboration Experience*
Company culture *(AVG=3.74 (1.03))*	**3.86 (1.35)**	3.40 (.89)	**3.86 (.90)**	*Culture*
Leadership *(AVG=4.05(.88))*	**4.14 (1.21)**	3.80 (.84)	**4.14 (.90)**	*Management (Project)*

Personal contacts *(AVG=4.32 (.72))*	**4.42 (.79)**	4 (.71)	**4.42 (.79)**	*Personal Contacts*
Government funding *(AVG=2.53 (1.11))*	**3.57 (.98)**	1.6 (.55)	2.14 (.69)	*Investments*
Clear Business Case *(AVG=4.27 (1.10))*	4.33 (1.15)	3.40 (1.34)	**4.86 (.38)**	*Task Clarity, Structure, Risk*
Company Analysis				
Function + Background	**Business**	**Multiple**	**Business**	*Additional, Perception*
Innovation focus (internal/external)			**Mostly Internal**	*Strategic Priority, Culture, Structure (Firm)*
Prior Collaboration Experience	**High**	**Medium**	**Low**	*Collaboration Experience*
Collaboration Motivation			**Competitive Advantage**	*Strategic Priority, Expected Outcomes*
Past collaboration success factors	**Launching Customer**		**Launching Customer**	*Additional, Previous Experience.*
Prior knowledge needed before starting collaborations	**Customer**		**Customer, Commitment**	*Expected Outcomes, Risk, Investments*
Possible Solutions for Bottlenecks (scale)				
Spin-off/Joint Venture formalization *(AVG=3.05 (1.22))*	**3.43 (1.40)**	2.60 (.89)	3.00 (1.29)	*Structure*
Previous smaller project experience *(AVG=2.47 (1.26))*	2.57 (1.51)	**2.60 (1.14)**	2.29 (1.25)	*Previous Experience*
Defining costs as early as possible *(AVG = 3.32 (1.06))*	**3.57 (.98)**	3.40 (1.34)	3.00 (1.00)	*Requested by AMMON, Risk & Investments*
Importance of IP *(AVG = 3.33 (1.46))*	2.83 (1.72)	**3.60 (1.14)**	3.57 (1.51)	*Risk & Investments (IP)*
Government Funding Not Needed *(AVG=3.53 (1.22))*	3.29 (1.11)	**4.00 (1.22)**	3.43 (1.40)	*Stakeholder: Government*
External Guidance is Essential *(AVG=3.28 (1.45))*	**4.00 (1.55)**	3.60 (1.14)	2.43 (1.27)	*Management*
Financial buffer within AMMON *(AVG=3.76 (1.25))*	**4.83 (.41)**	4.00 (0)	2.71 (1.25)	*Requested by AMMON, Investments & Risk*

Table 4 - The conclusions from the interviews, bold numbers are the highest scores

The table above shows the variables *trust, perception, and personal contacts* were all rated consistently high. The factor *trust* was by far considered most important. These three factors look interrelated, since they all focus on the same factors. The main reasons for partners to join previous collaborations and AMMON was consistent: a focus on competitive advantage and speed. The strategies are thus consistent, meaning that AMMON should keep focusing on these factors. In the open questions the participants focused on comparable factors: synergy, commitment and profit.

AMMON and the partners were consistent in their perceived role for the government: a launching customer. This was scored high in the open question by all parties. Where needed subsidies are important, but preferably as limited as possible. They also did not want the government involved in the AMMON-processes.

Opinions about *Management* and *Structure* on a project level differed greatly, whereas AMMON aimed for guiding projects (M= 4.00, sd= 1.55), partners were not in favour (M=2.43, sd=1.27). Also concerning future structures they differed: AMMON wants spin-offs (M=3.43, sd = 1.40), whereas partners wanted a licensing solution (M=3.00, sd=1.29). This could in part be related to the experience with spin-offs and in collaboration, which also differed greatly.

The financial buffer was scored low by partners (M=2.71, sd = 1.25), although they were in favour of the concept itself. The main concern was the governance of this fund, by whom would this be done and how? The sample was divided, there was no general consensus.

There was little mention of technological limitations. This part of the projects was not an issue according to the interviewed participants. Apparently this is not a factor they considered important in general, or trust that AMMON has sufficient skills to manage this.

Recommendations for AMMON will be provided in Chapter 7. Firstly the cases will be researched to check whether these factors hold on an AMMON-case level. The final overview of variables will be shown in Chapter 5.3.

5. AMMON Case Analysis

In addition to the general analysis of the AMMON-network and expectancies, cases were researched. These were researched by looking into documentation from AMMON and during the interviews as discussed above. The cases provided additional input for factors outside the general interview questions and specific to AMMON. In this chapter firstly the Smart Roads project is discussed, followed by the GreenSource project.

5.1. Analysis Case 1 – Smart Roads

The first case that will be discussed is the Smart Roads project. First the case will be introduced; secondly the current evaluation will be processed, followed by the future challenges. This is consistent with the interview questions asked about these projects.

5.1.1. Case Introduction

Figure 32 - An artist impression of a Smart Road

Smart Roads is project between Reef, Use Technology, TKH Group and AMMON that focuses on developing a road of the future. It features a roadmap of multiple steps towards a full-fledged new road. They currently focus on better reflection of roads strips, heating and energy-efficiency. They are looking for partners for starting the first generation. In later generations two and three they want to look into cradle to cradle and generating energy from roads. The project is still in its early phases, no clear deliverables have been completed yet. This makes it an interesting case since it shows

Figure 31 - The general setup of the Smart Roads project, showing generation one to three

the problems that can occur early in the process.

Three managers from AMMON and one partner were interviewed. This case provided insights in the early phases of an AMMON project. Next to these interviews the available documentation was used as an input for this case.

The documentation on this project showed that they are currently looking for a launching customer. They have had a meeting with the municipality of Haaksbergen, which is an important partner for building a first demonstrator.

5.1.2. Roles within the Smart Roads Project

Reef Infra is a company that develops and creates roads, whereas USE and TKH develop better reflective lining and cabling. Combined they aim to make roads more energy-efficient by limiting the light needed. In this project Reef and TKH are already trying to market a part of the concept, since they already have a meeting with municipalities for building a first demonstrator. Secondary stakeholders are the potential launching customers. Think of for instance municipality and the province, which will be facilitating the demonstrators or roads in the future.

The roles of the AMMON-team is active, they are actively guiding the project and planning meetings. The partner was actively steering as well and commented that it took longer than expected for all partners to get a consensus.

5.1.3. Current Evaluation of the Project

The progress in project Smart Roads in general was evaluated positively by both the partner as the AMMON-team during the interviews. Although one partner and one AMMON-team member mentioned that progress was slow, it was not considered problematic. They attributed this slowness mainly to the negotiations between partners and because it was difficult to determine the main customer. The development was also slower than expected because choosing partners and technologies was difficult. Balancing innovation and practical feasibility took longer than expected, but as an AMMON-Business Developer called it: *"This saves a lot of time in the long run".*

Concerning the trust in a successful product, they were all enthusiastic about the concept. They were developing it into a demonstrator, to be able to show the concept worldwide.

5.1.4. Most Important Events

The partner noted that this slowness could be countered by not making every decision by the entire consortium. Instead some decisions could be made by a smaller group. This partner chose to discuss topics directly with the AMMON-team without the other partners. This makes it more difficult for the other partners to know what has been discussed and lowers transparency in a project.

They described three important phases in the project: choosing the main partners, choosing the main client and search for a launching customer.

The main partners chosen are not the only ones considered, since other partners also had usable technologies. The choice was made to keep the project simple at first, to include other partners in future phases. This excluded potential partners from the project.

Choosing a client for a new road was difficult since in the Netherlands the roads are governed on multiple levels: municipality, province and national. They chose to focus on the province since these govern the most important roads, excluding other clients.

Lastly they searched for a launching customer to be able to build a demonstrator. This was found in Haaksbergen, but at the moment of writing these negotiations were not finished yet.

The other partners weren't interviewed; the responses from these partners could not be evaluated.

5.1.5. Future Challenges

They mentioned three challenges: finding a launching customer, the current lobby and providing sufficient added value.

Firstly, finding a launching customer is a crucial part for the speedy development of the concept. They are dependent on the government in this aspect. The negotiations were going well according to the participants. If however this would not continue it would be a challenge to find another one. This project needs a demonstrator to be able to visualize the concept to other future clients.

Another factor that was named is the market introduction of the product; since the current lobby for road construction is strong it could be difficult to launch a new concept. It should thus provide sufficient advantages compared to current solutions. These are thus competitors, so outside stakeholders.

Lastly the documents of project Smart Roads showed that the added value is an important focus of the project. They must show that they can develop it cheaply and that the companies are reliable players to collaborate with. The long term benefits for the government would have to come from less maintenance, less noise and higher safety of the roads. This is a technological challenge.

5.2. Analysis Case 2 – GreenSource

GreenSource is the second case that was analyzed based on documentation and interviews. Firstly the case will be introduced, afterwards the roles will be described. Thereafter the current evaluation, most important events and future challenges will be described.

5.2.1. Case Introduction

GreenSource is a collaboration between TenCate, Pentair and Wavin. This project is about developing artificial grass that also purifies water. Normally artificial grass needs water to keep it from drying out. GreenSource combines this watering with purification to make it reusable. TenCate delivers the grass, Pentair the purifying technology and Wavin delivers the piping for the water. The main market they want to focus on is Africa, where they can provide a sports field and water purification simultaneously. A working demonstrator has been built in front of OICAM to demonstrate the principle, which has been presented in July 2011. Currently they aim at bringing 20 prototypes to the South-African market, the partners requested government funding for this project which at the moment of writing this thesis has not been accepted yet. Secondly they are looking at sports fields throughout the Netherlands. IP-arrangements have not been made yet and no formal future structure for the future has been written down. The project does not have a launching customer yet, but it could be considered for wide range of markets: sports, mine-water cleaning and leisure.

Figure 33 - An artist impression of GreenSource

Currently GreenSource is marketed as the prime example of the AMMON concept. This status makes it well known project in the region with many participants having an opinion on it. Six direct stakeholders were interviewed in detail for this case and only these will be considered in the chapter below. These were four AMMON-managers (one also was employee of TenCate) and two direct partners.

5.2.2. Roles within the GreenSource Project

The collaboration started between TenCate and Pentair as an initiative from AMMON. The demonstrator was built in collaboration with AKG Polymers for the piping, but Wavin was included later in the development and is currently the main partner. In the initial phases for GreenSource funding from Kennispark and OostNV was used in AMMON phases 1 and 2. These parties have thus all been involved in the development of the system, but Kennispark and OostNV currently have no role in the project.

The first partner considered his role as providing the marketing.

"The partners could provide the marketers independently"

- CEO of one of the partners

This is consistent with what most AMMON-managers complain about:

"All parties are waiting on each other, they want to just deliver the parts, not the total package"

- AMMON – Project Plan Manager

The individual partners only want to invest the bare minimum, not wanting to be the main leader of the project. This results in a very slow process within this project. This is not surprising: all three parties can provide the individual parts of the system, which means they could all be in a supplier. This is easier for them, because this costs less time and money. Four AMMON-team members and one partner mentioned this could be problematic in the future, because no-one is willing to lead the project. Furthermore the discussions of the distribution of tasks and revenues still had to be done. The participants stated this is a part of the negotiation process, so likely will likely count for more projects within AMMON.

From the documents and interviews it became clear that this product is not within a market most partners are experienced with. Investments are thus needed to develop these markets.

5.2.3. Current Evaluation of the Project

There are several factors that have highly influenced the success of the GreenSource project till now. As three managers from AMMON note, especially the physical building of the prototype was a turning point. They stated that OICAM installed it by ordering the individual parts and building the demonstrator in front of OICAM for the opening of the building. The proof of principle was thus created by OICAM, which could then be shown to the world. Note that the main persons involved in OICAM are the same Business Developers that are responsible for the GreenSource project. This building of the demonstrator however had to be done haphazardly by the AMMON-team to speed up the project and get it finished before the opening in July 2011. This went faster than partners expected, meaning not all partners were ready for this new project and steps at the start of the process were skipped.

"Too late in the process we've made things explicit and put them into contracts. Now this still has to be done, which could become a breaking point"

- AMMON Business Developer

This AMMON Business Developer notes that legal contracts still have to be signed. He argues that perhaps this was now too late in the process since a working product is already available, making discussions even more difficult since partners now focus on the marketing.

"The development of the demonstrator was essential, it made the concept visible and tangible"

- AMMON Business Developer

All four managers from AMMON mention that the demonstrator was essential, but strangely enough the partners themselves gave little mention of this. They were looking into how to market the project and division of these tasks.

As shown in Figure 34 all respondents thought the speed of the project was essential, all six said the project currently was taking too long. The demonstrator however was only mentioned specifically as an important factor in the start-up process by three AMMON-managers. It was not mentioned specifically by the partners. AMMON mentioned that they thought OICAM was essential, otherwise the demonstrator wouldn't be finished yet. There was one unexpected answer: changing the internal organization and budgeting which one of the partners had to do.

The partners however focused more on the future: they thought the launching customer in Africa is essential and communication within the project was lacking. This lack of communication can be attributed to discussions that simultaneously happen on the CEO-level and on lower (project) levels, of which outcomes are not always communicated correctly according to one partner.

This clearly shows that all stakeholders focus on project progress, consistent with their view on AMMON. They however state different origins for reaching the current progress of the project. While the AMMON-team stated that the current slowness was improved by OICAM, partners stated it was mainly because of bad communication and lack of priority.

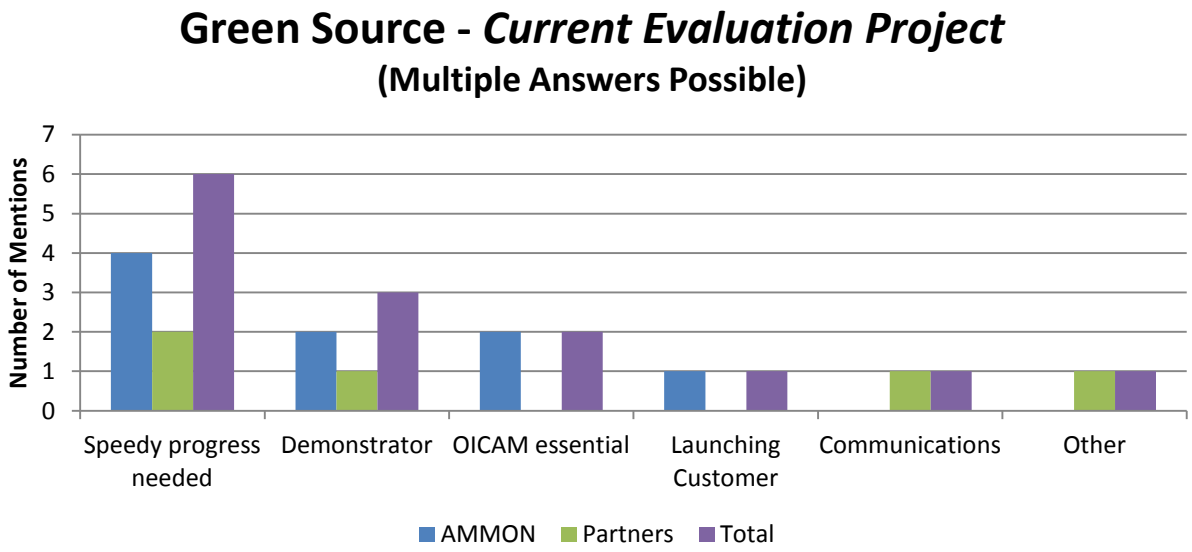

Figure 34 - The current evaluation of project GreenSource according to stakeholders (multiple answers possible)

5.2.4. Most Important Events

The most important events were the development of the demonstrator at OICAM according to the AMMON-management. This improved project speed, but simultaneously left the partners surprised since they were not involved in building this demonstrator.

The partners did not mention that the demonstrator was for the progress till now. They mentioned that the current delay was because of the discussions concerning financing and positioning. Here a clear cut between AMMON and the partners becomes visible, comparable to the previous question.

5.2.5. Future Challenges

The interviewees mentioned the following challenges: task divisions, profits, spin-offs, focus and commitment. In this question interviewees could provide multiple answers.

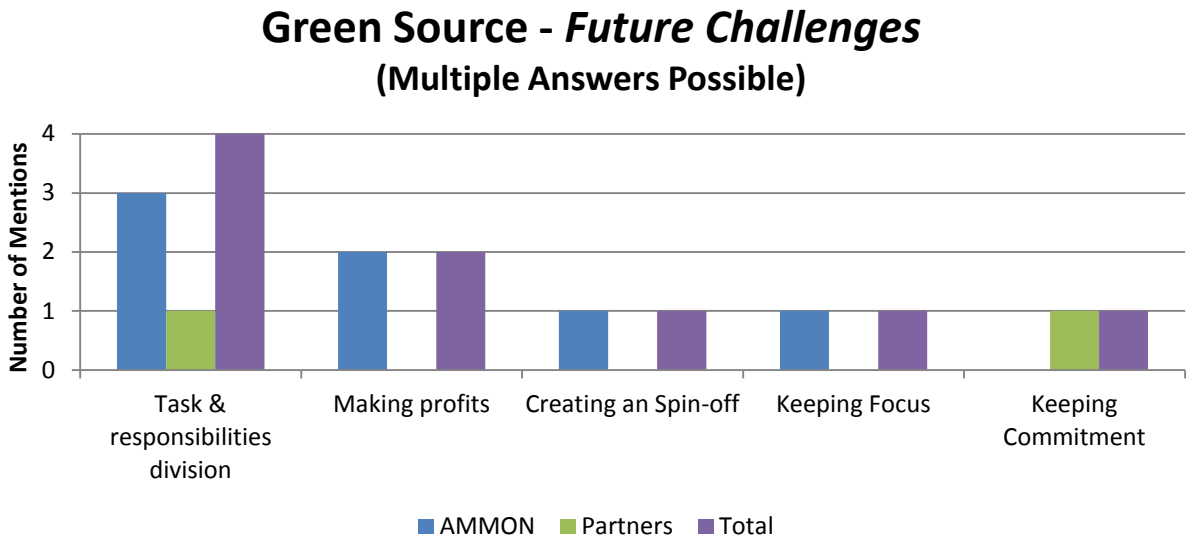

Figure 35 - The future challenges for GreenSource as perceived by stakeholders (multiple answers possible)

Spin-offs were thought as an essential solution according to two AMMON-managers, whereas the companies were less appealed by this concept. The differences in opinions thus are consistent with the results of Chapter 4.3.8. As one of the partners stated:

"Although spin-offs have benefits, spin-offs loose the image and network of the companies behind it"

- Partner

This was in a later interview countered by the management of AMMON:

"For (Spinoff X) it was essential to show the 'powered by (Company)'-logo, using the image of the mother company."

- AMMON Business Developer

The funding is currently dependent on the government, but if this funding does not come through it is uncertain whether the project will continue. The strategic priority is an issue, since partners are not fully focused on project GreenSource. Although they stated unanimously to support the project even when no subsidy would be available, it is unsure whether this would really be the case.

Lastly the negotiations and formal structure is still not clear according participants: who is going to do what in the project and how will the rights and benefits be divided? AMMON named these issues more often than partners did.

