

DEMOLA EAST SWEDEN: THE INNOVATION INTERMEDIARY

A study of the innovation project process and the user
experience of Demola East Sweden



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Master thesis LIU-IEI-TEK-A--14/01980—SE

Department of Management and Engineering

Machine Design

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SAMMANFATTNING

Innovation är en svårhanterad, men samtidigt viktig faktor för alla typer av organisationer. Detta har lett till en ny typ av organisationer; förmedlarna av öppen innovation. Dessa arbetar för att föra samman och skapa utbyte mellan sökare med innovationsproblem, och tredjeparts problemlösare. Denna studie fokuserar på det särskilda fallet av en sådan innovationsförmedlare; Demola East Sweden. De för samman sökare i form av t.ex. större företag eller privatpersoner, med lösare i form av studenter från Linköpings Universitet. Demola East Sweden har snabbt vuxit sedan starten 2012, och ser nu ett behov av utvärdering. Syftet med studien är att undersöka användarupplevelsen av Demola East Sweden's innovationsförmedlande projektprocess. Detta genom perspektivet av vad som skapar värde i den, och vad som kan förbättra upplevelsen. Studien genomfördes som en fallstudie i fyra faser av planering, kartläggning, analys, och slutsats. I planeringsfasen definierades det praktiska ramverket för studien, och tre teoretiska huvudområden valdes: *innovationsförmedling som en tjänst, strukturen bakom innovationshantering, och det praktiska genomförandet av innovation.* Kartläggningsfasen inkluderade observationer och intervjuer för datainsamling. I ett första steg skaffades insikt och förståelse för kontexten och verksamheten kring Demola East Sweden och den generella projektprocessen. Fyra projektfall valdes sedan ut för att utforska vidare. Detta inkluderade intervjuer med sökare, lösare, och Demola East Sweden's projektfacilitatorer för varje fall. Resultatet analyserades genom att besvara specificerade frågeställningar, vilka definierats genom att koppla samman de tre teoriområdena med studiens syfte. Från detta kunde sedan slutsatser för studien dras.

Resultatet genererade en översikt av den generella projektprocessen och vad som händer före, under, och efter projektens genomförande. Innan projektstart handlar processen framförallt om att gallra sökare och deras projektidéer, och lösarna som ansöker för att delta. Analysen visar att denna initiala gallringsprocess är viktig för att försäkra kvalitet till projekten, och för att säkerställa att användarnas förväntningar samstämmer med tjänsten som erbjuds. Under själva projektprocessen är inte sökarna särskilt involverade. Lösarna, å andra sidan, deltar i obligatoriska projektmoment från Demola East Sweden och från Linköpings Universitet. Detta inkluderar t.ex. pitch-tillfällen där lösarna presenterar och får feedback på projekten, och handledningstillfällen kring etik och projektmål. Analysen visar att de obligatoriska momenten är kritiska beslutspunkter, och viktiga för att upptäcka problemområden i projektprocessen. När slutresultatet presenteras och levereras till sökarna, kan dessa välja att köpa det eller inte. Om de väljer att inte göra det, så äger de fortfarande själva projektidén, men lösarna äger det genererade resultatet. Analysen visar att resultaten sällan utvecklas längre än till konceptlösningar eller prototyper, men också att detta inte definierar framgångsgraden för projekten. Detta mäts istället genom värdet som erhålls från upplevelsen av själva projektprocessen. Avseende förväntningar och den verkliga upplevelsen, så är en vanlig anledning för både sökare och lösare att delta den potentiella rekryteringsmöjligheten. I övrigt förväntar sig sökarna möjlighet till lågrisk affärsutveckling, där de inte behöver investera resurser eller förpliktelser, men fortfarande har tillgång till eventuell innovation. För lösarna handlar förväntningarna även om att skaffa erfarenhet från verkliga projekt, där de samtidigt tjänar kurspoäng från Linköpings Universitets obligatoriska projektmoment. Generellt sett möter förväntningarna den verkliga upplevelsen. Faktorerna kring förbättring handlar snarare om t.ex. att projektprocessen innehåller för många obligatoriska moment, bristande koordination i samarbetet mellan Demola East Sweden och Linköpings Universitet, och underhåll av balansen i det viktiga ömsesidiga utbytet mellan sökare och lösare.