5.3. Conclusions

The cases above show that tasks divisions, speedy progress and effective communications are essential for the success of these projects. These factors were mentioned in both projects, showing that these play a key role.

The cases provided additional input for factors outside the general interview questions. The communication and demonstrators were in both cases essential. Both also show that the progress and task clarity are essential for stakeholders. This is consistent with what participants stated as essential factors.

There were other factors that were not discovered in the theory. Firstly in project SmartRoads the one-on-one negotiations provide a project boost, which meant communicating on multiple levels without all partners. Secondly the current competitors were an issue for SmartRoads, this however is too project specific to solve. Thirdly the discussions on IP for GreenSource have not been negotiated yet. This means the contracting was not finished, although there already is a demonstrator. Lastly, future investments have also not been agreed in project GreenSource.

The first shows the importance of good project management, the second is an issue that comes from outside AMMON (environment). The third is a contracting issue and the fourth an investment issue.

There was again little mention of technological limitations. This part of the projects is not an issue according to the interviewed participants. Apparently the process AMMON uses incorporated this sufficiently in these projects.

To conclude chapters 4 and 5 the previous model has to be re-evaluated. Participants graded trust, personal contacts and strategic priority as the most important factors in as well the cases as AMMON in general. What became clear from the interviews is that partners focused greatly on trust within the network, which comes from a multitude of sources: prior experience, strategic priority, capacity, etc. Trust however, is difficult to capture reliably since partners do not necessarily fill in a toolkit honestly (De Man & Roijakkers, 2009). Therefore the toolkit also focuses on factors that are importance for trust: communication, strategic priority and capacity. Factors like government role, investments (network & project level) and competing networks were deliberate left out the toolkit since these entail structural changes in AMMON. The *expected outcomes* variable was too consistent to include, since all parties already agree that AMMON should focus on speedy product development. Risk, competences, firm stability and culture scored consistently low or weren't mentioned as project-bottlenecks. These have therefore not been included. Figure 36 shows the overview.

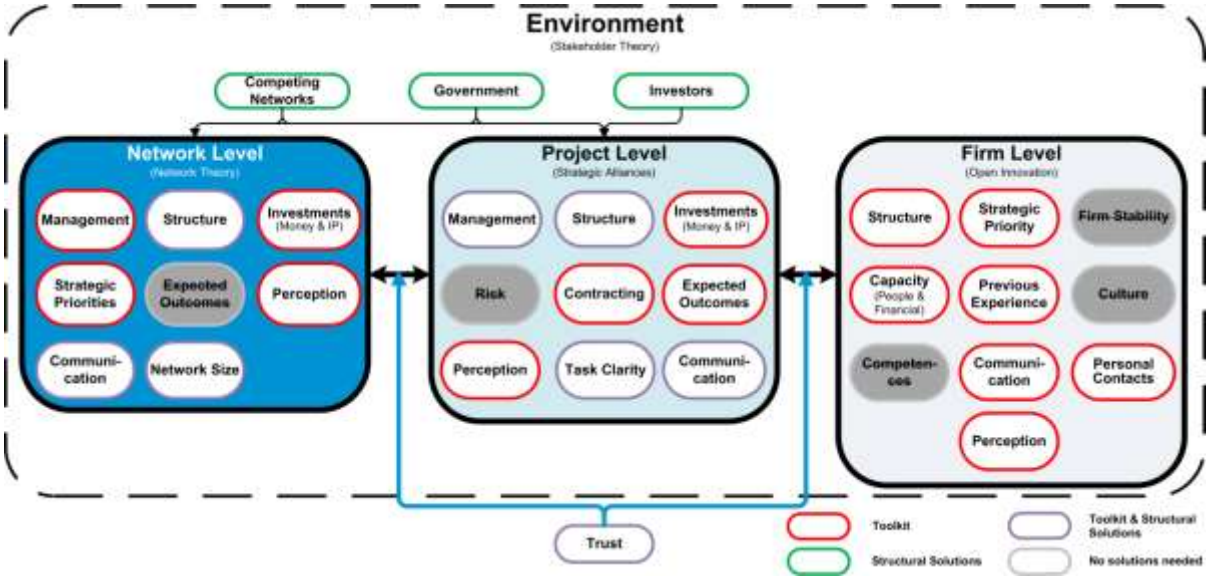

Figure 36 - The variables as shown in chapter 2, red showing the Toolkit variables, green the Structural Variables, purple need both and grey variables have not been included because lack importance.

6. Developing the Results into a Toolkit

Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important.

- Bill Gates

The above quote is typical for the toolkit developed. A tool can only be as good as the one using it and the people that are involved. The chosen tools use aspects of existing tools and newly developed aspects. Firstly the toolkit will be introduced and of which tools it consists and how these should be combined. Afterwards the evaluation process of the tools is explained, ending with a suggestion on how to implement the toolkit.

6.1. Introduction of the Toolkit

The toolkit uses open question and scales. Scales are used so the AMMON-team can check whether all partners have the same priorities in projects. There are a multitude of other factors that could affect a project, but with every question the trustworthiness of an individual question is reduced. To keep the tool simple and manageable, the amount of questions has been kept low. This makes it easier to fill in and takes less time for getting in-depth information. In the following chapters it is explained how the most important factors of Figure 37 are used in the tools.

Purposively the choice was made not to create a toolkit that focuses on technology, AMMON uses tools for these purposes that function according to the stakeholders. These tools are for instance Voice of the Customer and QFD (Eger, 2004; Nagji & Tuff, 2012; Tidd & Bessant, 2009).

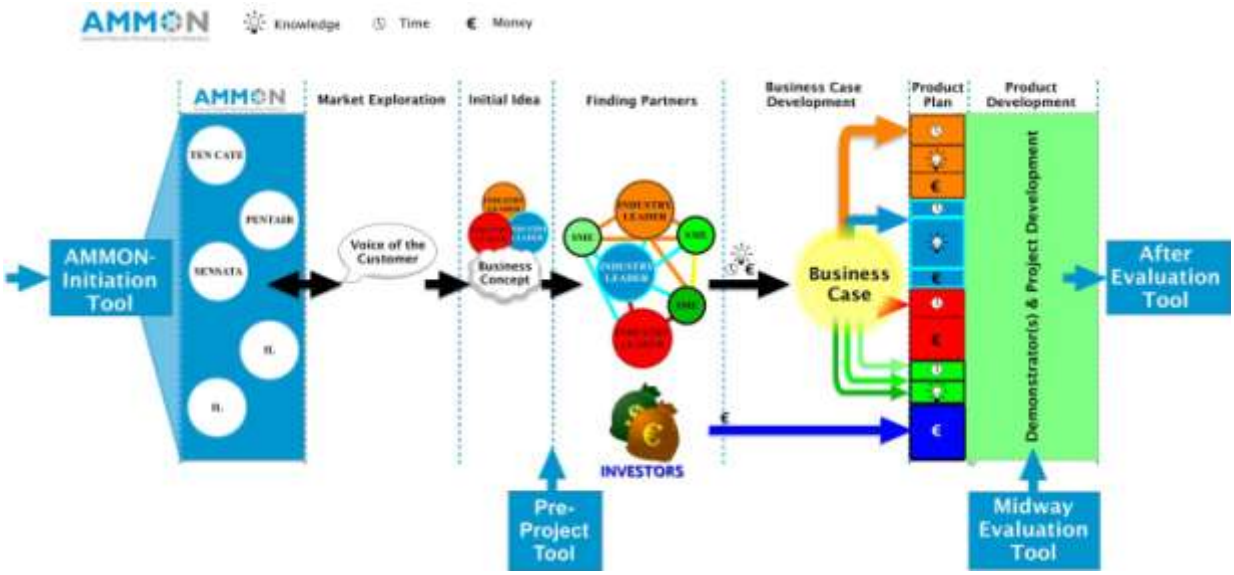

Figure 37 - The AMMON Model, including when the tools are used (Appendix 9.2)

In total four tools were developed: an AMMON Initiation tool, a Pre-project tool, a Midway-tool and an Evaluation tool. As shown in Figure 37 the toolkit can be used at the initiation, at the start of a project, during the development of a demonstrator and after AMMON formally leaves a project. The first tool is

for usage on a network level, the latter tools are on a project level. All these tools are developed in such a way that they can be used separate from each other but can be combined. The tools all have two parts: a questionnaire and an Excel sheet to fill in the information. This excel sheet automatically generates graphs for easy comparison. If the AMMON-team wants to prioritize certain factors, they can add weighing factors manually.

The toolkit uses questionnaires that can be filled in on a physical paper or in the form of an interview. It is recommended to use it in the form of an interview to ask in-depth answers. With every question there is the option for adding notes to make the tool more flexible and provide a background for all the answers given. This prevents that grades are too rigid and lack subtleties (Babbie, 2010). At the end of every tool, the partner has to sign the tool. This makes the form an official statement from the company. The results of the toolkit will only be made public to AMMON management, not to other partners. Unless mutually agreed that it may be shared with the partners. These tools could hold sensitive information and the subtleties have to be taken into account, it should not be published.

The AMMON-team can input these answers in the Excel sheet, which will automatically show the factors that are graded high and which are graded low. It provides graphs that show how the different factors relate to each other, making it easier to find deviations from the mean. The choice was made to use Excel is because it is an easy to understand format were the AMMON-team is used to working with. This makes the adoption much easier and also allows them to make their own changes.

6.2. Toolkit Tools

The toolkit and a complete manual of how to use it can be found in the Appendix E and F. Firstly the initiation tool and secondly the project toolkit will be discussed.

6.2.1. AMMON Initiation Tool

As stated before, the AMMON initiation tool focuses on getting to know the commitment and expected way of working within the network. There are in total seven questions that ask for the *strategic priority (questions 1 and 2)*, *company experience (3 and 4)*, *firm structure (3b), perception (5), network size, structure, management & task clarity (6)* and *communication (7)*. The *previous experience*-question is for getting to know practices the companies are used to from past projects, this helps to estimate expectancies. Question 5 asks for the relative importance of a company concerning additional factors like *personal contacts*, *heterogeneity*, *developing the region* and more. These have been combined since these describe the factors a company finds most important in AMMON. The last two questions ask where and how partners want external guidance in projects and how do they want to be updated on new developments. Since this was a clear point of discussion in Chapter 4.3.3. The questions about how to communicate ask when to contact the companies. It also asks for their willingness to start new projects.

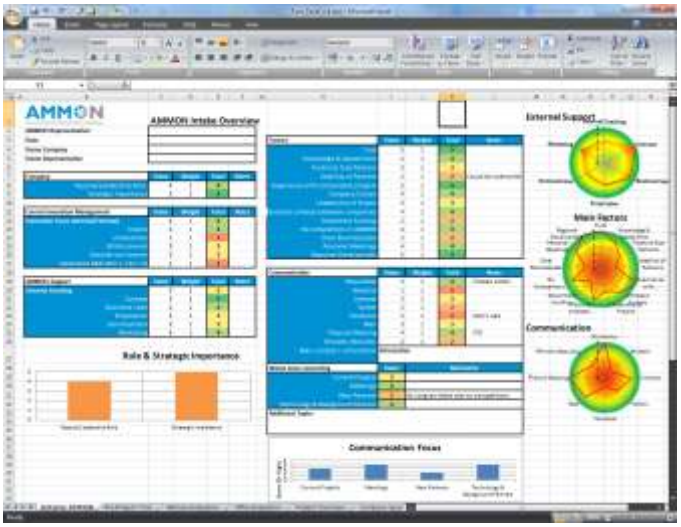

Figure 38 - An overview of the AMMON Initiation Tool, showing the graphs around the grades

6.2.2. Project Toolkit

The Project-tools focus on three parts of the project: before the project, midway and after finishing the project.

6.2.2.a. Pre-project Tool

The pre-project tool looks at the *strategic priorities* companies have in a project and consists of seven questions. Like shown in the cases and interviews the *strategic priority (1 and 2), project management (3), expected outcomes & structure (4), communications (internal & project) & capacity (5)* and *expected outcomes & perception* (6 & 7).

Firstly the questions focus on the role and tasks a company thinks it has and their commitment to a project, which partner in chapter 4.3 regarded of high importance. This is asked to obtain clarity on their focus within projects. Thereafter it is asked whether they would like external guidance and in what form they would like to market it, which helps AMMON to know to which extent they should steer a project. Question 4 looks if a company aims at a spin-off, licensing or any other form and to what extent they want to want to market it themselves. The fifth question asks for the presence of a product champion as a main channel for communication. It asks who this is, how to contact him/her and the available time this person has for the project. This makes this clearer and also indicates the commitment. Lastly the company has to fill in a small scale-form that asks for her expectations of herself and of the partners. This provides a base for comparing expectancies and trust between partners at the start of the project.

Figure 39 - The AMMON Pre-Project Tool Excel sheet. Red blocks mean a low score(1), green means high(5).

6.2.2.b. Midway Tool

After the pre-project tool has been filled in and the project has been developed further, a midway tool can be used to evaluate during the development of a demonstrator. Since the after evaluation tool is too late for making changes, this midway tool aids in for steering a project.

This tool focused on the *strategic priority & project management (1 and 5), expected outcomes* (3), *perceptions (2, 4 and 6).* As shown in the interviews partners could have different perceptions and expectations of a project, this toolkit aims to find where these differences lie. There are six questions: how does the partner role compare to the expectations? What do they think about the collaboration so far? How do they evaluate the future product and project speed? And lastly it asks for their evaluation of AMMON and a grade for the total project. By knowing if the time and effort matches the expectations, estimations can be made whether this requires changes.

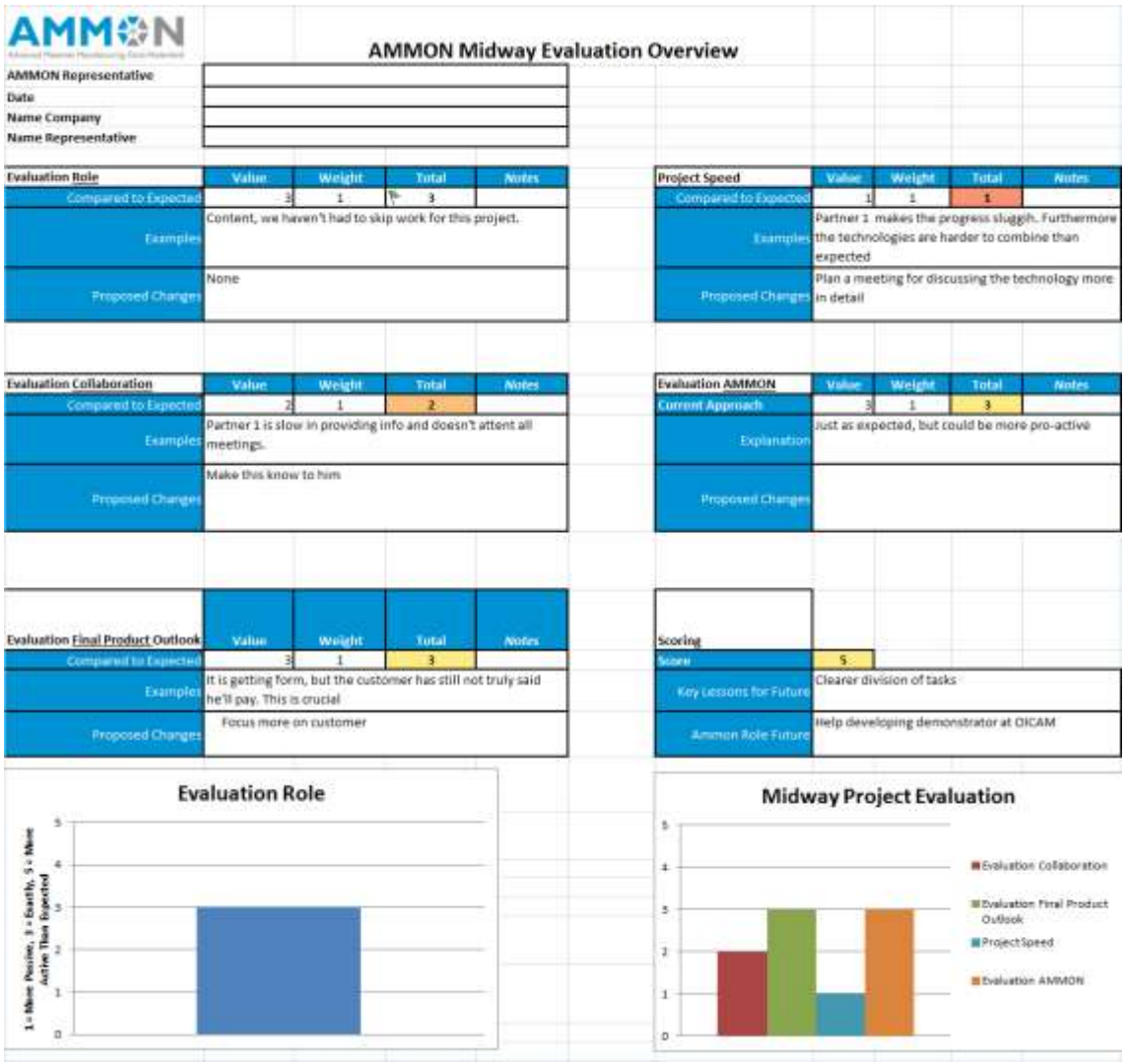

Figure 40 - The Midway-Tool sheet

6.2.2.c. After Evaluation Tool

The After-Evaluation tool is used when AMMON leaves a project and the companies further develop the product. The questions are equal to the Midway Tool, only now based on the final result of the project. By using this it can be used to check if changes in perception and expectations have occurred during the project. This can test whether interventions from AMMON have helped and which key lessons can be learned for the future.

This tool and the midway tool are not limited to successful projects, but can also be used for projects that have stalled or stopped to measure where this came from.

Figure 41 - The AMMON After Evaluation sheet.

6.2.2.d. Project Overview Tab

An additional function was built in this toolkit which can compare companies in the project. It is linked to the other tools and automatically generates an overview of what each company scored.

By looking at the graphs the AMMON-team can easily compare where partners focus on mostly. It can also be used to see what partners expect from each other and if this matches what these partners expect from themselves. The fields have the same colours as in the other tools, helping to easily distinguish the low and high values.

It is not automatically linked to outside questionnaires, so should normally be updated manually. If users want to update automatically, a step by step guide is included in the Manual (Appendix F.6)

Figure 42 - The Project Overview Tool. This tool aids in comparing the answers from the different partners.

6.3. Evaluating the Toolkit

The toolkit is evaluated in several ways, firstly by feedback from the AMMON-management, secondly by looking at if the tool would work on current cases and lastly by looking at the TCP-framework (Tichy, 1982) to see if there are any bottlenecks that can be expected.

6.3.1. User Feedback

The toolkit form that has been developed in this thesis is between a prototype and a concept. It is a setup toward a full-fledged tool. It has not been completely developed and tested yet.

It has been developed together with the AMMON team and feedback from partners. This feedback has been implemented in the version of the toolkit that is attached in the Appendix E. The questions of strategic importance and role within a project have been switched in the Project Toolkit. Questions on market experience and project focus have been added. In the AMMON Initiation Tool the questions on previous collaborative experience got a separate question about projects outside their own branch. The Midway and After Evaluation Tool have also been made more consistent, to enable better comparisons throughout the project using the Project Overview Tab.

In general the AMMON-team saw this toolkit as useful and what they expected prior to the project, but had differing opinions on which the toolkit should focus. For instance two stated that it should include a complete other element: the screening of companies. They asked to insert questions concerning for instance the experience with QFD and strategic development. This was considered but not developed in detail, because time did not allow developing such an extensive tool. A raw concept however was developed, as can be found in Appendix E.5. Notwithstanding this is an interesting concept for future iterations of this toolkit, or perhaps another tool within the kit.

Partners also provided feedback. They mentioned that perhaps it would be wise to include a project-question which asks what the partners expect for a business success, profit and additional jobs. This was not included in the last version for time reasons, but could be an interesting addiction to test the commitment in further detail.

They further provided feedback on the words and statements used in the toolkit, since not every question was directly clear. These changes have all been implemented.

6.3.2. Evaluating with Current Projects

The tool was evaluated whether they could solve problems in the current cases. This chapter described how it was evaluated in the Smart Roads and GreenSource projects.

In project Smart Roads most of the delay came from choosing a focus and a launching customer. This is a topic that is a strategic choice and not necessarily a problem that this toolkit can solve. For this the current AMMON-tools should be sufficient. The toolkit however can indicate the strategic priority per partner for a project, making it easier to choose which technologies will be developed firstly. It also shows the main contacts and way of communication. This would indicate when partners wish to communicate on a different level like the interviewed partner did directly with AMMON.

By using this toolkit on the project GreenSource, it shows that companies all have the same goal in the project: being a part of the value chain, but not being a leader of the project. This gives the AMMON-team a handle to look into, steering the project towards a leader and clear structure. Another limitation that occurred during GreenSource was the delay because of unclear tasks and roles, by combining the complete project toolkit AMMON can see how every partner looks at their role and tasks in the project. Lastly communication was named as an issue, the question concerning the key contact helps show which persons should be updated on a regular base, but also concerning which topics. This forces companies and AMMON to think of how to communicate and on which levels.

6.3.3. TCP Framework

The TCP-framework (Aken et al., 2007; Tichy, 1982) is also using for evaluating the toolkit. Since it can be seen as an organizational change, the technical, political and cultural challenges need to be taken into account. In case of this tool this is on two levels: the Partners and the AMMON-team.

The technical problems are handled by keeping the questions simple, not ambiguous and the list of questions small. This will make it easier and faster for users to answer the questions. The AMMON Initiation Tool and Pre-Project tool would likely take an estimated one hour, the Midway and After Evaluation Tool about thirty minutes. It has deliberately been created in a default format (Word & Excel) so it is easy to edit and answer the questions, making it easy to use for AMMON. The automatic generation of graphs, indicators and colours were done to ease this even further.

The toolkit is developed in such a way that the CEO's fill the questions, ensuring the political support is there. The AMMON-team has helped develop this toolkit and was send new versions on a regular base for feedback, therefore is knowledgeable on what is in the toolkit.

Lastly the cultural aspect could be a hurdle. Firstly, companies could lack trust towards the tool. This could result in that when they provide their commitment, they provide social desirable answers to appear open and committed. This depends largely on the interviewer, which should focus on getting the most reliable answer possible. Secondly, the partners are most likely not used to a tool like this, because it focuses on the non-product side of a collaboration. For the AMMON-team a cultural problem could be that they neglect this toolkit and try to find comparable answers without documenting it. The tool is made to make this as simple as possible. Using this tool is a process innovation, which makes it another way of working than they are currently used to and cause friction. Using this tool however, could result in strong overview in AMMON when a thorough database is built.

6.4. Implementing the Toolkit

Towards the implementation of the toolkit four steps still have to be taken before fully using it within AMMON. The toolkit is finished and can be used in its current state to obtain relevant information, but has not been formally agreed by all parties or properly tested.

1. **Phase 1 (Finalizing):** firstly the toolkit has to be discussed further within AMMON. They should edit the toolkit where needed and test if the team understands how to use it. Although feedback was gathered in this thesis, not all potential users have had the opportunity to provide it. Furthermore, the "Company Screening Tool" as requested as an adaptation could be developed further in this phase. The AMMON team is leading in this phase, since the tool will still be developed mostly internally.

2. **Phase 2 (Testing):** secondly a test-case should be chosen for looking whether the tool works as envisioned and if the questions are also clear for the partners. It is recommended to use at least one project from start to finish to see if the toolkit as a whole functions, but the individual tools could also be tested separately.

3. **Phase 3 (Implementing):** when the test has been found successful. The last adaptations can be made and implemented. AMMON can start consistently using the AMMON Initiation Tool for all current and future partners as well as using the project toolkit in each project. It should get an official status that it will be used for e.g. initiations without exceptions, to get a good overview of the complete network.

4. **Phase 4 (Continuous Improvement):** After implementing, it could be that new changes have to be made based on feedback. This tool is based on a flexible shell and the AMMON-team can easily add or edit questions if needed.

For learning and using this toolkit the AMMON Toolkit Manual was developed, as found in Appendix FF.

7. Conclusion & Discussion

"A ship in harbour is safe, but that is not what ships are built for"

- Freya Stark

This is the final chapter of this thesis, here an overview of the main findings, implications, limitations and future research will be discussed.

7.1. Main Findings

In this paragraph the research questions will be answered and discussed. The main question and sub-questions of this thesis were as follows:

What bottlenecks and opportunities does AMMON currently face in starting and maintaining multi-stakeholder innovation projects and what kind of structural changes and tools can be used to solve these?

The sub-questions answer the main question, these are answered below.

1. *What bottlenecks appeared in AMMON?*

From the theory, documentation and interviews, bottlenecks were distilled and compared with AMMON. The most important factor for AMMON is speedy progress in projects with concrete results. All parties were unanimous that this was most important for them in AMMON as well as in projects. Participants named past projects that suffered from delay and that were stopped although they were promising. Partners also stated that they chose for AMMON mostly because of its product-focus and were practical compared to other networks. The *expected outcomes* on a network level were thus consistent.

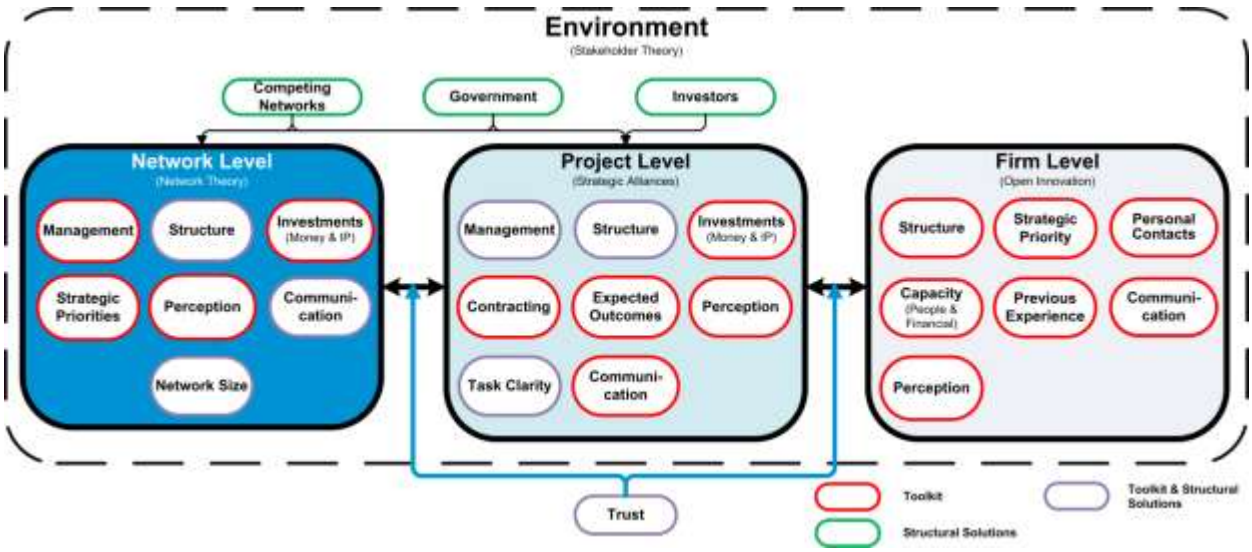

Figure 43 - The final model that was used for the toolkit and final recommendations

From the interviews it became clear that the most important variables could be divided into *trust*, *strategic priority (commitment)* and *setup*.

Trust can be divided in the factors *personal contacts*, *culture* & *previous experience* (De Man & Roijakkers, 2009; Kale & Singh, 2009; Ring & Van de Ven, 1994). *Personal contacts* (M=4.32 , sd=.72)) scored high, whereas a comparable *culture* (M=3.74, sd=1.03) makes communications between partners a lot easier. This factor was however scored mediocre and not found important. *Previous experience* (M=2.89, sd=1.01) can influence a project as well positively as negatively: when a firm has had negative experiences they could be hesitant to step into a new project (McGahan, 2004; Tahtinen & Blois, 2011). Participants however thought the experience could be learned during a project and could also be neglected.

Strategic priority has a link with a firms *size & stability* (M=3.32, sd=.88), *government subsidy* (M=2.53 , sd=1.11) and *perception* (Hausler, Hohn, & Lutz, 1994). Participants stated that the size and stability determines capacity, government subsidy makes it easier to develop a concept and perception determines how companies experience a concept. When a company has limited capacity left for a project and cannot provide the personnel, funding and/or facilities they cannot provide the commitment needed to fully aid a project. This can be because of a reorganization or company size. When a company focuses on *subsidies* they are less focused on the product itself (Czarnitzki et al., 2007). Opinions differed greatly on to which extent participants considered subsidies important. Lastly, even when it fits the strategy of a company it could be that the management of a company could have other reasons to not focus on a AMMON-project (Crossan & Apaydin, 2010). These are placed under the variable *perception*. In the interviews partners also called this a "feeling", which could not been placed under any other variable.

The *setup* of a project was also considered important. It is linked to *task clarity* (Kotter, 2007; Vasconcelos et al., 2003), *expected outcomes(project level), structure, management/leadership (project level), management (firm level)* and *communication (Astebro & Michela, 2005)*. Within *task clarity* tasks and responsibilities are meant. This encompasses where to position a company in a project: as a leader or only as a supplier. *Expected Outcomes* and *structure* are linked to whether the project will focus on develop a spin-off or licensing structure and how participants foresee their roles. *Management* and *Leadership* (M=4.05, sd=.88) of projects were important, but opinions differed on how this should be done. AMMON focused on providing external managers (M=4.00, sd=1.55) whereas partners stated they did not need this (M=2.43, sd=1.27). In general this 3rd party aids project speed (Astebro & Michela, 2005), but only if trusted and capable (Barnes et al., 2006). *Management on a firm level* means the senior management agrees and provides the support needed and the players involved have the power to choose a project direction. This is done by providing a CEO-level discussion, but provided problems in the communication. The *communication*-variable was mentioned as an issue in the cases and appeared in the general interviews.

2. *Why did these bottlenecks appear?*

In the researched cases no lack of trust was found, although partners did take actions that could have an severe effect on trust. The building of the demonstrator for GreenSource and the negotiations between the AMMON-member and a partner for Smart Roads can decrease project trust, although it improves speed. There was however no mention of a lack of trust in the interviews. These events do concern communication: by not including all partners in the product development the communication towards other partners is decreased. In project GreenSource one partner named communication as an issue. Outside the cases three participants stated that communication was an issue, mainly because of the focus on the CEO-level and less on other levels of the partner firms.

In the case of GreenSource the lack of strategic priority was apparent: for none of the partners it was sufficiently important to become leader of the project. In project Smart Roads there was no mention of these problems. This lack of strategic priority is because all partners could have the role of a supplier, meaning they have no incentive in becoming fully responsible for the project. A future bottleneck for GreenSource could be the contracting and the ownership of the product, since at the start of the project no clear arrangements on the usage of IP and facilities were made.

Most of the delay that participants named in the cases came from negotiations and building a clear business concept. In project Smart Roads it took long to define the strategy and client clearly.

Next to the concrete cases participants named contracting and requesting subsidies as a reason for project delay (Faems et al., 2005). Most considered the role of the government as one of launching customer mostly.

Another factor that could have an effect on AMMON-projects is the lack of experience. Six partners had medium to little experience in collaboration, only one partner was experienced in inter-firm collaborations. Three members from the AMMON-team thought this was an origin for the bottlenecks, but partners have not confirmed this.

Concerning environmental factors for delay partners stated clearly that AMMON should be action-focused. Six out of seven partners stated that other networks were too slow and provided little results. This perception could provide impossible expectations for AMMON. Furthermore, four out of five external stakeholders named projects that have an overlap with AMMON-projects. Meaning a competition could start between these networks if not properly managed.

Unexpectedly the factor of technological feasibility was not named often, apparently the interpersonal side of projects is more important. Apparently previous collaborations and AMMON have not suffered from technological limitations in their projects.

3. *What can be done to solve these bottlenecks in future projects?*

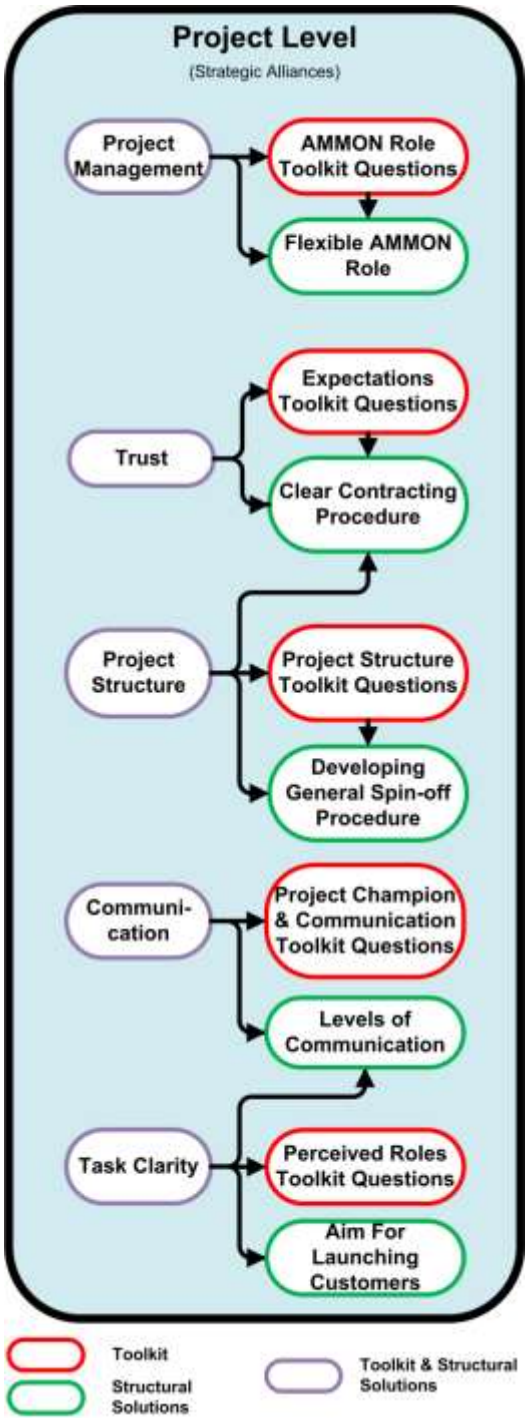

Figure 44 - Project Level Solutions with the linked Toolkit-questions

For structural changes in projects the following recommendations are provided: role of AMMON, a clear contracting process, better communication, and remain focused on launching customers.

A primary factor that was found to be essential for AMMON-projects is guidance by an independent third party. This party aids in steering and can be a mediator when problems arise (Barnes et al., 2006; Berendsen & Kuijper, 2012). In the interviews the firms stated they would rather do this themselves, whereas AMMON was in favour of external guidance. Here lies a potential conflict, which should be discussed prior to a project to know what each partner expects. Past practices proof that this is an essential factor for successful collaboration, so is recommended to use. AMMON should however not force this against the will of partners (Barnes et al., 2006; Berendsen & Kuijper, 2012).

It is important when innovating with industrial leaders that a spinoff structure or comparable outside structure is created to provide focus to a radical innovation (Christensen & Bower, 1996). This will enable the resources, personnel and commitment needed to develop and market a product till the end. The uncertainty that currently is apparent (for instance in project GreenSource) comes from a lack of clarity in the future structure and strategic priorities. Creating a spinoff structure provides focus and commits people to one product, comparable to what Engel and del-Palacio (2009); Leslie (2001) both plead. This structure could be based on Philips (Braaksma & De Jong, 2005), Procter & Gamble (Huston & Sakkab, 2006) and Silicon Valley (Leslie, 2001). For the industrial leaders this helps place the innovation outside their daily business, and leave the option to buy-in the company afterwards. Partners stated they have little to no experience with creating spin-offs and were unwilling to develop them. This

means that it is for them a new process they need to learn. A clear recommendation concerning the solving of this problem would be to let a future student develop a structure for when and how a spinoff should be started from AMMON.

A clear process and template for contracting would make building of trust and strategic faster, easier and more transparent. Contracting was however considered a medium partners, not a goal by itself. Therefore AMMON is recommended to keep the contracting low and only focus on the bare minima partners state they need. Making this a clear step in the process could solve the IP-problems that are likely to occur within GreenSource in the near future.

Concerning project communication and task clarity, differences in expected outcomes and openness was an important factor. People were difficult to contact, did not know what was decided and focused on different goals. As shown in the GreenSource project the communication and differing future goals reduced the successfulness. AMMON should measure throughout projects what firms expect and communicate this clearly. There were differences in personal preferences in language and medium. Documentation is essential, combined with sharing this information afterwards. AMMON should communicate progress clearly, also to the other partners.

Lastly, a project should have a clear launching customer or at least an interested customer prior to developing the project. Otherwise it is unclear who to develop it for and how to market it afterwards. This focus is currently present and is important for AMMON to focus on. Difficulties in finding launching customers were crucial factors for the GreenSource and Smart Roads projects. This client can aid in funding the project and realizing a demonstrator.

An important factor for solving the above problems is to make the intentions of the partners involved more explicit. AMMON then knows better what partners in their network expect. Providing an open debate about the commitments, tasks and elements that are likely to be forgotten otherwise. The toolkit helps to open this debate, but should normally be combined with other tools to also include the technological and market factors.