ABSTRACT

Innovation is a difficult, yet vital factor for any given organization. This has led to a new type of organizations; the intermediaries of open innovation. These provide a service offering by creating interchange between seekers with innovation problems, and third party problem solvers. This study focus on the specific case of one innovation intermediary; Demola East Sweden. They connect seekers of like big organizations or private persons, with student solvers from Linköping University. Demola East Sweden has grown quickly since the start in 2012, and now recognizes a need for evaluation. The purpose of this study is to examine the user experience of the Demola East Sweden innovation intermediary project process. This through the perspective of what adds values to it, and what could improve to the experience. The study was conducted as a case study in four phases of planning, mapping, analyzing, and conclusion. The planning phase defined the practical framework of the study, and three main areas of theory were chosen: *the service of innovation intermediation*, *the structures behind innovation management*, and *the practical implementation of innovation*. The mapping phase included observations and interviews for collecting data. As an initial step, insight on the context and operations of Demola East Sweden and the general project process was attained. Four project cases were then chosen to examine further. This included interviews with the seeker, the solvers, and the Demola East Sweden project facilitator of each case. The results were analyzed by answering specified research questions, defined by connecting the three theory areas to the purpose of the study. From this, conclusions for the study then could be drawn.

The results generated an overview of the general project process of what happens before, during, and after the project conduct. Before project start, the process is mainly about screening the seekers and their projects ideas, and the solvers applying to participate. The analysis show that this initial screening process is important for assuring quality to the projects, and making sure the user expectations matches the service provided. During the projects the seekers are not involved much. The solvers on the other hand, are parallel to the project work also provided with mandatory events from Demola East Sweden and Linköping University. This e.g. includes pitch events where the solvers present and attain feedback on their projects, and coaching sessions on ethics and project goals. The analysis shows that the mandatory events are critical decision points, and are crucial for detecting problem areas in process. When the final results are presented and delivered to the seekers, they can choose if they want to buy it or not. If they choose not to, then they still own the initial project idea, but solvers own the generated results. The analysis shows that the results rarely go further than to concept solutions or prototypes, but also that these issues do not define the success rate of the projects. This is instead measured from the values attained from the experience of the project process. Regarding the expectations and the actual user experience, a common aspect for participation for both seekers and solvers, is the potential of recruitment. Otherwise, the seekers also expect the opportunity for low risk business investment, where they do not need to put in resources or commitment, but still maintain potential for innovation. For the solvers the expectations is also about attaining experience from real projects, where they at the same time gain course credits from the mandatory project events provided by the university. In general the expectations often match the actual experience. The issues on improvement is instead about e.g. the project process including too many mandatory events, lack of coordination between Demola East Sweden and Linköping University, and maintaining a balance of the important mutual interchange between the seekers and the solvers.

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TABLE OF CONTENTS

1.	INTRODUCTION	1
1.1	Background.....	1
1.1.1	Demola East Sweden	2
1.2	Problem statement.....	5
1.3	Purpose	6
1.4	Research questions	6
1.5	Delimitations	6
1.5.1	The stakeholders of the Demola East Sweden	6
1.5.2	The course events provided by Linköping University	6
1.5.3	Contracts on intellectual property and other legal issues	6
1.6	Disposition	7
2.	INNOVATION INTERMEDIARIES: WHAT IT IS, AND WHAT THEY DO.....	8
2.1	The history and meaning of innovation intermediaries.....	8
2.2	Three examples of actual innovation intermediaries	8
2.2.1	InnoCentive	9
2.2.2	NineSigma.....	10
2.2.3	The Big Idea Group	10
3.	FRAME OF REFERENCE	12
3.1	The service of innovation intermediation.....	12
3.1.1	Values to innovation intermediation	12
3.1.2	Challenges to innovation intermediation	12
3.1.3	Understanding the user experience of a service process.....	14
3.1.4	The user value of a service process	14
3.2	The structures behind innovation management	16
3.2.1	Advantages of a well-defined product development process	16
3.2.2	Risk aspects of failure in product development processes.....	17
3.2.3	The investment and effort of managing innovation	18
3.2.4	Complexity and the innovation process	18
3.3	The practical implementation of innovation	20
3.3.1	The generic product development process	20
3.3.2	The Stage-Gate approach	24
3.3.3	The innovation process	25
3.3.4	The funnel of uncertainty	28
4.	ANALYSIS MODEL	29