4. *What opportunities are there for structural improvements for AMMON on a network level?*

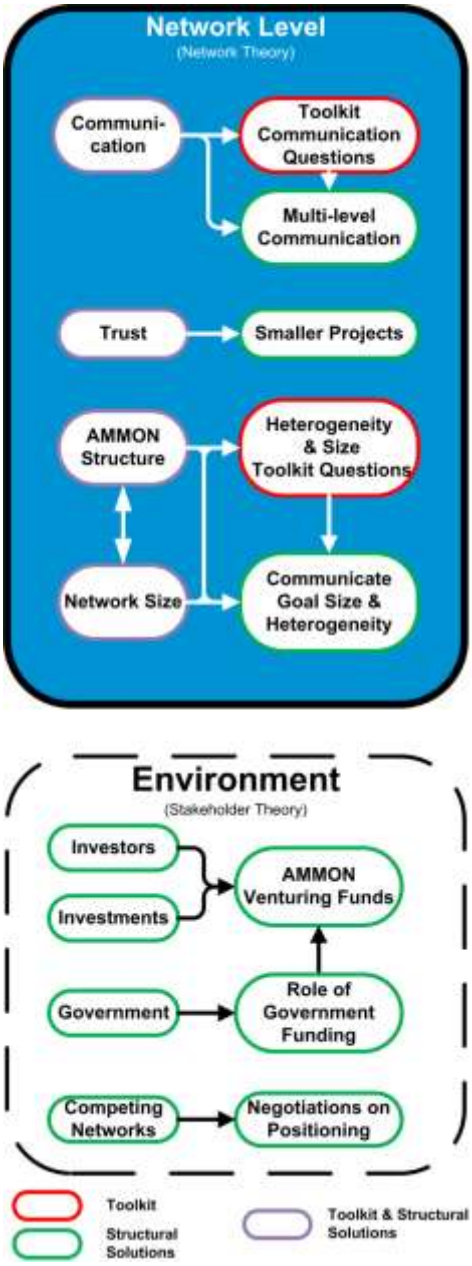

Figure 45 - The structural solutions for AMMON

Structural improvements concern the structure of AMMON as a network, not on a project level. In total there are six recommendation for AMMON on a network & environment level: communication media & openness, improved communication, , develop the venturing funds, built trust, determine the broadness of the network and the politics with other networks.

The first factor concerns the communication to AMMON partners in general, which was stated by several firms as a limiting factor. Currently most communication is done by phone, e-mail or sharing information on DropBox. These channels are only updated for users that are within a project, but for outside parties and partners without projects it is unclear what AMMON does currently. This could be solved by starting a newsletter, intranet or another means. The AMMON-initiation tool includes a communication-question that asks how and on what topics firms want to be kept up-to-date.

A second structural change would be not to focus only on a CEO-level like AMMON has done in the past. Focusing on CEO-level helps get commitment from the top of a company. A problem arises on a project-level if new developments are not communicated correctly, which provides difficulties in the alignment within a company. A potential solution is to communicate on multiple levels and make clear who needs to know what part of projects. Currently AMMON also communicates on a CTO level to include the technology and project knowledge.

The network is new and partners do not know each-other well. This lack of history and experience makes it difficult to built trust, but meeting on a regular base or in small collaboration and meetings could ease this process (Tahtinen & Blois, 2011). It should be noted that most interviewees thought this was not needed, but it could be useful to develop small concepts and supplier contracts when no large projects are available (Ring & Van de Ven, 1994). Although AMMON by design focuses on architectural innovations, on the level of small incremental innovations partners could get to know each-other better. This increases the tie strengths in the network and personal contacts within AMMON (Ahuja, 2000; Lowik et al., 2012). It is recommended

however that AMMON keeps looking outside their network for SME's to obtain weak links and thus new inputs as well (Ahuja, 2000).

The fourth recommendation is about the partners in the network and how broad this should be. Opinions differed greatly on how large and heterogeneous the network should be. Partners thought that the network should be heterogeneous and not too large. They argued a small network is better manageable and would still be able to combine different core competences. The AMMON-team however wants to scale the network larger, to get more funding and potential technologies. This could be a potential future conflict between the AMMON-team and partners. It could alter the structure and targets of AMMON greatly. Participants thought AMMON should not include knowledge institutions unless needed because of the differences between the product-focused AMMON and the research-focused institutions (Barnes et al., 2002). This could delay and complicate the development trajectories so should only be included when essential for a project.

Another structural change is starting a financial venturing funds, funded by a combination of venture capitalists, government and firms. This helps create a steady stream of funds for projects and could solve the current problems with funding. Venture capitalists stated they would support it, since their risk is relatively low because large firms are involved. The AMMON-team was also very much in favour, but firms were sceptic. They stated that it should be done by an external specialized entity and not in AMMON-itself. Partners liked the concept, but thought there were some practical restrictions involved which explained their low rating of this concept (M =2.71, sd= 1.25). This is an concept that should be developed in further detail. If this funds would be funded by partners, government, investors or a combination should be discussed within AMMON. The role of government subsidies furthermore differed greatly in the interviews, this could be included in these discussions.

The last recommendation concerns the politics in the East of the Netherlands and specifically Twente. Twente has had many initiatives now and in the past to stimulate innovation and collaboration(Stichting Twente Index, 2012), which have an overlap with AMMON. Four out of five external stakeholders thought their network differed clearly from other networks, while in fact it did not become clear on what levels they truly differ. For AMMON it is important to have a clearly different strategy and a distinguished profile. A suggestion would be to discuss which party will focus on what part of the region and where collaborations are needed with other networks. Otherwise these networks could become competitors and hinder AMMONs development. Partners already stated they were getting network-tired of all the initiatives in the region. Combining the strong points of all networks can help in building a strong lobby from Twente and the East of the Netherlands. Getting this shared focus is difficult, but it affects the success of AMMON directly.

5. *What kind of tools can be provided to account for these problems?*

In this thesis two toolkits with in total four tools have been developed. The first toolkit contains an AMMON Initiation Tool. The second is the Project Toolkit with a Pre-Project Tool, Midway Evaluation Tool and After Evaluation Tool. Next to this a Project Overview Tab and Company Screening Tool-concept was developed. These tools in total account for all non-structural factors shown in Figure 43.

Firstly the AMMON Initiation-tool can be used to screen partners' interest in AMMON. AMMON can use this tool to know what individual partners expect from AMMON and can tailor their strategy to this. It can be used by the AMMON-team in defining a network-strategy, communicating to partners and know previous experiences with collaborative innovation projects. Secondly there is the Pre-Project Tool, which goes in-depth into how important partners consider a project. It asks in what form they expect the formal structure to be and shows expectation for later in the process. This makes goals more explicit early in the project. The Midway Evaluation Tool helps the management to know what needs to be changed. Lastly there is an After-Evaluation Tool, that asks how the results compare to the expectations. This can also be used to learn for future projects and document what experiences partners have from past collaborations. The Midway-Evaluation Tool and After-Evaluate tool are comparable to measure the same variables throughout the projects.

An additional function is the Project Overview Tab that enables the AMMON-team to see how expectations developed throughout the project and between partners. An early concept for a company-screening tool was developed as requested by AMMON in the last phases of the project. This tool measures what company currently use for defining a analysis tools and processes. This can aid in finding where companies could need help from AMMON.

This toolkit deliberately focuses on the non-technological side of a project. By AMMON this was considered a strength because it can easily be combined with existing tools for market & technology analysis. These analysis tools are important for AMMON and much experience is available with it, so it is strongly recommended to combine the strengths of all tools together. The tools were developed by looking at past cases, asking for user feedback and the TCP-framework. Suggestions for development and testing the toolkit have been provided.

There were no mentions of problems in market research and technological feasibility in as well the cases as further interviews. Therefore this developed toolkit did not focus on these factors and AMMON is recommended to keep using the current tools alongside the AMMON-toolkit.

7.2. Discussion & Theoretical Implications

This research focused on the theory as well as practice, looking at where these match and are relevant for AMMON. The process was chronologically in that the interviews followed from the theory, after which the toolkit could be developed and evaluated by user feedback. The toolkit provided is unique, in the sense that little examples of similar tools have been found in the research. One example is the research by Barnes et al. (2002), but this was focused on university collaborations and much more complex than the proposed AMMON-toolkit. The AMMON-toolkit is simple, flexible and focused, with little overlap in the tools that are already used within AMMON. It is tailored to the needs of AMMON and the tools do not take much time to learn and use. Because the tools provide instant feedback when the results are input, it requires little to no investments.

The recommendations aid AMMON to become a strong and effective network. This thesis is relevant for employability in the region. If a concept like AMMON functions well it could result in new businesses and thus work, developing the east of the Netherlands further. This thesis formalizes the process which was already proposed by AMMON, but adds recommendations for the future and a toolkit to solve common problems. The toolkit could be used in the future to find new bottlenecks. It is useful for theory as well as relevant for management to see where these arise and how to cope with these. There were differences in perception between the AMMON-team and partners concerning external guidance, the relevance importance of personal contacts and role of spin-offs. The main reasons for these differences have been researched, but still leave open questions concerning the impact these views could have.

The recommendations provide structure in AMMON and show where AMMON-managers should focus on in projects and within the network. This thesis extends beyond the Twente region, because the model can most likely be used outside AMMON. These kinds of collaborations are becoming increasingly important for companies in every technological sector in order to compete worldwide. A great amount of theory is available on the different success factors for networks and collaborations, but little has been written on the best practical ways to structure it and how to collaborate effectively (Ahuja et al., 2008; Bergek & Bruzelius, 2010; Wey Smola & Sutton, 2002). This thesis shows that the research field of trust and interpersonal relationships is perhaps even more important than previously expected. The theory and the point of view from the companies differed greatly: firms directly want to start larger collaborations and develop it without third parties. This shows there is a gap between theory and practice that needs to be bridged.

The network theory, strategic alliances theory, open innovation theory and stakeholder theories have been used in this thesis. This thesis shows these theories can be combined and add to each other and provide in-depth analysis of product-focused networks. In general trust was rated highest, all factors that have an effect on trust like personal contacts and strategic priority have also been scored high.

The network theory was applicable in this thesis, but provided multiple answers in an optimal way to structure a network. Heterogeneity appears to be the best future for AMMON, but this was based on user feedback, not on theory because that was too ambiguous. Literature did not propose to let the network help determine this, this could be a solution to get a matching strategy in the network. On a

network level AMMON was divided in the role of government funding and the general strategy, which are factors often neglected in network theory and only on a project level.

Strategic alliances theory focuses on structuring collaborations, called the project level in this thesis. It looks at the formal way of collaborating, but neglects the personal contacts in general. By using smaller teams in non-formal collaborations these personal contacts can be strengthened and ease the creation of formal structures. The focus of AMMON on business cases was found to be important for AMMON and partners alike, this shows that this project clarity is of high importance for them. The differences within a group are however large and need further development in theory. Spin-offs are described as the optimal structural collaboration form in theory for incumbent firms (Christensen & Bower, 1996). This however neglects the experience and willingness of firms to start spin-offs. On a project level literature stated that external guidance is of high importance, but neglects whether partners want this. When forced it could have adverse effects not described in strategic alliances literature.

Open innovation theory was highly applicable and provided the variables on a firm level. The theory shows little toolkits and stakeholders. It contains gaps concerning the perception of external guidance and effect of government on open innovation. This thesis shows that perceptions differ greatly between groups, which is a variable that was not included in the theory found. It also shows that an architectural innovation focus helps to speed the innovation process, but suffers from restrictions by inter-firm problems. It was expected that consistent with Ring and Van de Ven (1994) participant would find previous experience important, this however was not the found. The same goes for starting in smaller projects and cultural differences: partners thought they immediately could start new projects.

Stakeholder Theory was used because the external stakeholders were thought to be of large influence on AMMON. This prediction was true. The current stakeholder theory is too broad, because it wants to keep everything into account. On a network-level this is not possible because of the large amount of outside stakeholders. A new setup of the stakeholder theory on a network level could aid here. The effect of the government was greater than expected and perhaps one of the most important factors to check. Furthermore the competing networks had an overlap with AMMON and companies were presently sceptic toward a new network-initiative. This indirect effect was not found in current literature.

7.3. Limitations

There are six limitations that have to be taken into account: the number of relevant cases, history of AMMON, the time available, confounding variables, accessibility of information and implementation.

Firstly, the number of available cases was limited, because there was limited experience with collaborations in AMMON. Within AMMON there were not many open cases that were available for research and companies themselves could also give little examples. Outside cases have been included as useful examples, but these are not necessarily the same as AMMON-projects.

Secondly, the network of AMMON is new. During the thesis the structure of AMMON has been developing. This makes the interviews a measurement in time, since the participants respond at how they saw AMMON developing. Between interviews the participants could have gotten different input into how AMMON was focused on. This could have affected their responses.

Thirdly, the total time for this assignment was 6 months, which made it essential to limit the scope for a large project such as this. Although it provides many relevant insights, it leaves opportunities for future research.

It is hard to account for all confounding variables, there could be factors that were not named in the interview but still have an impact. The assumption had to be made that the variables used now are the only relevant ones. This could have steered the interviews towards expected variables, leaving less room for other factors. Although containing many open questions, this effect is difficult to exclude and users could give faulty answers. The interviews were based on perceptions of individuals, which is prone to social-desirability bias or interpretation of answers and definitions.

The fifth limitation was the availability of people that needed to be interviewed. The main problem was that respondents resided abroad or were otherwise unavailable for interviews. However, with nineteen respondents left, still a representative case of all the people involved with AMMON was interviewed. Another problem with the respondents was they sometimes were not able to provide the openness needed for this assignment. This was for instance because of lack of information and secrecy. All AMMON-members, nearly all partner firms and the most important external stakeholders have been interviewed. Still more partners or multiple interviews within a company could have changed responses since it currently was not randomly selected.

Lastly, implementing the suggestions done in the past chapter needs many different steps from stakeholders. It affects partners, managers and external stakeholders alike. The implementation has been done in accordance with these stakeholders where possible, but not all have been able to evaluate these final solutions. Concerning the toolkit, as discussed in the implementation chapter these parties should be willing to invest time and effort in this tool. At the same time partners should provide the openness to make the tools and solutions function optimally. This makes the tool a challenge to use effectively and should be done with care. When this is done properly however, it could aid AMMON greatly in becoming a successful network.

7.4. Future Research

This thesis provides six clear recommendations for AMMON to focus on, but at the same time raises five questions that could be relevant for future research. These concern checking the theoretical implications, researching a larger group, looking into the venturing funds concept, how to structure spin-offs and lastly the further development of the toolkit and generalizing solutions to other networks.

The literature showed gaps between theory and practice, especially the differences in perception between groups was an apparent. The standard deviations on the quantitative questions were high, but also answers to qualitative questions held differences. The importance of government funding could be researched in further depth, as well as the effect of networks on each-other within a region such as Twente. Literature looks from idealized situations, but these differences in view could have far-reaching consequences for the successfulness of AMMON. Therefore future research should look at the effect of these perceptions.

As stated in the limitations, the time allotted for this research provided limitations on testing the tool and the number of participants that could be interviewed. If the setup of this research would be scaled in a future research the internal validity could be strengthened and look if the results would change if a larger group is contacted. The partners' view on the role of AMMON concerning project guidance and the funding structure are interesting for further research.

The venturing fund within AMMON is worth developing. It could aid in funding AMMON and its projects, but the formalization of this fund is still not clear. Looking at comparable concepts like for instance Silicon Valley could aid (Engel & del-Palacio, 2009; Leslie, 2001).

Future research could look at the formalization of projects within AMMON. Since this thesis focused little on the practical development of formal (spinoff) structures, there have not been given clear recommendations on this topic. There is reason to assume this creation of spin-offs, joint ventures or comparable structures would aid in the development of new products. Literature and examples from comparable projects state it aids in increasing commitment, trust and speed in projects (Braaksma & De Jong, 2005; Christensen & Bower, 1996; Huston & Sakkab, 2006). Research could look into how this process would function best and when to choose the different types of collaborations. This research should also look into how companies experience such a solution, since they should actively support it.

Future research could test whether the toolkit works as expected. The tool should not be considered finished yet, since it has not been tested in an actual project and lacks practical proof. It is currently a prototype waiting to be used and adapted to future needs. The AMMON-team knows the tool should not be considered fully tested. It was built to make editing it easy for AMMON by using known programs like Word and Excel. The tool can provide useful insights in projects, but should be tested and developed further. A part of this research could be to develop the Company Screen Tool alongside it.

Lastly, this research was focused on a specific network (AMMON) with a specific a goal in mind (technological collaborations). The conclusions from this research could be applicable in a wide area of applications outside AMMON. Since it has been developed for this specific purpose, in this research no conclusions could be given about possible generalization. This could be tested in future research.

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4 Juni 2013

AMMON
Advanced Materials Manufacturing Oost-Nederland

OPEN INNOVATIE CENTRUM ADVANCED MATERIALS

UNIVERSITY OF TWENTE.

STRUCTURING OPEN INNOVATION IN THE ADVANCED MATERIALS SECTOR

APPENDIX

Nick Leoné (s0119938)

Master Thesis
Business Administration
Innovation & Entrepreneurship

Supervisor OICAM
Ir. Martin Olde Weghuis

Supervisor University of Twente
Dr. Ir. Jeroen Kraaijenbrink

Second Supervisor University of Twente
Dr. Ir. Sandor Löwik

Appendix - Table of Contents

A. Literature Overview

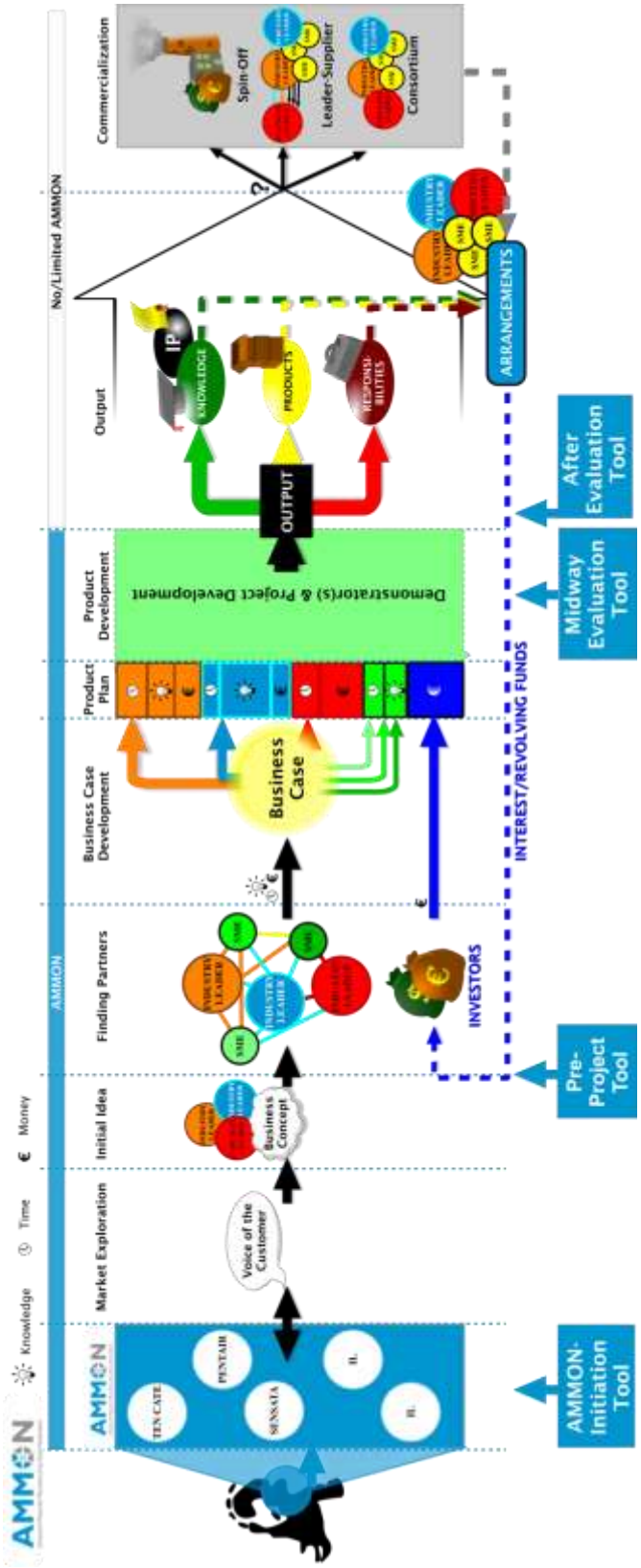
Below is an overview of the central articles that were used as the base for the research.

Articles	Network Theory	Open Innovation	Strategic Alliances	Stakeholder Theory
Ahuja (2000)	X		X	
Ahuja et al. (2008)	X	X		
Alvarez and Barney (2001)			X	
Anand and Daft (2007)			X	
Astebro and Michela (2005)		X		
Balachandra and Friar (1997)		X		
Barnes et al. (2006)			X	
Barnes et al. (2002)			X	
Barringer and Harrison (2000)			X	
Bergek and Bruzelius (2010)		X		
Bougrain and Haudeville (2002)		X		
Corsaro et al. (2012)	X			
Cozijnsen et al. (2000)		X		
Crane and Ruebottom (2011)				X
Crossan and Apaydin (2010)				X
Czarnitzki et al. (2007)		X		
De Man and Roijakkers (2009)			X	
Dhanaraj and Parkhe (2006)	X			
Donaldson and Preston (1995)				X
Faems et al. (2005)	X			
Fassin (2010)				X
Garud and Karnoe (2003)	X	X		X
Gassmann et al. (2010)		X		
Gibson and Birkinshaw (2004)			X	
H. W. Chesbrough and Teece (1996)		X		
H. W. Chesbrough (2012)		X		
H.W. Chesbrough (2012)		X		
H. W. Chesbrough and Crowther (2006)		X		
Hausler et al. (1994)	X	X	X	
Hausler et al. (1994)		X	X	
Henderson and Clark (1990)		X		
Hormiga et al. (2011)	X			
Jensen (2002)				X
Kale and Singh (2009)	X			
Kassim and Hussin (2009)			X	
Kellogg et al. (2006)		X		
Khaire (2010)	X			
Kyriakos and Masako (2007)	X		X	

Lichtenthaler (2008)		X		
Lowik et al. (2012)	X			
Nagji and Tuff (2012)		X		
Narula (2004)			X	
Pittaway et al. (2004)	X			
Ring and Van de Ven (1994)	X			
Rogers (2004)	X			
Rowley (1997)	X			
Tidd (2001)		X	X	
Witt (2004)	X		X	
Zaheer et al. (2010)	X			

Next to this list, additional articles were used that did not fit directly within these categories. These articles are explained in the text.

B. Graphical Overview of the AMMON-Network and Toolkit



C. Interviews

C.1. AMMON-Team Interview Setup

C.1.1. English Translated Version

Interview-questions AMMON-Executives

This interview aims to get insight in the most important factors for innovative collaborations in the AMMON network. We hope to process this into an optimal structure or model to improve and ease this. For any questions that is considered too broad or which is unclear, you can choose a most appropriate answer or example.

Firstly I'll ask several questions about your professional background, followed by your general vision on business collaborations. Afterwards I'll ask for your view on collaboration within the AMMON-projects. Lastly I'll ask you for how collaborations can be improved in general.

All information will be processed confidential and will only be used by OICAM and the thesis of Nick Leoné for the study Business Administration at the University of Twente. The report can be viewed afterwards, if requested.

Do you have any questions prior to the interview?

1. **General Questions:**

1. **What is your function? Which tasks does this job have?**

2. **What is your background/experience? How long have you been working for this organization?**

2. Collaborations:

3. **How much experience do you have with innovative-collaborations? (apart from normal supplier – client relations)**

4. **Do have examples of which were successful? Which weren't? What affected this?**

5. **What do you think is the most important factor for companies to know, before they start collaborations with other companies/institutions?**

6. **When can a project be considered successful according to you?**

7. **Do you wish that collaborations are managed by an external person or by the partners themselves? In which phases should he/she be involved?**

8. **Do think it is possible to collaborate without the usage of contracts? When would this be possible? Why?**

3. AMMON

9. What is your role within AMMON? Which tasks does this have?

10. How important do you consider the following factors for a successful innovative collaboration?

Factors	Very Unimportant				Very Important
Trust	O	O	O	O	O
Knowledge & Capabilities	O	O	O	O	O
Financial size & Stability partners	O	O	O	O	O
Experience with comparable projects	O	O	O	O	O
Company Culture	O	O	O	O	O
Leadership	O	O	O	O	O
Personal contact between companies	O	O	O	O	O
Government support	O	O	O	O	O
Clear BusinessCase	O	O	O	O	O

11. Why do you consider these tasks the most important?

12. How do you think the AMMON project-financing could be organized best?

13. What role should the government play in AMMON?

14. What do you consider the biggest challenge/danger for AMMON as a network?

4. AMMON-Projects

15. What is your role in this project?

16. What do you think of the collaboration so far?

17. Which moments do you consider most important till now? How were these handled?

18. Which problems do you foresee for the near future? How can these be prevented and/or solved?

5. Statements

19. Lastly, I would like to propose several possible solutions, what do you think of the following statements?

Statement	Strongly Disagree				Strongly Agree
Forming spin-offs or joint ventures early in the process is essential for successful innovation.	O	O	O	O	O
Project partners must first have done smaller projects, before trying bigger projects.	O	O	O	O	O
The earlier possible costs are determined and fixed, the better.	O	O	O	O	O
Trustworthy usage of Intellectual Property (IP) is a reason for stopping innovation collaborations.	O	O	O	O	O
Government-financing is not needed for innovative collaborations.	O	O	O	O	O
Without external guidance successful innovative products cannot be developed within AMMON.	O	O	O	O	O
AMMON needs to build a financial fund that can be used for project-financing.	O	O	O	O	O

20. Why did you answer the above questions in this way?

21. Do you have any further questions, remarks or recommendations?

Thank you for your time and collaboration.

C.1.2. Original Dutch Version

Interview-vragen AMMON-Team

Dit interview heeft als doelstelling inzicht te krijgen in wat de belangrijkste factoren zijn voor innovatieve samenwerking binnen het AMMON netwerk. We hopen dit te kunnen verwerken in een structuur of model om samenwerkingen te verbeteren en te versoepelen. Bij elke vraag die breed of onduidelijk is, kunt u zelf het meest relevante voorbeeld kiezen.

Allereerst zal ik u vragen stellen over uw professionele achtergrond, gevolgd door uw algemene visie op samenwerking in het bedrijfsleven. Daarna zal ik u vragen naar uw visie op samenwerking binnen het Greensource/Smart Roads project. Als laatste vraag ik u hoe u denkt dat samenwerkingen het beste verbeterd kunnen worden.

Alle informatie wordt vertrouwelijk behandeld en zal alleen worden gebruikt voor OICAM en de scriptie van Nick Leoné voor de studie Business Administration aan de Universiteit Twente. Het verslag mag na de tijd ingezien worden, indien gewenst.

Heeft u vragen vooraf?

1. Basisvragen:

1. **Welke functie heeft u? Welke taken heeft dit zoal?**

2. **Wat is uw achtergrond & ervaring? Hoe lang werkt u al voor deze organisatie?**

2. Samenwerkingen:

3. **Hoeveel ervaring heeft u met innovatie-samenwerkingen? (buiten directe leverancier – klant verhoudingen)**

4. **Heeft u voorbeelden van welke succesvol waren? Welke juist niet? Wat was daarvoor van belang?**

5. **Wat denkt u dat bedrijven het belangrijkst vinden om te weten voor u een samenwerking aan gaat met andere bedrijven?**

6. **Wat is volgens u de beste meetfactor of een netwerk/project succesvol is?**

7. **Wenst u dat een samenwerking door een extern persoon gecoacht wordt of door de partners zelf? In welke fase zouden deze betrokken moeten worden?**

8. **Denkt u dat het mogelijk is samen te werken zonder gebruik van contracten? Wanneer wel/niet? Waarvoor zijn contracten vooral belangrijk?**

3. AMMON

9. Wat is uw rol binnen AMMON?

10. Hoe belangrijk zijn volgens u de volgende factoren voor een succesvolle innovatieve samenwerking binnen AMMON?

Factoren	Zeer Onbelangrijk				Zeer Belangrijk
Vertrouwen	O	O	O	O	O
Kennis & Kunde	O	O	O	O	O
Financiële grootte & Stabiliteit partners	O	O	O	O	O
Ervaring Projecten	O	O	O	O	O
Bedrijfscultuur	O	O	O	O	O
Leiderschap	O	O	O	O	O
Persoonlijke contacten tussen bedrijven	O	O	O	O	O
Overheidsbijdrage	O	O	O	O	O
Concrete BusinessCase	O	O	O	O	O

11. Waarom vindt u deze factoren het meest belangrijk?

12. Hoe ziet u de financiering van AMMON-projecten voor u?

13. Wat is uw visie op de rol van de overheid binnen AMMON?

14. Wat ziet u als de grootste gevaren voor AMMON als netwerk?

4. AMMON-Projecten

15. Wat is uw rol binnen dit project?

16. Hoe vindt u de samenwerking tot nu toe gaan?

17. Welke momenten zijn tot nu toe het meest cruciaal gebleken? Hoe was dit aangepakt?

18. Welke problemen voorziet u nog voor de nabije toekomst? Hoe kunnen deze volgens u opgelost worden?

5. Verbeteringen

19. Als allerlaatste wil ik u enkele voorbeelden geven voor oplossingen, wat vindt u van de volgende stellingen?

Stelling	Zeer Mee Oneens				Zeer Mee Eens
Het vormen van spin-offs of joint ventures vroeg in het proces is essentieel voor succesvolle innovatie	O	O	O	O	O
Projectpartners moeten eerst kleinere projecten samen hebben gedaan, voordat ze iets nieuws proberen.	O	O	O	O	O
Hoe vroeger de mogelijke kosten vastgelegd worden, hoe beter.	O	O	O	O	O
Betrouwbaar gebruik van Intellectual Property (IP) is een breek-factor in innovatieve samenwerkingen	O	O	O	O	O
Overheidsfinanciering is helemaal niet nodig voor innovatieve samenwerkingen	O	O	O	O	O
Zonder externe begeleiding kan een innovatief product niet succesvol ontwikkeld worden binnen AMMON	O	O	O	O	O
Er zal een financiële buffer binnen AMMON gebouwd moeten worden voor projectfinanciering.	O	O	O	O	O

20. Heeft u verder nog vragen, opmerkingen of suggesties?

Dank voor uw tijd en medewerking.

C.2. AMMON Business Partners Interview Setup

C.2.1. English Translated Version

Interview-questions AMMON-Business partners (English)

This interview aims to get insight in the most important factors for innovative collaborations in the AMMON network. We hope to process this into an optimal structure or model to improve and ease this. For any questions that is considered too broad or which is unclear, you can choose a most appropriate answer or example.

Firstly I'll ask several questions about your professional background, followed by your general vision on business collaborations. Afterwards I'll ask for your view on collaboration within the AMMON-projects. Lastly I'll ask you for how collaborations can be improved in general.

All information will be processed confidential and will only be used by OICAM and the thesis of Nick Leoné for the study Business Administration at the University of Twente. The report can be viewed afterwards, if requested.

Do you have any questions prior to the interview?

6. General Questions:

1. **What is your function? Which tasks does this job have?**

2. **What is your background/experience? How long have you been working for this organization?**

3. What is your main source of innovation in the company?

- Separate division/ University / New students / Intern /…

7. Collaborations

4. **How much experience do you have with innovative-collaborations? (apart from normal supplier – client relations)**

5. **Do have examples of which were successful? Which weren't? What affected this?**

6. **What was the main reason for starting these projects?**

(e.g.: knowledge, risks, costs, needed, speed, reputation/access, knowing people within companies)

7. **What do you consider most important to know before you start collaborations with other companies?**

8. **When can a project be considered successful according to you?**

9. **Do you wish that collaborations are managed by an external person or by the partners themselves? In which phases should he/she be involved?**

10. **Do think it is possible to collaborate without the usage of contracts? When would this be possible? Why?**

8. AMMON

11. What is the main reason for you to become a member of AMMON?

12. How do you consider your role within AMMON? And your personal role?

13. How important do you consider the following factors for a successful innovative collaboration?

Factors	Very Unimportant				Very Important
Trust	O	O	O	O	O
Knowledge & Capabilities	O	O	O	O	O
Financial size & Stability partners	O	O	O	O	O
Experience with comparable projects	O	O	O	O	O
Company Culture	O	O	O	O	O
Leadership	O	O	O	O	O
Personal contact between companies	O	O	O	O	O
Government support	O	O	O	O	O
Clear BusinessCase	O	O	O	O	O

14. Why do you consider these tasks the most important?

15. **How do you think the AMMON project-financing could be organized best?**

16. **What role should the government play in AMMON?**

17. **What do you consider the biggest challenge/danger for AMMON as a network?**

18. **When would you consider quitting an AMMON-project?**

9. AMMON-Projects

19. What is your role in this project?

20. What do you think of the collaboration so far?

21. Which moments do you consider most important till now? How were these handled?

22. Which problems do you foresee for the near future? How can these be accounted for/tackled?

10.Statements

23. Lastly, I would like to propose several possible solutions, what do you think of the following statements?

Statement	Strongly Disagree				Strongly Agree
Forming spin-offs or joint ventures early in the process is essential for successful innovation.	O	O	O	O	O
Project partners must first have done smaller projects, before trying bigger projects.	O	O	O	O	O
The earlier possible costs are determined and fixed, the better.	O	O	O	O	O
Trustworthy usage of Intellectual Property (IP) is a reason for stopping innovation collaborations.	O	O	O	O	O
Government-financing is not needed for innovative collaborations.	O	O	O	O	O
Without external guidance successful innovative products cannot be developed within AMMON.	O	O	O	O	O
AMMON needs to build a financial fund that can be used for project-financing.	O	O	O	O	O

24. Why did you answer the above questions in this way?

25. Do you have any further questions, remarks or recommendations?

Thank you for your time and collaboration.

C.2.2. Original Dutch Version

Interview-vragen Bedrijven

Dit interview heeft als doelstelling inzicht te krijgen in wat de belangrijkste factoren zijn voor innovatieve samenwerking binnen het AMMON netwerk. We hopen dit te kunnen verwerken in een structuur of model om samenwerkingen te verbeteren en te versoepelen. Bij elke vraag die breed of onduidelijk is, kunt u zelf het meest relevante voorbeeld kiezen.

Allereerst zal ik u vragen stellen over uw professionele achtergrond, gevolgd door uw algemene visie op samenwerking in het bedrijfsleven. Daarna zal ik u vragen naar uw visie op samenwerking binnen het Greensource/Smart Roads project. Als laatste vraag ik u hoe u denkt dat samenwerkingen het beste verbeterd kunnen worden.

Alle informatie wordt vertrouwelijk behandeld en zal alleen worden gebruikt voor OICAM en de scriptie van Nick Leoné voor de studie Business Administration aan de Universiteit Twente. Het verslag mag na de tijd ingezien worden, indien gewenst.

Heeft u vragen vooraf?

11. Basisvragen:

1. **Welke functie heeft u? Welke taken heeft dit zoal?**

2. **Wat is uw achtergrond & ervaring? Hoe lang werkt u al voor deze organisatie?**

3. **Wat is jullie grootste bron van innovatie binnen het bedrijf?**

- Aparte afdeling / Universiteit / Nieuwe studenten / Intern /…

12.Samenwerkingen:

4. **Hoeveel samenwerkingen heeft u in het verleden gehad? (buiten directe leverancier – klant verhoudingen)**

5. **Do have examples of which were successful? Which weren't? What affected this?**

6. **Waarom bent u deze samenwerkingen aangegaan in het verleden?**

(bv: Kennis, risico's, kosten, nodig, snelheid, reputatie/toegang, bekenden)

7. **Wat vindt u het belangrijkst om te weten voor u een samenwerking aan gaat met andere bedrijven?**

8. **Wat is volgens u de beste meetfactor of een netwerk/project succesvol is?**

9. **Wenst u dat een samenwerking door een extern persoon gecoacht wordt of door de partners zelf? In welke fase zouden deze betrokken moeten worden?**

10. Denkt u dat het mogelijk is samen te werken zonder gebruik van contracten? Wanneer wel/niet? Waarvoor zijn contracten vooral belangrijk?

13.AMMON

11. Wat is voor u de grootste reden om onderdeel te worden van AMMON?

12. Hoe ziet u uw rol als bedrijf binnen AMMON? En uw persoonlijke rol?

13. Hoe belangrijk zijn volgens u de volgende factoren voor een succesvolle innovatieve samenwerking binnen AMMON?

Factoren	Zeer Onbelangrijk				Zeer Belangrijk
Vertrouwen	O	O	O	O	O
Kennis & Kunde	O	O	O	O	O
Financiële grootte & Stabiliteit partners	O	O	O	O	O
Ervaring Projecten	O	O	O	O	O
Bedrijfscultuur	O	O	O	O	O
Leiderschap	O	O	O	O	O
Persoonlijke contacten tussen bedrijven	O	O	O	O	O
Overheidsbijdrage	O	O	O	O	O
Concrete BusinessCase	O	O	O	O	O

14. Waarom vindt u deze factoren het meest belangrijk?

15. **Hoe ziet u de financiering van AMMON-projecten voor u?**

16. **Wat is uw visie op de rol van de overheid binnen AMMON?**

17. **Wat ziet u als de grootste gevaren voor AMMON als netwerk?**

18. **Wanneer zou u uit een AMMON-project stappen?**

14.AMMON-Projecten

19. Wat is uw rol binnen dit project?

20. Hoe vindt u de samenwerking tot nu toe gaan?

21. Welke momenten zijn tot nu toe het meest cruciaal gebleken? Hoe was dit aangepakt?

22. Welke problemen voorziet u nog voor de nabije toekomst? Hoe kunnen deze volgens u opgelost worden?

15.Verbeteringen

23. Als allerlaatste wil ik u enkele voorbeelden geven voor oplossingen, wat vindt u van de volgende stellingen?

Stelling	Zeer Mee Oneens				Zeer Mee Eens
Het vormen van spin-offs of joint ventures vroeg in het proces is essentieel voor succesvolle innovatie	O	O	O	O	O
Projectpartners moeten eerst kleinere projecten samen hebben gedaan, voordat ze iets nieuws proberen.	O	O	O	O	O
Hoe vroeger de mogelijke kosten vastgelegd worden, hoe beter.	O	O	O	O	O
Betrouwbaar gebruik van Intellectual Property (IP) is een breek-factor in innovatieve samenwerkingen	O	O	O	O	O
Overheidsfinanciering is helemaal niet nodig voor innovatieve samenwerkingen	O	O	O	O	O
Zonder externe begeleiding kan een innovatief product niet succesvol ontwikkeld worden binnen AMMON	O	O	O	O	O
Er zal een financiële buffer binnen AMMON gebouwd moeten worden voor projectfinanciering.	O	O	O	O	O

24. Heeft u verder nog vragen, opmerkingen of suggesties?

Dank voor uw tijd en medewerking.