4.1	Analysis units	29
4.2	Specified research questions	31
4.2.1	The service of innovation intermediation	31
4.2.2	The structures behind innovation management	32
4.2.3	The practical implementation of innovation	33
5.	RESEARCH METHODOLOGY	34
5.1	Research approach	34
5.1.1	The chosen approach	34
5.1.2	Research objective	35
5.1.3	Quantitative or qualitative research	35
5.1.4	Scientific design	36
5.2	Research procedure	38
5.2.1	Structural overview	38
5.2.2	The planning phase	39
5.2.3	The mapping phase	41
5.2.4	The analyzing phase	46
5.2.5	The conclusion phase	47
5.3	Validity and reliability	48
5.3.1	Validity	48
5.3.2	Reliability	49
6.	RESULTS	50
6.1	The Demola East Sweden innovation intermediary project process	50
6.1.1	The process before the projects start	51
6.1.2	The process during the projects	53
6.1.3	What happens after the projects	56
6.2	The examined project cases	57
6.2.1	Project case A	57
6.2.2	Project case B	61
6.2.3	Project case C	65
6.2.4	Project case D	69
7.	ANALYSIS	74
7.1	The service of innovation intermediation	74
7.1.1	Aspects on values	74
7.1.2	Interchange between seeker and solver	77
7.1.3	Structural proceedings behind innovation intermediation	78
7.2	The structures behind innovation management	79
7.2.1	General structure and management of development project processes	80
7.2.2	Managing development project teams	84

7.3	The practical implementation of innovation	85
7.3.1	Planning	85
7.3.2	Development project process	86
7.3.3	Capturing the effects	88
8.	CONCLUSIONS AND DISCUSSION.....	89
8.1	Conclusions	89
8.1.1	What does the overall Demola East Sweden innovation intermediary project process include in the experience of the seekers and solvers?	89
8.1.2	What expectations for added value do the seekers and solvers have on participation?	90
8.1.3	What added values do the seekers and the solvers actually experience, and what can Demola East Sweden do to improve it even more?.....	91
8.2	Discussion	92
9.	RECOMMENDATIONS AND FUTURE WORK.....	93
9.1	Recommendations	93
9.1.1	Maintaining the good reputation.....	93
9.1.2	Calibration of the mandatory events	93
9.1.3	Further insight on the seeker experience.....	93
9.1.4	Opportunities of the Demola East Sweden contact network.....	94
9.2	Future work.....	94
9.2.1	The Demola network	94
9.2.2	The collaboration with other industry promoting organizations.....	94
9.2.3	The definition of successful projects	95
9.2.4	A sustainable continued conduct of operations.....	95
9.2.5	Project follow-ups	95
9.2.6	Different types of seekers, solvers, and projects.....	96
	REFERENCES	97
	APPENDIX 1 LIST OF OBSERVATIONS	99
	APPENDIX 2 LIST OF INTERVIEWS	101
	APPENDIX 3 INTERVIEW WITH THE UNIVERSITY EXAMINER ..	103
	APPENDIX 4 GROUP INTERVIEW WITH THE PROJECT FACILITATORS	104
	APPENDIX 5 INTERVIEWS WITH SEEKERS.....	105
	APPENDIX 6 INTERVIEWS WITH SOLVERS.....	107
	APPENDIX 7 INTERVIEWS WITH PROJECT FACILITATORS.....	109

LIST OF TABLES

Table 1 Correlations of the four chosen projects cases to the contextual variation factors.....	43
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LIST OF FIGURES