C.3. AMMON Stakeholder / Network Organizations Interview Setup

C.3.1. English Translated Version

Interview-questions AMMON-Stakeholders & Network-organizations

This interview aims to get insight in the most important factors for innovative collaborations in the AMMON network. We hope to process this into an optimal structure or model to improve and ease this. For any questions that is considered too broad or which is unclear, you can choose a most appropriate answer or example.

Firstly I'll ask several questions about your professional background, followed by your general vision on business collaborations. Afterwards I'll ask for your view on collaboration within the AMMON-projects. Lastly I'll ask you for how collaborations can be improved in general.

All information will be processed confidential and will only be used by OICAM and the thesis of Nick Leoné for the study Business Administration at the University of Twente. The report can be viewed afterwards, if requested.

Do you have any questions prior to the interview?

16.General Questions

1. **What is your function? Which tasks does this job have?**

2. **What is your background/experience? How long have you been in your current role?**

17.Collaborations

3. **How much experience do you have with networks like Kennispark and AMMON?**

4. **Do have examples of which were successful? Which weren't? What affected this?**

5. **What differentiates your network from other initiatives? What does your organization do in the area of innovative collaborations?**

6. **What do you think is the most important factor for companies to know, before they start collaborations with other companies/institutions?**

7. **When can a project be considered successful according to you?**

8. **Do you wish that collaborations are managed by an external person or by the partners themselves? In which phases should he/she be involved?**

18.AMMON

9. **How do you look at the relation between your organization and AMMON? Where can the main differences be found?**

10. **How important do you consider the following factors for a successful innovative collaboration?**

Factors	Very Unimportant				Very Important
Trust	O	O	O	O	O
Knowledge & Capabilities	O	O	O	O	O
Financial size & Stability partners	O	O	O	O	O
Experience with comparable projects	O	O	O	O	O
Company Culture	O	O	O	O	O
Leadership	O	O	O	O	O
Personal contact between companies	O	O	O	O	O
Government Funding	O	O	O	O	O
Clear BusinessCase	O	O	O	O	O

11. **Why do you consider these tasks the most important?**

12. **What role should the government play in AMMON?**

13. What do you consider the biggest challenge/danger for AMMON as a network?

19.Statements

14. Lastly, I would like to propose several possible solutions, what do you think of the following statements?

Statement	Strongly Disagree				Strongly Agree
Forming spin-offs or joint ventures early in the process is essential for successful innovation.	O	O	O	O	O
Project partners must first have done smaller projects, before trying bigger projects.	O	O	O	O	O
The earlier possible costs are determined and fixed, the better.	O	O	O	O	O
Trustworthy usage of Intellectual Property (IP) is a reason for stopping innovation collaborations.	O	O	O	O	O
Government-financing is not needed for innovative collaborations.	O	O	O	O	O
Without external guidance successful innovative products cannot be developed within AMMON.	O	O	O	O	O
AMMON needs to build a financial fund that can be used for project-financing.	O	O	O	O	O

15. Why did you answer the above questions in this way?

16. Do you have any further questions, remarks or recommendations?

Thank you for your time and collaboration.

C.3.2. Original Dutch Version

Interview-vragen Externe Stakeholders/netwerkorganisaties

Dit interview heeft als doelstelling inzicht te krijgen in wat de belangrijkste factoren zijn voor innovatieve samenwerking binnen het AMMON netwerk. We hopen dit te kunnen verwerken in een structuur of model om samenwerkingen te verbeteren en te versoepelen. Bij elke vraag die breed of onduidelijk is, kunt u zelf het meest relevante voorbeeld kiezen.

Allereerst zal ik u vragen stellen over uw professionele achtergrond, gevolgd door uw algemene visie op samenwerking in het bedrijfsleven. Als laatste vraag ik u hoe u denkt dat samenwerkingen het beste verbeterd kunnen worden.

Alle informatie wordt vertrouwelijk behandeld en zal alleen worden gebruikt voor OICAM en de scriptie van Nick Leoné voor de studie Business Administration aan de Universiteit Twente. Het verslag mag na de tijd ingezien worden, indien gewenst.

Heeft u vragen vooraf?

20. Basisvragen:

1. **Welke functie heeft u? Welke taken heeft dit zoal?**

2. **Wat is uw achtergrond & ervaring? Hoe lang werkt u al in uw huidige rol?**

21.Samenwerkingen:

3. **Hoeveel ervaring heeft u met samenwerkingen zoals Kennispark en AMMON?**

4. **Heeft u voorbeelden van welke succesvol waren? Welke juist niet? Wat was daarvoor van belang?**

5. **Wat onderscheidt uw netwerk van andere initiatieven? Wat doet uw organisatie op het gebied van samenwerkingen?**

6. **Wat denkt u dat het belangrijkst is om te weten voordat een bedrijf een samenwerking aan gaat met andere bedrijven/instellingen?**

7. **Wat is volgens u de beste meetfactor of een netwerk/project succesvol is? Waarom?**

8. **Wenst u dat een samenwerking door een extern persoon gecoacht wordt of door de partners zelf? In welke fase zou deze betrokken moeten worden?**

22.AMMON

9. Hoe ziet u de verhouding tussen AMMON en uw organisatie? Waar zitten de verschillen?

10. Hoe belangrijk zijn volgens u de volgende factoren voor een succesvolle innovatieve samenwerking binnen AMMON?

Factoren	Zeer Onbelangrijk				Zeer Belangrijk
Vertrouwen	O	O	O	O	O
Kennis & Kunde	O	O	O	O	O
Financiële grootte & Stabiliteit partners	O	O	O	O	O
Ervaring Projecten	O	O	O	O	O
Bedrijfscultuur	O	O	O	O	O
Leiderschap	O	O	O	O	O
Persoonlijke contacten tussen bedrijven	O	O	O	O	O
Overheidsbijdrage	O	O	O	O	O
Concrete Business Case	O	O	O	O	O

11. Waarom vindt u deze factoren het meest belangrijk?

12. Wat is uw visie op de rol van de overheid binnen AMMON?

13. Wat ziet u als de grootste uitdagingen/gevaren voor AMMON?

23.Verbeteringen

14. Als allerlaatste wil ik u enkele voorbeelden geven voor oplossingen, wat vindt u van de volgende stellingen?

Stelling	Zeer Mee Oneens				Zeer Mee Eens
Het vormen van spin-offs of joint ventures vroeg in het proces is essentieel voor succesvolle innovatie	O	O	O	O	O
Projectpartners moeten eerst kleinere projecten samen hebben gedaan, voordat ze iets nieuws proberen.	O	O	O	O	O
Hoe vroeger de mogelijke kosten vastgelegd worden, hoe beter.	O	O	O	O	O
Betrouwbaar gebruik van Intellectual Property (IP) is een breek-factor in innovatieve samenwerkingen	O	O	O	O	O
Overheidsfinanciering is niet nodig voor innovatieve samenwerkingen	O	O	O	O	O
Zonder externe begeleiding kan een innovatief product niet succesvol ontwikkeld worden binnen AMMON	O	O	O	O	O
Er zal een financiële buffer binnen AMMON gebouwd moeten worden voor projectfinanciering.	O	O	O	O	O

15. Heeft u verder nog vragen, opmerkingen of suggesties?

Dank voor uw tijd en medewerking.

D. Coding Scheme

The following factors were used for coding the interviews. These are based on the variables and theory and the factors named by the AMMON-team and documentation prior to the interviews.

Background (Companies)
Innovation Strategic Focus
Mainly Internal
Both
Mainly External
Collaborations
Prior Collaboration Experience
High
Medium
Little
None
Collaboration Motivation
Knowing people
Competititive advantage
Other
Needed prior knowledge for project
Customer
Funding
Commitment
None Stated
Past collaboration success factors
Launching Customer
Demonstrator
Knowing eachother & expectations
Commitment
Other
Definition of project success
Profit
Innovation
Image
Other

AMMON
Main motivation joining
Profit
Product-focus formula
Longterm R&D
Image
Other
Role within AMMON
Active
Waiting
Unsure

AMMON (Continued)
Importance of contracts
Very
Somewhat
As little as possible
Not needed
External Project Guidance
A lot
Some
Little
None
Termination factors for projects
Lack of Synergy
Commitment
Speed/Concrete results
Project Financing
Companies
Mostly Companies
Part
Government
Perceived future challenges for AMMON
Speed/Concrete results
Focus
Capacity
Communication
Other
Government Role
Other
Launching Customer
Funding
Revolving Funds
Difference AMMON - Network

Project
Green Source
Speedy progress needed
Demonstrator
OICAM essential
Launching Customer
Communications
Other
Future
Task & responsibilities division
Making profits
Creating an Spin-off
Keeping Focus
Keeping Commitment

E. Toolkit

In this chapter all the tools will be provided. Starting with the AMMON Initiation Tool, following by the AMMON Project Toolkit.

E.1. AMMON Initiation Tool

AMMON Initiation Tool

This questionnaire aims to get insight in the needs of AMMON-partners. Every partner is obliged to fill in this form before becoming a member of AMMON. By using this form the strategy and focus of AMMON can be tailored to the needs and expectations of the partners in the network.

Date
Firm
Name Representative Firm

All information provided will only be made available to the AMMON team as a ways to optimize the network. It will not be made available to others unless mutually agreed in writing that this information may be shared with others.

24. What role do you aim to have as a company within AMMON?

0 (Very Small)				5 (Very Large)
O	O	O	O	O
Which role do you wish for?				

25. How important do you consider AMMON strategically for your company?

0 (Very Small)				5 (Very Large)
O	O	O	O	O
Why?				

26. How is the innovation currently organized in your company?

0 (100% Internal)		(50/50)		5 (100% External)
O	O	O	O	O

Comments

With who have you collaborated for new innovations?	0 (None)				5 (Always)
Clients	O	O	O	O	O
Universities	O	O	O	O	O
Companies within own branch	O	O	O	O	O

Do you have a dedicated R&D department?

Yes	No
O	O

Comments

27. How much experience do you have with collaborations with companies outside your own sector, comparable to what AMMON aims at?

0 (None)				5 (Mostly)
O	O	O	O	O

Can you provide examples?

28. How important are the following factors for your company in AMMON?

	Very Unimportant				Very Important
Trust	O	O	O	O	O
Knowledge & competences partners	O	O	O	O	O
Financial size partners	O	O	O	O	O
Stability partners	O	O	O	O	O
Experience in collaborations	O	O	O	O	O
Company cultures	O	O	O	O	O
Leadership of projects	O	O	O	O	O

Personal contacts between companies	O	O	O	O	O
Government subsidies	O	O	O	O	O
Concrete Business Case in projects	O	O	O	O	O
Heterogeneity[3] of AMMON	O	O	O	O	O
Personal meetings	O	O	O	O	O
Developing the region	O	O	O	O	O
Attracting new personnel	O	O	O	O	O

Why do you score these factors in this way?

29. To what extent do you wish support from the AMMON-Business Development Team?

0 (None)				5 (High)
O	O	O	O	O

Why?

In which phases would you like AMMON to support in projects?
(1=none, 5=high support)

Concept phase (1-5)					Business Case (1-5)					Project plan (1-5)					Demonstrator (1-5)					Market Introduction (1-5)				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

[3] Heterogeneity means that companies from different backgrounds and markets are within the network of AMMON. This means no direct competitors and as little overlap in core competences as possible.

30. How would you like to communicate within AMMON

Medium	0 (Very Unimportant)				5 (Very Important)
Newsletter	O	O	O	O	O
Website	O	O	O	O	O
Intranet	O	O	O	O	O
Twitter	O	O	O	O	O
Facebook	O	O	O	O	O
Mail	O	O	O	O	O
Physical meetings	O	O	O	O	O
Minutes (Notulen)	O	O	O	O	O

Who are the main contacts for AMMON related news?
Please provide the relevant contact details below (multiple possible).

About which topics would you mostly want to be kept up to date?
(1=No information, 5=Continuous updates)

Current Projects (1-5)					Meetings (1-5)					New Partners in the Network (1-5)					Technology & Background Partners (1-5)				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Motivation
+ Additional topics

Signed:	*Date:*	*Firm:*

Date:
Project:
Name:

E.2. Pre-Project Tool

Pre-Project Tool

This questionnaire aims to get insight in the needs of AMMON-partners in the project. By using this form the strategy and focus of AMMON during this project can be tailored to the needs and expectations of the partners in the network.

All information provided will only be made available to the AMMON-team for aiding in this project. This document will be considered confidential unless mutually agreed in writing that this information may be shared with others.

1. How do you consider your role within this collaboration?

Passively				Leadership Role
O	O	O	O	O

What do you wish to add to this project in terms of knowledge & facilities?

What do wish to add in terms of other competences needed?

Where do you focus on in this collaboration?
(1 = no focus, 5 = 1st priority)

Resources					*Research*					*Development*					*Production & Marketing*				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Motivation

2. **How would you grade your strategic interest in this project?**

0 (Very Unimportant)				5 (Very Important)
O	O	O	O	O

What are the main goals of your firm in this project?

How much experience do you have in the proposed market?

None (0)				Main Market(5)
O	O	O	O	O

In what way do you have experience?

3. **To what extent do you wish support from the AMMON-Business Development Team?**

0 (None)				5 (High)
O	O	O	O	O

Why?

In which phases would you like AMMON to support in projects?
(1=none, 5=high support)

Concept Phase					Business Case					Project Plan					Demonstrator					Marketing				
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

4. **Do you expect to market the product yourself or together with other partners?**

0 (Self)									5 (Together)				
O					O				O					O					O				

In which form?

Spin-off[4]					Joint Venture[5]					Licensing					External Entrepreneur					……(other)				
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

Why?

[4] A Spin-off/Spin-out in this case means that one company is leading for developing this in a separate entity.
[5] A Joint Venture means two or more companies are leading in developing the product in a separate entity.

5. **Do you have a main contact person for this project?**

Yes (5)	No (1)
O	O

If yes, please fill in his/her contact information below

Name:

Function:

Contact Information:

Preferred medium (phone/voicemail/mail/meetings/…):

How much time a week will he/she be available for this project? (Hours)

0-2 (1)	2-5	5-10	10-20	20-30	Fulltime (6)	Unknown (0)
O	O	O	O	O	O	O

Which task will he have for this project?

Are there any other relevant persons that have to be updated during this project?

6. **How would you rate these factors for your own company in this project?**

Self	0 (Very Low)				5 (Very High)
Commitment	O	O	O	O	O
Capacity	O	O	O	O	O
Profit-focus	O	O	O	O	O
IP-focus	O	O	O	O	O
Continuity personnel	O	O	O	O	O
Experience	O	O	O	O	O
Support within organization	O	O	O	O	O
Budget Availability	O	O	O	O	O

Further explanation

7. What do you expect from other partners?

Partner 1 (fill in) ……	0 (Very Low)				5 (Very High)
Commitment	O	O	O	O	O
Capacity	O	O	O	O	O
Profit-focus	O	O	O	O	O
IP-focus	O	O	O	O	O
Continuity personnel	O	O	O	O	O
Experience	O	O	O	O	O
Support within organization	O	O	O	O	O
Budget Availability	O	O	O	O	O
Further explanation					

Partner 2 (fill in) ……	0 (Very Low)				5 (Very High)
Commitment	O	O	O	O	O
Capacity	O	O	O	O	O
Profit-focus	O	O	O	O	O
IP-focus	O	O	O	O	O
Continuity personnel	O	O	O	O	O
Experience	O	O	O	O	O
Support within organization	O	O	O	O	O
Budget Availability	O	O	O	O	O
Further explanation					

Signed:	*Date:*	*Firm:*

E.3. Midway Evaluation Tool

Midway Evaluation

This questionnaire aims to get insight in the needs of AMMON-partners in the project. By using this form the strategy and focus of AMMON during this project can be tailored to the needs and expectations of the partners in the network. Where problems have arisen till know a best strategy to move forward can be thought out.

Date:
Project:
Name:

All information provided will only be made available to the AMMON-team for aiding in this project. This document will be considered confidential unless mutually agreed in writing that this information may be shared with others.

1. **What is your current role in this project? Does this fit your expectations?**

More passive than expected		Exactly as expected		More active than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

2. **What do you think of the collaboration so far?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

3. **What do you think about the final (product) currently proposed?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

4. **How do you evaluate the Project Speed?**

Slower than expected		Exactly as expected		Faster than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

5. **How do you evaluate the role of the AMMON team so-far?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

6. **How would you grade this project till now (circle which is applicable)?**

1	2	3	4	5	6	7	8	9	10
O	O	O	O	O	O	O	O	O	O
What are the key lessons for the future learned till now?									
In what way can AMMON aid in the further development of this project?									

Signed:	*Date:*	*Firm:*

E.4. After Evaluation Tool

After Evaluation

This questionnaire aims to get insight in the evaluation of the project by the AMMON-partners. By using this form the strategy and key learning points for AMMON can found and used for future projects.

All information provided will only be made available to the AMMON-team for aiding in this project. This document will be considered confidential unless mutually agreed in writing that this information may be shared with others.

Date:
Project:
Name:

1. **What was your role within the project? Did this fit your expectations?**

More passive than expected		Exactly as expected		More active than expected
O	O	O	O	O
Where did this show?				
What would you like to be changed?				

2. **How would you evaluate how the collaboration went?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where did this show?				
What would you like to be changed?				

3. **What do you think about the final (product) result?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

4. **How do you evaluate the Project Speed?**

Slower than expected		Exactly as expected		Faster than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

5. **How do you evaluate the role of the AMMON team?**

Worse than expected		Exactly as expected		Better than expected
O	O	O	O	O
Where does this show?				
What would you like to be changed?				

6. **How would you grade this project in total (circle which is applicable)?**

1	2	3	4	5	6	7	8	9	10
O	O	O	O	O	O	O	O	O	O

What are the key lessons for the future learned in this project?
In what way can AMMON aid in the further development of this project?

Signed:	*Date:*	*Firm:*

E.5. Company Screening Tool (Concept)

The following is a concept that was developed based on the last feedback from users. This was a too large a project to finish since this tool has another aim. Nevertheless the following setup could provide a base for future developments in this tool.

AMMON Company Screening Tool

This questionnaire aims to get insight in the needs of AMMON-partners. Every partner is obliged to fill in this form before becoming a member of AMMON. By using this form the strategy and focus of AMMON can be tailored to the needs and expectations of the partners in the network.

All information provided will only be made available to the AMMON team as a ways to optimize the network. It will not be made available to others unless mutually agreed in writing that this information may be shared with others.