Figure 1 The Demola ES innovation intermediary process, and the parties involved in it	2
Figure 2 The three stages of a service process (Grönroos & Voima, 2013).....	15
Figure 3 The spheres of collaboration between the service provider and the customer	16
Figure 4 The generic product development process (Ulrich & Eppinger, 2008) ...	20
Figure 5 The Stage-Gate model (Cooper, 2008).....	24
Figure 6 The innovation process (Tidd & Bessant, 2009)	26
Figure 7 The innovation funnel (Tidd & Bessant, 2009)	28
Figure 8 The dimensions of the case study approach for this thesis.....	30
Figure 9 The analysis process of the study.....	30
Figure 10 The general structure of the study	38
Figure 11 The planning phase	39
Figure 12 The mapping phase	41
Figure 13 The context and case aspects in correlation to the mapping phase.....	42
Figure 14 The analysis units in correlation to the mapping phase	42
Figure 15 The analyzing phase.....	46
Figure 16 The conclusion phase	47
Figure 17 The complete Demola ES innovation intermediary project process	50
Figure 18 Events before the Demola ES project process starts.....	51
Figure 19 Events during the Demola ES project process.....	53
Figure 20 The continuous events taking place during the project process.....	55
Figure 21 Events after the project process of Demola ES.....	56

1. INTRODUCTION

This chapter is the main introduction to this study. It provides information on the background to it, and what the problem statement and purpose for it is. The research questions are also defined, followed by a description of the delimitations of the study. In the final section of the chapter, the disposition of the report is presented.

1.1 Background

Innovation is a vital factor for every company, of any size in any industry to advance and grow. It is even claimed that companies that do not innovate die. However, it is also a process that is difficult to manage. In fact, most innovations fail. (Chesbrough, 2003) Innovation is a risky business, and even organizations well-endowed with resources cannot take unlimited risks. (Gustafsson & Johnson, 2003) This has created a new type of organizations; the intermediaries of open innovation¹. (Chesbrough, 2006) An innovation intermediary uses open innovation platforms to bridge the gap between organizers that seek solutions to an innovation problem², and innovators that can provide a solution to an organizer's problem³. (Hallerstede, 2013) The concept is about helping innovators to use external ideas more effectively, or help them find markets where their ideas can be used through a mutual beneficial interchange with others. These intermediaries enable exploration of other markets without having to take the greater risks. (Chesbrough, 2006) An innovation intermediary also not only connects the innovation seekers and solvers, they often operate on a wider level as well. In the interchange between seeker and solver, the intermediary can provide functions like handling of contracts and negotiations, project gate keeping, handling and protection of intellectual properties, integrate additional collaborative partners, and provide test chambers and laboratories. (Howells, 2006) They can also assist the seeker to properly define the problem, allowing the potential solver to get a clear idea and comprehension on what is required for successful results. Still, the concept of innovation intermediation is fairly new as a spoken business concept. There are not that many studies conducted yet on the challenges and risks that these organizations face in the aspect of success and failure. (Hossain, 2012)

Innovation intermediation can basically be considered a service offering. It falls under the wide description of a service being a process where someone, like an organization, does something to valuably assist someone else, like a customer, in their everyday practices. (Grönroos, 2008) Howells (2006) claim that the service of innovation intermediation is not so much about delivering a one-off service exchange. It is more about working in a more long-term relational innovation capability for providing added value. This is achieved by working in a close collaboration with the innovation seekers and solvers. This is to get to get know them better, and evolve the service offering by identifying what adds value to it. The values that need to be focused on depend on what the overall strategy of the organization is, referring to what business it wants to be in and how it wants to compete. (Gustafsson & Johnson, 2003)

This study has focused on one case of a particular innovation intermediary in question; Demola East Sweden⁴.