31. To what extent do you think your company has the following competences?

	0 (None)				5 (Always)	Would you like AMMON to aid in developing these competences?
Innovation Management	O	O	O	O	O	☐
Clear view of Core Competences	O	O	O	O	O	☐
Sales	O	O	O	O	O	☐
Distribution Channels	O	O	O	O	O	☐
Marketing Channels	O	O	O	O	O	☐
Concept Development	O	O	O	O	O	☐
Clear strategy-statement	O	O	O	O	O	☐
CRM-System Used for market Analysis	O	O	O	O	O	☐
Open Culture	O	O	O	O	O	☐
Attracting Personnel	O	O	O	O	O	☐
Radical Innovation Budgeting	O	O	O	O	O	☐
Production Facilities	O	O	O	O	O	☐
Legislation	O	O	O	O	O	☐
Comments						

Signed:	*Date:*	*Firm:*

F. Toolkit Manual

Monday, 03 June 2013

HOW TO USE
THE AMMON TOOLKIT

AMMON Pre-project Overview

AMMON Representative	
Date	
Name Company	
Name Representative	

Company	Value	Weight	Total	Notes
Passive/Leadership Role	3	1	3	
Delivering: Knowledge & Facilities	Gas measurement, base materials			
Other Competences	Marketing, but no Business Developers			
Tasks	**Resources**	**Research**	**Development**	**Marketing**
Focus	3	3	2	1
Motivation	Need to find new markets			

Company Focus	Value	Weight	Total	Notes
Strategic Interest	4	1	4	High, this links with our strategy
Main Goals				
Previous Experience Market	3	1	3	None

AMMON Role	Value	Weight	Total	Notes
AMMON Support	2	1	2	
Conceptfase	2	1	5	
Business Case	2	1	5	
ProjectPlan	2	1	4	
Demonstrator	2	1	3	
Marketing	2	1	1	We use our own marketing

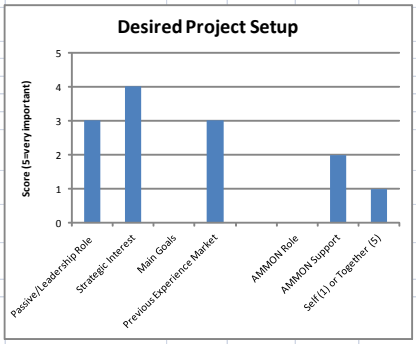
Market Attack	Value	Weight	Total	Notes
Self (1) or Together (5)	1	1	1	
Spin-off	3	1	3	
Joint Venture	2	1	2	
Licensing	5	1	5	Easier & faster
External Entrepreneur	3	1	3	
.....(Other)	3	1	3	

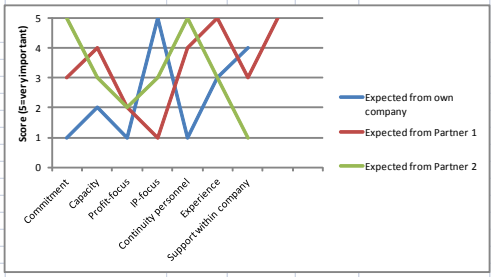
Contactperson	Value	Weight	Total	Notes
Available	1	5	5	
Name				
Function	Innovation Manager			
Contact Information	...			
Preferred Medium	Mail or phone, no voicemails please.			
Time Available	6	1	6	Fulltime
Tasks	Monitoring, steering the technology development			
Additional Contacts	Marketeer: Jan Johansson			

Expected from own company	Value	Weight	Total	Notes
Commitment	1	1	1	We have little time
Capacity	2	1	2	
Profit-focus	1	1	1	
IP-focus	5	1	5	Our IP is important
Continuity personnel	1	1	1	We are reorganizing
Experience	3	1	3	
Support within company	4	1	4	
Available Budget	4	1	4	

Expected from Partner 1	Value	Weight	Total	Notes
Commitment	3	1	3	
Capacity	4	1	4	
Profit-focus	2	1	2	
IP-focus	1	1	1	
Continuity personnel	4	1	4	
Experience	5	1	5	
Support within company	3	1	3	
Available Budget	5	1	5	

Expected from Partner 2	Value	Weight	Total	Notes
Commitment	5	1	5	
Capacity	3	1	3	
Profit-focus	2	1	2	
IP-focus	1	1	3	
Continuity personnel	5	1	5	
Experience	3	1	3	
Support within company	1	1	1	
Available Budget	1	1	1	





F.1. Introduction

This manual will provide an overview of the AMMON toolkit, showing the goals, usage and some practical tips for getting the most out of it.

This toolkit aims to get an overview of the factors that affect project success, apart from the technological limitations of a product. The questions are based on the most important factors according to partners & stakeholders in AMMON, which keeps this tool simple and easy to use and filters the less relevant questions. This makes it easier to fill in and takes less time, but still can be used for getting in-depth information on the individual questions.

The tools all have two parts: a questionnaire and an Excel sheet to fill in the information. The questionnaire is used for asked the AMMON-partners for their view on the different questions, the Excel file is only for the AMMON-team. This toolkit works best if all the contexts of the answers are known, therefore It is recommended to use the “notes” field in the Excel-sheet as often as possible and asks these questions in the form of an interview. This enables further questioning and provides more context to the answers provided. Purposively the choice was made not to include a tool that focuses on technology or market research, because a multitude of tools are already available that could be combined with the AMMON Toolkit like QFD and TRIZ. Since it focuses on different aspects, these & other tools can easily be combined with this toolkit to evaluate the collaboration, technology and market simultaneously.

The toolkit is divided in two parts: an AMMON Initiation Tool and a Project-toolkit which can be used separate from each-other. The first is for usage on a network level, the Project-toolkit is focused on the project level. The Project-toolkit is divided up out of three separate tools: a pre-project tool, a midway-evaluation tool and an after-evaluation tool.

The AMMON Initiation Tool would normally be used before firms become a member of AMMON. This allows the AMMON-team to evaluate whether a company fits the profile of AMMON and where needed discover where to focus their strategy on.

The Project Toolkit will normally be used on three moments within the project: just after officially starting the project, during the development of an demonstrator and after the AMMON leaves the project.

F.2. Table of Contents

F.3. AMMON Initiation Tool

The AMMON Initiation tool is focused on getting a view of what a AMMON partner looks for within AMMON. This chapter will provide and introduction, a step by step guide how to use it and lastly how to interpret the results.

Introduction

As stated before, the AMMON initiation tool focuses on getting to know the commitment of companies within the network. This tool would normally be used at the initiation of a company and be obligatory for entering the AMMON-network, to obtain an overview of which company are present in the network and on what they all focus.

There are in total seven questions that ask for the strategic importance, company role and experience of AMMON. Furthermore is asks whether the company focus externally for innovation, what capabilities they currently have and what they find important in collaborations. Lastly it asks whether partners want external guidance in projects and how do they want to be updated on new developments in AMMON.

This tool works separate from the Project Toolkit, in that this tool can be used as input for the projects, but is not obligatory.

How to use the AMMON Initiation Tool

Below a short introduction is given on how to effectively use the AMMON Initiation Tool.

1. The toolkit uses questionnaires that can be filled in on a physical paper or in the form of an interview. It is recommended to let it be filled in by the firm's Senior Management alongside an AMMON-team-member in the form of an interview, to get the management support and background information needed. With every question there is the option for adding notes, this makes the tool more flexible and provides a background for all the answers given. This helps prevent that grades become too rigid and lack the subtleties to interpret them correctly.

2. At the end of every tool, the partner has to sign the tool to make it official. Making the form an official statement from the company and makes it clear who filled it in. The results of the toolkit will normally only be made available to AMMON management and not to other partners, unless stated otherwise. This is important to note, since these tools could hold sensitive information and the context has to be taken into account. If not done correctly it could unnecessarily decrease trust between firms.

3. The answers given in the interview can be used for filling in the Excel sheets. It is greatly recommended to fill in every remark. In this sheet there are multiple tabs on the bottom, each for every part of the toolkit. For the AMMON Initiation Tool, use the tab that is named the same.

4. This excel sheet automatically generates graphs and warning colours for easy comparisons. The blocks show red with a score nearing 0 and green when near 5. From this information comparisons can be made between partners in the network to look at potential conflicts of interest. In the "Notes" field and other open fields the user can input additional information.

Communication	**Value**	**Weight**	**Total**	***Notes***
Newsletter	4	1	**4**	Please email
Website	1	1	**1**	
Intranet	3	1	**3**	
Twitter	2	1	**2**	
Facebook	5	1	**1**	Don't use
Mail	3	1	**3**	
Physical Meeting	4	1	**4**	F2F
Minutes (Notulen)	2	1	**2**	
Main contact + Information	**Information**			

5. When looking at these results, questions that could be asked are:
    a. What do partners expect from AMMON?
        i. Is this consistent with the current way of working?
    b. How and on what basis do they want to stay informed?
    c. Who is the main person to contact? What is his function?
        i. How could this function affect AMMON?

6. It is recommended to use a new excel sheet per partner, to keep the overview of a project. From this a simple database can be built that can be used in projects. For every partner that enters AMMON it is advised to compare it with the current portfolio, to be able to provide tailored advises.

Using the Results

The results from the questionnaire can be used to estimate the expectations from partners within the network. It looks at which factors need additional focus or how the network can be tailored to the needs of specific partners, but also the strategy of AMMON as a whole.

For instance the image below shows that the partner thinks trust and previous experience is very important, but sees little role for the government within AMMON. It also shows that it is willing to external guidance, up to the point of building a demonstrator.

F.4. Project-Toolkit

The project toolkit is focused on the collaboration between partners towards a new product. In this chapter all individual tools will be introduced. As stated before, all tools can be used individually or combined as a whole. Most of the questions from the tools have an overlap, enabling easy comparison of answers at the end of the project using the Project Overview tab.

Pre-Project Tool

The following will be outlined: Introduction, How to Use the Pre-Project Tool and how to interpret the results.

Introduction

This tool is used at the start of a project, about when the partners have officially agreed to start the project. The pre-project tool looks at the commitment companies have towards a project and contains seven questions. These questions are focused on the role, strategic interest, AMMON-coaching, marketing, communication and expectancies.

This tool can be combined with the AMMON Initiation tool by comparing the internal structure of the different companies in the collaboration. Are they for instance truly differently structured of focus on different factors of projects in general? This could be a reason to look into differences in culture and focus.

Firstly the questions focus on the role and tasks a company thinks it has and their strategic importance, thereafter it asks whether they would like external guidance and in what form they would like to market it. This latter focuses on spin-offs, licensing or any other form. Following this question about the presence of a product champion is asked for, who this is, how to contact him/her and the available time this person has. Lastly the company has to fill in a small scale-form that asks for her expectations of herself and of the partners. This provides a base of comparisons.

How to use the Pre-Project Tool

Below a short introduction is given on how to effectively use the Pre-Project Tool.

1. The toolkit uses questionnaires that can be filled in on a physical paper or in the form of an interview. It is recommended to let it be filled in by the firm's Senior Management alongside an AMMON-team-member in the form of an interview, to get the management support and background information needed. With every question there is the option for adding notes, this makes the tool more flexible and provides a background for all the answers given. This helps prevent that grades become too rigid and lack the subtleties to interpret them correctly.

2. At the end of every tool, the partner has to sign the tool to make it official. Making the form an official statement from the company and makes it clear who filled it in. The results of the toolkit will normally only be made available to AMMON management and not to other partners, unless stated otherwise. This is important to note, since these tools could hold sensitive information and the context has to be taken into account. If not done correctly it could unnecessarily decrease trust between firms.

3. The answers given in the interview can be used for filling in the Excel sheets. It is greatly recommended to fill in every remark. In this sheet there are multiple tabs on the bottom, each for every part of the toolkit. For the Pre-Project Tool, use the tab that is named the same.

4. This excel sheet automatically generates graphs and warning colours for easy comparisons. The blocks show red with a score nearing 0 and green when near 5. From this information comparisons can be made between partners in the network to look at potential conflicts of interest. In the "Notes" field and other open fields the user can input additional information.

Company	**Value**	**Weight**	**Total**	***Notes***
Passive/Leadership Role	3	1	**3**	
Delivering: Knowledge & Facilities				
Other Competences				
Tasks	**Resources**	**Research**	**Development**	**Marketing**
Focus	**3**	**3**	**2**	**1**
Motivation				

5. When looking at these results, questions that could be asked are:
    a. What do partners expect from this project?
        i. Are these consistent between partners?
    b. Do the expectations between partners match what they state themselves?
    c. Do partners have low expectations on different levels?
    d. Is the strategic commitment & role a firm wants sufficient?
        i. If not, what is the reason for these low scores?
    e. Who is the main person to contact? What is his function?
        i. How could this function affect the project?
    f. Where do they want AMMON to aid the project?

6. In the Project Overview Tab, the user can create links with questionnaires from other companies. Here results between companies can even more easily be compared.

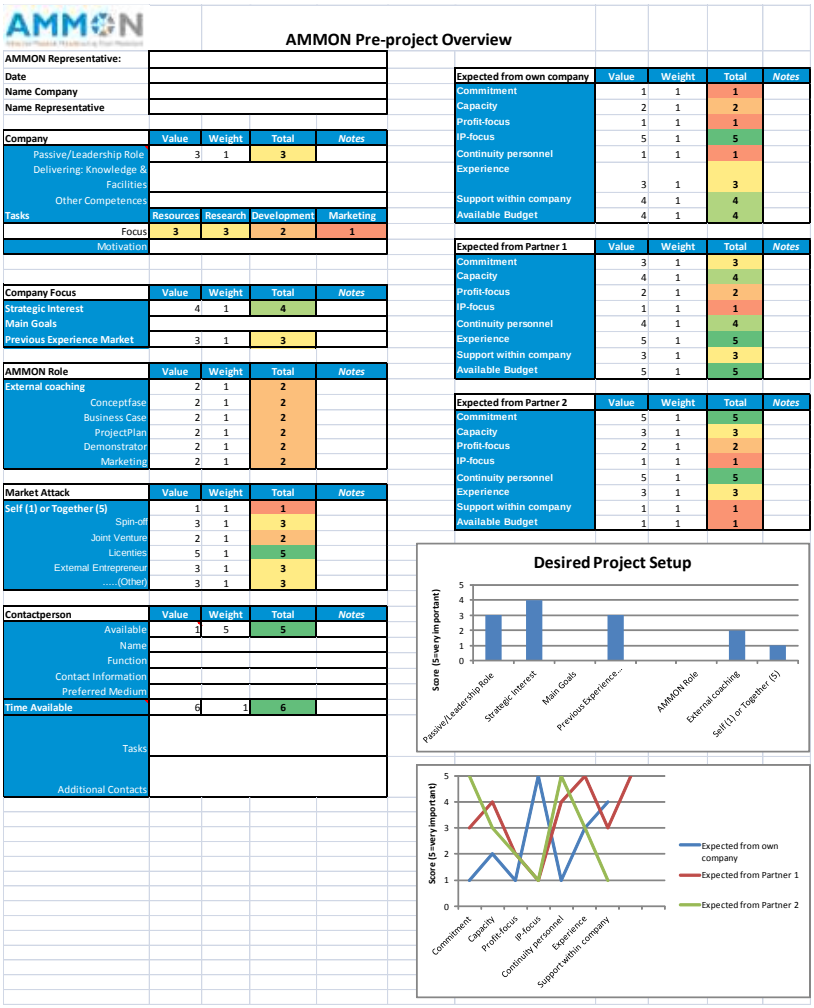
7. It is recommended to use a new excel sheet per partner, to keep the overview of a project. From this a simple database can be built that can be used in projects. For every partner that enters AMMON it is advised to compare it with the current portfolio, to be able to provide tailored advises.

Using the Results

The results from the questionnaire can be used to estimate the expectations from partners within the network. It looks at which factors need additional focus or how the network can be tailored to the needs of specific partners, but also the strategy of AMMON as a whole.

For instance the image below shows that the partner thinks trust and previous experience is very important, but sees little role for the government within AMMON. It also shows that it is willing to external guidance, up to the point of building a demonstrator.

The below results also show that this client has limited focus on marketing, but also has low capacity and continuity of personnel. This gives reasons to assume there currently is an internal restructuring going on that could affect the project speed. This could be a reason for looking into the division of tasks within a project.



AMMON

AMMON Pre-project Overview

AMMON Representative:	
Date	
Name Company	
Name Representative	

Company	Value	Weight	Total	Notes
Passive/Leadership Role	3	1	3	
Delivering: Knowledge & Facilities				
Other Competences				

Tasks	Resources	Research	Development	Marketing
Focus	3	3	2	1
Motivation				

Company Focus	Value	Weight	Total	Notes
Strategic Interest	4	1	4	
Main Goals				
Previous Experience Market	3	1	3	

AMMON Role	Value	Weight	Total	Notes
External coaching	2	1	2	
Conceptfase	2	1	2	
Business Case	2	1	2	
ProjectPlan	2	1	2	
Demonstrator	2	1	2	
Marketing	2	1	2	

Market Attack	Value	Weight	Total	Notes
Self (1) or Together (5)	1	1	1	
Spin-off	3	1	3	
Joint Venture	2	1	2	
Licenties	5	1	5	
Extemal Entrepreneur	3	1	3	
.....(Other)	3	1	3	

Contactperson	Value	Weight	Total	Notes
Available	1	5	5	
Name				
Function				
Contact Information				
Preferred Medium				
Time Available	6	1	6	
Tasks				
Additional Contacts				

Expected from own company	Value	Weight	Total	Notes
Commitment	1	1	1	
Capacity	2	1	2	
Profit-focus	1	1	1	
IP-focus	5	1	5	
Continuity personnel	1	1	1	
Experience	3	1	3	
Support within company	4	1	4	
Available Budget	4	1	4	

Expected from Partner 1	Value	Weight	Total	Notes
Commitment	3	1	3	
Capacity	4	1	4	
Profit-focus	2	1	2	
IP-focus	1	1	1	
Continuity personnel	4	1	4	
Experience	5	1	5	
Support within company	3	1	3	
Available Budget	5	1	5	

Expected from Partner 2	Value	Weight	Total	Notes
Commitment	5	1	5	
Capacity	3	1	3	
Profit-focus	2	1	2	
IP-focus	1	1	1	
Continuity personnel	5	1	5	
Experience	3	1	3	
Support within company	1	1	1	
Available Budget	1	1	1	

Midway Evaluation Tool

Introduction

After the pre-project tool has been filled in and the project has been developed further, a midway tool can be used to evaluate how the project goes thus far. Since the after evaluation tool is too late for making changes, this Midway Tool is good for steering the project halfway. It also helps get a feeling of changes during the project when compared with the Pre and After-Tool.

This tool would normally be used during the development of the demonstrator, where the most important project-aspects are already developed.

In this tool there are six simple questions: how does the partner role compare to the expectations? What do they think about the collaboration so far? Thirdly. What do they expect from the final product and the project speed so far? Lastly, how do they evaluate the role of AMMON and score the project as a whole so far? With every question there is room for further elaborations and suggestions for improvements. These improvements could lie in any of these factors.

How to use the Midway Tool

Below a short introduction is given on how to effectively use the Pre-Project Tool.

1. The toolkit uses questionnaires that can be filled in on a physical paper or in the form of an interview. It is recommended to let it be filled in by the firm's Senior Management alongside an AMMON-team-member in the form of an interview, to get the management support and background information needed. With every question there is the option for adding notes, this makes the tool more flexible and provides a background for all the answers given. This helps prevent that grades become too rigid and lack the subtleties to interpret them correctly.

2. At the end of every tool, the partner has to sign the tool to make it official. Making the form an official statement from the company and makes it clear who filled it in. The results of the toolkit will normally only be made available to AMMON management and not to other partners, unless stated otherwise. This is important to note, since these tools could hold sensitive information and the context has to be taken into account. If not done correctly it could unnecessarily decrease trust between firms.

3. The answers given in the interview can be used for filling in the Excel sheets. It is greatly recommended to fill in every remark. In this sheet there are multiple tabs on the bottom, each for every part of the toolkit. For the Midway Evaluation Tool, use the tab that is named the same.