¹ Hereon referred to innovation intermediaries

² Hereon referred to innovation seekers, or just seekers

³ Hereon referred to innovation solvers, or just solvers

⁴ Hereon referred to as Demola ES

1.1.1 Demola East Sweden

Demola ES is an innovation intermediary organization operating in Norrköping and Linköping, Sweden. It is operated as a part of the municipality owned Norrköping Science Park and Mjärdevi Science Park, as an initiative to promote collaborations between the university and the regional industry.⁵

Demola ES connect innovation seekers like companies as well as private persons, to solvers in the shape of students at Linköping University⁶. The seekers, or the idea owners as Demola ES call them, submit a project idea with a problem or an innovation task that they want solved or explored. Demola ES then put together groups of student solvers, mixed from different programs and faculties, to solve this task in project groups over the course of a semester. During the semester, the solvers also gain course credits from the university by participating in seminars and course activities parallel to the project work. At the end of the semester the solvers present their results. The seekers can choose to buy it or allow the solvers to keep the results as their own. The seekers still own the initial project idea, but the solvers own the results produced.⁷ These correlations are shown in Figure 1.

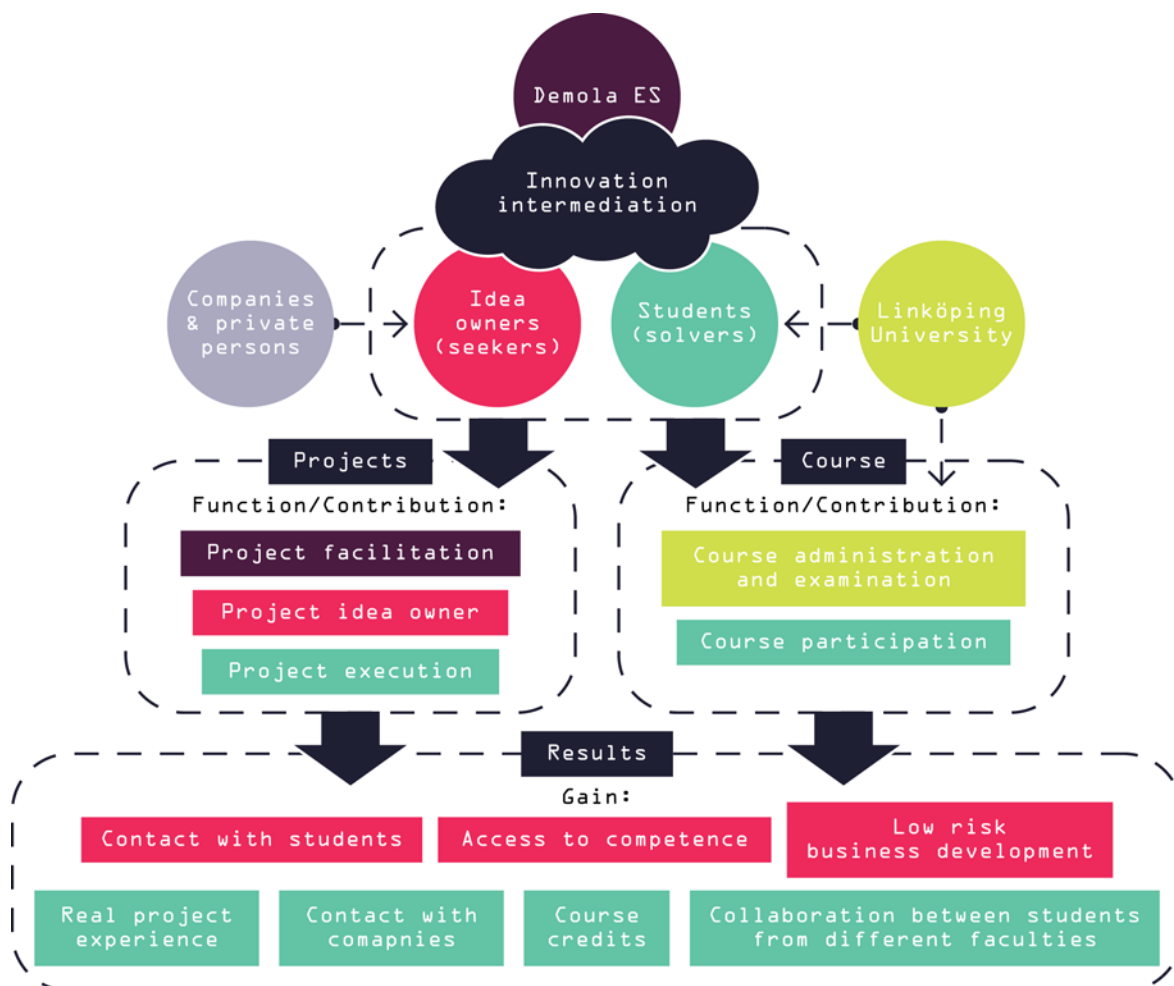


Figure 1 The Demola ES innovation intermediary process, and the parties involved in it