4. This excel sheet automatically generates graphs and warning colours for easy comparisons. The blocks show red with a score nearing 0 and green when near 5. In this tab there is one exception: the Evaluation Role – question, here a 3 is optimal (Exactly as Expected) where 1 means it is more passive and 5 means the role is more active than expected. From this information comparisons can be made between partners in the network to look at potential

conflicts of interest. In the "Notes" field and other open fields the user can input additional information.

Evaluation Role	Value	Weight	Total	*Notes*
Compared to Expected	3	1	**3**	
Examples	Content, we haven't had to skip work for this project.			
Proposed Changes	None			

5. When looking at these results, questions that could be asked are:
    a. What did partners expect compared to what they now state?
        i. Where does this originate?
        ii. Do partners name the same problems?
    b. How do they evaluate the collaboration themselves?
        i. Is one partner specifically named?
    c. How much do they trust the current product?
        i. Why did the partner score this way?
        ii. Do multiple companies state the same concerns?
        iii. Is there a need to re-evaluate the product?
    d. How do they evaluate the project speed?
        i. Where can AMMON aid in speeding the process?
    e. How do they evaluate the role of AMMON?
        i. Should AMMON become less/more active?
        ii. Is there a specific part that partners mention AMMON could focus more on?
    f. How do they score the project?
        i. What can be done with the key lessons provided?
        ii. Could advice provided here be used in other projects or on a broader scale?

6. In the Project Overview Tab, the user can create links with questionnaires from other companies. Here results between companies can even more easily be compared.

7. It is recommended to use a new excel sheet per partner, to keep the overview of a project. From this a simple database can be built that can be used in projects. For every partner that enters AMMON it is advised to compare it with the current portfolio, to be able to provide tailored advises.

Using the Results

The results from the Midway Evaluation Tool can be used to measure if the expectations of partners fit their current view. It looks at which factors need additional focus or how the project can be changed to better fit the needs of specific partners,

For instance the image below shows that the partner is content with its role, since he scores it with 3 points (= just as expected). The collaboration however is scored low, with two points it apparently looks something is lacking. This provides reasons to look into the reasons of this low grade. The project speed is scored a "1", meaning it is far too slow according to this respondent. It could be that this has a link with the low collaboration score and that other partners are not sufficiently cooperating. This is also a good reason for looking at the further comments given. It looks like he specifically has comments on Partner 1, but also the customer & technology should be discussed more. This could be essential points for a next meeting.

The overall score is a 5, meaning there is much room for improvement.

AMMON Midway Evaluation Overview

AMMON Representative	
Date	
Name Company	
Name Representative	

Evaluation Role	Value	Weight	Total	Notes
Compared to Expected	3	1	3	
Examples	Content, we haven't had to skip work for this project.			
Proposed Changes	None			

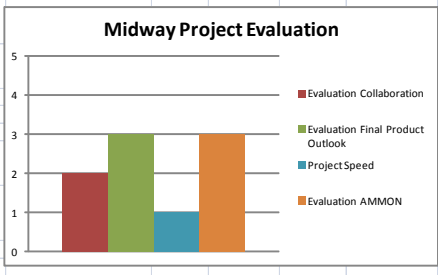
Project Speed	Value	Weight	Total	Notes
Compared to Expected	1	1	1	
Examples	Partner 1 makes the progress sluggih. Furthermore the technologies are harder to combine than expected			
Proposed Changes	Plan a meeting for discussing the technology more in detail			

Evaluation Collaboration	Value	Weight	Total	Notes
Compared to Expected	2	1	2	
Examples	Partner 1 is slow in providing info and doesn't attent all meetings.			
Proposed Changes	Make this know to him			

Evaluation AMMON	Value	Weight	Total	Notes
Current Approach	3	1	3	
Explanation	Just as expected, but could be more pro-active			
Proposed Changes				

Evaluation Final Product Outlook	Value	Weight	Total	Notes
Compared to Expected	3	1	3	
Examples	It is getting form, but the customer has still not truly said he'll pay. This is crucial			
Proposed Changes	Focus more on customer			

Scoring	
Score	5
Key Lessons for Future	Clearer division of tasks
Ammon Role Future	Help developing demonstrator at OICAM



After Evaluation Tool

Introduction

After the Pre-Project and Midway Tools tool have been filled in and the project has been developed further, the After Evaluation tool can be used to evaluate how the project was evaluated at the end. It helps to obtain key lessons for the future and get a feeling of how partners look back at the project.

This tool would normally be used when AMMON officially leaves a project, when partners will develop it further.

In this tool there are six simple questions: how does the partner role compare to the expectations? What do they think about the collaboration so far? Thirdly. What do they expect from the final product and the project speed so far? Lastly, how do they evaluate the role of AMMON and score the project as a whole so far? With every question there is room for further elaborations and suggestions for improvements. These improvements could lie in any of these factors.

How to use the After Evaluation Tool

Below a short introduction is given on how to effectively use the After Evaluation Tool.

1. The toolkit uses questionnaires that can be filled in on a physical paper or in the form of an interview. It is recommended to let it be filled in by the firm's Senior Management alongside an AMMON-team-member in the form of an interview, to get the management support and background information needed. With every question there is the option for adding notes, this makes the tool more flexible and provides a background for all the answers given. This helps prevent that grades become too rigid and lack the subtleties to interpret them correctly.

2. At the end of every tool, the partner has to sign the tool to make it official. Making the form an official statement from the company and makes it clear who filled it in. The results of the toolkit will normally only be made available to AMMON management and not to other partners, unless stated otherwise. This is important to note, since these tools could hold sensitive information and the context has to be taken into account. If not done correctly it could unnecessarily decrease trust between firms.

3. The answers given in the interview can be used for filling in the Excel sheets. It is greatly recommended to fill in every remark. In this sheet there are multiple tabs on the bottom, each for every part of the toolkit. For the After Evaluation Tool, use the tab that is named the same.

4. This excel sheet automatically generates graphs and warning colours for easy comparisons. The blocks show red with a score nearing 0 and green when near 5. In this tab there is one exception: the Evaluation Role – question, here a 3 is optimal (Exactly as Expected) where 1 means it is more passive and 5 means the role is more active than expected. From this information comparisons can be made between partners in the network to look at potential conflicts of interest. In the "Notes" field and other open fields the user can input additional information.

Evaluation Role	Value	Weight	Total	*Notes*
Compared to Expected	5	1	5	
Examples	Partner 1 was waiting too long with providing information, which costs us a lot of time asking for it			
Proposed Changes	In future projects, please be more clear on expectations			

5. When looking at these results, questions that could be asked are:
    a. What did partners expect compared to the resulted role?
        i. Where does this originate?
        ii. Do partners name the same problems?
    b. How do they evaluate the collaboration?
        i. Is one partner specifically named?
    c. How much are they content with the final product?
        i. Why did the partner score this way?
        ii. Do multiple companies state the same concerns?
        iii. Is there a need to re-evaluate the product?
    d. How do they evaluate the project speed?
        i. Where can AMMON aid in speeding the process?
    e. How do they evaluate the role of AMMON?
        i. Should AMMON become less/more active?
        ii. Is there a specific part that partners mention AMMON could focus more on?
    f. How do they score the project?
        i. What can be done with the key lessons provided?
        ii. Could advice provided here be used in other projects or on a broader scale?

6. In the Project Overview Tab, the user can create links with questionnaires from other companies. Here results between companies can even more easily be compared.

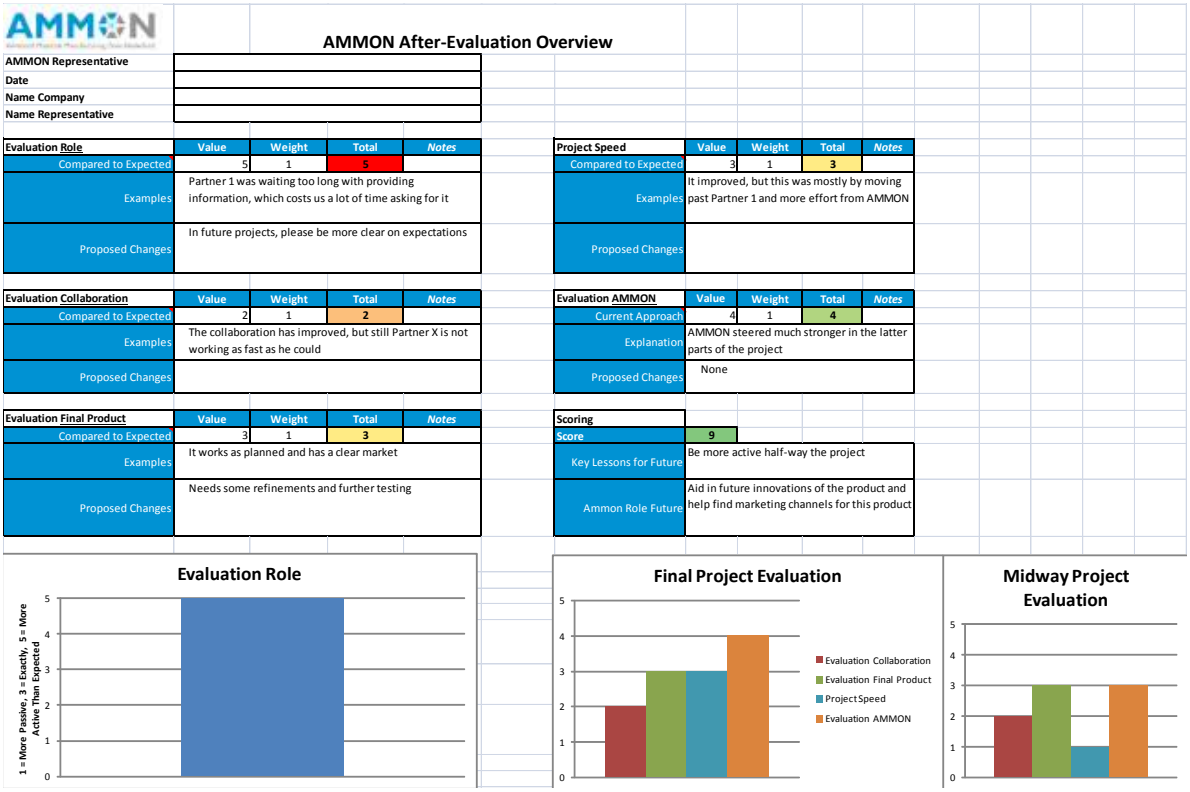
7. It is recommended to use a new excel sheet per partner, to keep the overview of a project. From this a simple database can be built that can be used in projects. For every partner that enters AMMON it is advised to compare it with the current portfolio, to be able to provide tailored advises.

Using the Results

The results from the After Evaluation Tool can be used to measure if the expectations of partners fit their final view. It looks at which factors need additional focus or how the project can be changed to better fit the needs of specific partners,

For instance the image below shows that the partner is not content with its role, since he scores it with 5 points (= too active). Apparently he thinks he had to do much more in the last phases than expected. The collaboration is scored also low, with two points it apparently looks like something is lacking, although better than in the Midway Tool. The reasons of this low grade are provided: once again partner 1, this means that future collaborations between these partners could become difficult. The project speed is scored a “3”, meaning it improved according to this respondent. The evaluation of AMMON was also better, meaning apparently AMMON handled the situations well.

The overall score is a 9, meaning is partner is overall very content.



AMMON After-Evaluation Overview

AMMON Representative	
Date	
Name Company	
Name Representative	

Evaluation Role	Value	Weight	Total	Notes
Compared to Expected	5	1	5	
Examples	Partner 1 was waiting too long with providing information, which costs us a lot of time asking for it			
Proposed Changes	In future projects, please be more clear on expectations			

Project Speed	Value	Weight	Total	Notes
Compared to Expected	3	1	3	
Examples	It improved, but this was mostly by moving past Partner 1 and more effort from AMMON			
Proposed Changes				

Evaluation Collaboration	Value	Weight	Total	Notes
Compared to Expected	2	1	2	
Examples	The collaboration has improved, but still Partner X is not working as fast as he could			
Proposed Changes				

Evaluation AMMON	Value	Weight	Total	Notes
Current Approach	4	1	4	
Explanation	AMMON steered much stronger in the latter parts of the project			
Proposed Changes	None			

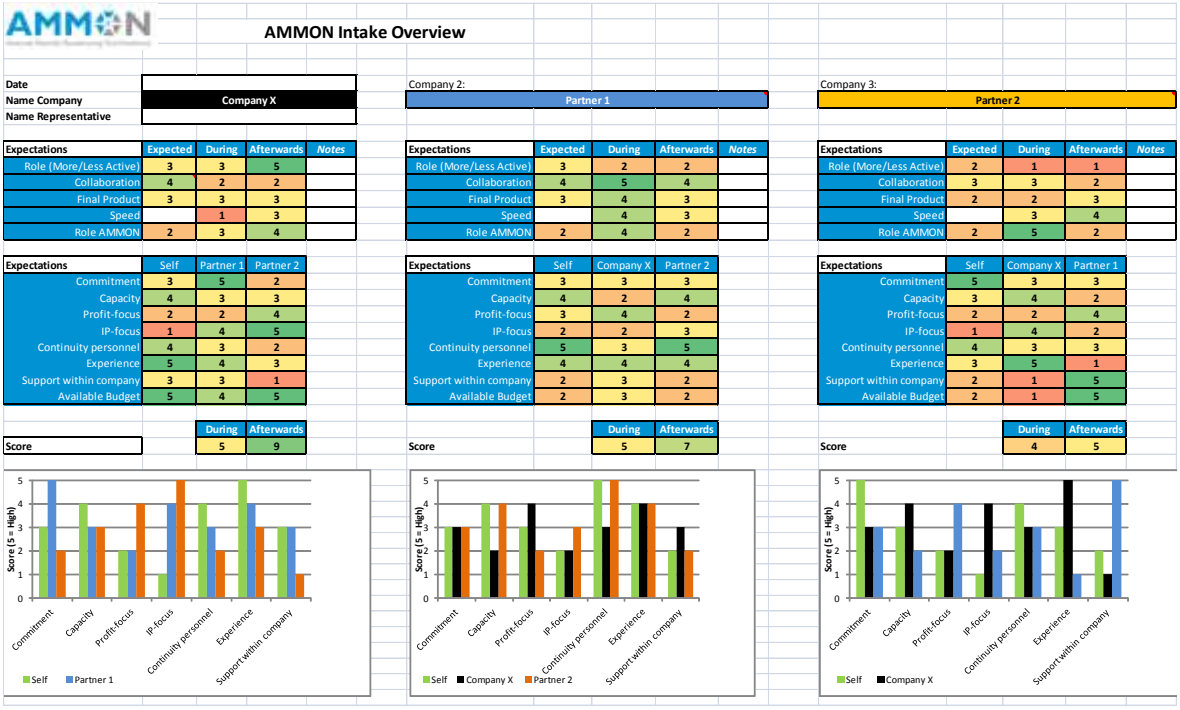
Evaluation Final Product	Value	Weight	Total	Notes
Compared to Expected	3	1	3	
Examples	It works as planned and has a clear market			
Proposed Changes	Needs some refinements and further testing			

Scoring	
Score	9
Key Lessons for Future	Be more active half-way the project
Ammon Role Future	Aid in future innovations of the product and help find marketing channels for this product

F.5. Project Overview Tab

The last tab in the Excel-file provides an overview of the project. It compares what each company stated in each stage of the project. By filling in the names in the squares at the top the names will automatically be updated. Do note that the grades of other companies in the project are not added automatically, this has to be done by hand or by coupling it with external files. This can be done by copying the blocks needed and pressing the small arrow beneath Paste, than press Paste Link.

As shown below, the scores from Partner 1 and 2 are much lower than Company X. Furthermore Partner 1 was more content in general about the project as a whole.



AMMON Intake Overview

		Company 2:		Company 3:	
Date					
Name Company	Company X	Partner 1		Partner 2	
Name Representative					

Expectations	Expected	During	Afterwards	Notes
Role (More/Less Active)	3	3	5	
Collaboration	4	2	2	
Final Product	3	3	3	
Speed		1	3	
Role AMMON	2	3	4	

Expectations	Expected	During	Afterwards	Notes
Role (More/Less Active)	3	2	2	
Collaboration	4	5	4	
Final Product	3	4	3	
Speed		4	3	
Role AMMON	2	4	2	

Expectations	Expected	During	Afterwards	Notes
Role (More/Less Active)	2	1	1	
Collaboration	3	3	2	
Final Product	2	2	3	
Speed		3	4	
Role AMMON	2	5	2	

Expectations	Self	Partner 1	Partner 2
Commitment	3	5	2
Capacity	4	3	3
Profit-focus	2	2	4
IP-focus	1	4	5
Continuity personnel	4	3	2
Experience	5	4	3
Support within company	3	3	1
Available Budget	5	4	5

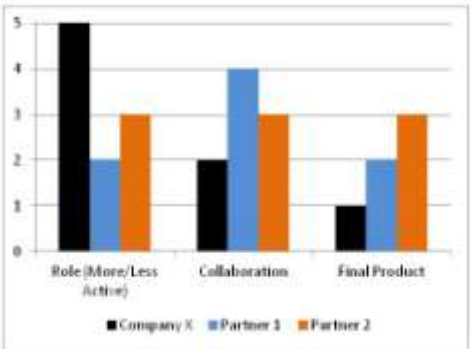
Score	During	Afterwards
	5	9

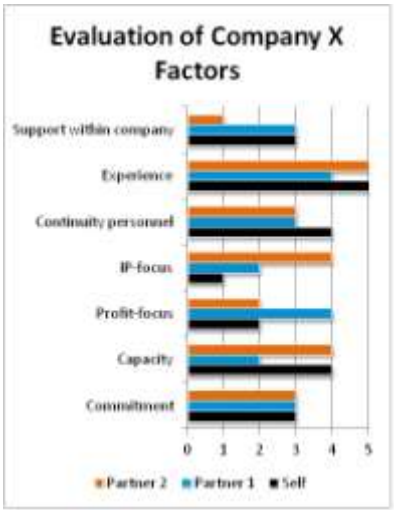
Expectations	Self	Company X	Partner 2
Commitment	3	3	3
Capacity	4	2	4
Profit-focus	3	4	2
IP-focus	2	2	3
Continuity personnel	5	3	5
Experience	4	4	4
Support within company	2	3	2
Available Budget	2	3	2

Score	During	Afterwards
	5	7

Expectations	Self	Company X	Partner 1
Commitment	5	3	3
Capacity	3	4	2
Profit-focus	2	2	4
IP-focus	1	4	2
Continuity personnel	4	3	3
Experience	3	5	1
Support within company	2	1	5
Available Budget	2	1	5

Score	During	Afterwards
	4	5





F.6. General Remarks & Tips

When using this toolkit, there are several comments that have to be taken into account:

- Be consistent with the way of interviewing partners and do this at the same time in a project. Failing to do so could greatly affect results.

- Take note of the comments! When something is graded low, this does not necessarily mean it is a bottleneck, but could only mean a shift of focus is needed.

- If something is still unclear or there are large differences between partners, ask for further explanation in a 2nd session or in a formal meeting. If truly a shared bottleneck, discuss it openly after asking partners for their consent.

- If multiple managers from AMMON are working on one project, discuss the results together to see if the answers are interpreted the same. This decreases bias and could provide relevant insights for improving a project.