⁵ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

⁶ Hereon referred to as the university

⁷ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

Figure 1 show the correlations between the parties involved in the main innovation intermediary process of Demola ES, what it includes, and what the users gain from it. Demola ES is on top as the over viewing coordinator between seekers and solvers, and the initiator of the intermediation process. This is conducted in the two parallel tracks of the actual project work where the seeker problem is solved, and the university provided course where the solvers gain course credits.

The seekers

The seekers basically come in all shapes and sizes, with anything from large multinational organizations, to smaller local one-man operations, or even as private persons. What they all have in common is often an interest in one or more of these three reasons for participation:⁸

- To gain contact with students at the university
- Opportunities for low risk business development
- Access to competence

Companies often look for ways to get in touch with students, basically in the aspect of getting in contact with potential future employees or degree project workers. Through Demola ES this contact can be made in a very practical manner, where both the solvers and the seekers get to show one another what they can contribute with. The solvers also can provide competence as an effect of their education. This is because the solvers who partake are required to have reached their final third year if they are studying on a bachelor level, or at least their fourth year on a master level. This also connects to the third aspect, where the solvers help the seekers to low risk business development. The low risk factor is mainly due to the seekers not having to put in any financial investment, or any other particular resources to their participation. Through the project process, the only thing the seekers potentially have to provide is e.g. expert support on project specific issues, useful contacts for the project group, or lab facilities and testing equipment. Neither is a must requirement, and the extent of seeker involvement is completely voluntary. As a matter of fact, Demola ES encourages the solvers to not involve the seeker much in the project process. This is to enhance the possibilities of true innovation. Also, since the seekers are not required to buy the results in the end, or to commit in any other way, it is important to assure that the projects are useful and valuable to the solvers in other ways than the financial aspect. They put in a lot of time and effort to it, and the attained value from the interchange therefore must come from another source than financial payment. Basically put, the value for the solvers instead needs to come from the project work and the experience of it.⁹

The solvers

The solvers are students from different programs, faculties, and years of grade. They work together in project groups to solve or explore the problem provided by the seeker. The reasons why the solvers choose to partake are mainly the aspects of:¹⁰

- Gaining real project experience
- Attaining contact with companies
- Gaining course credits
- Opportunity to collaborate and attain interchange with students from other programs

⁸ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

⁹ Ibid

¹⁰ Ibid

The project ideas provided by the seekers are actual real projects, with actual real problems. This means that the solvers get the opportunity to basically test run and practice their knowledge from their education. This gives them a beneficial career head start with experience to put in their resumes, as well as actual gained new knowledge. The project participation is also a good way to meet with companies as potential future employers or providers of degree project work. Parallel to the Demola ES project process, the solvers also gain course credits by participating in course activities provided by the university. This allows the solvers to work on their projects without it interfering outside to the regular study load. The project groups only consists of students, and since Demola ES strive for mixing team members from different programs and faculties, the students also get an opportunity to collaborate with students outside of their own programs. This is not a very common practice at the university, and it provides a potential exchange of new knowledge and insight into how students from other programs think and solve problems. It becomes an experience closer to how real projects are conducted, than most projects at the university can provide.¹¹

The project process

The project rounds are conducted twice a year, each during the course of a semester. Before each round starts, the seekers submit different project ideas. The solvers apply for the projects they are interested to participate in, and Demola ES then put them together in project groups. The projects start with a kick-off event, where the seekers and solvers meet and have initial exchanges of information to start the projects. Throughout the project process, the project groups work independently in a great extent. The solvers basically by themselves decide what approach they want the projects to take and what they want them to result in. The seekers do not have much say in this, and are basically only informed on the progress along the way. The project groups are instead supported and guided by the project facilitators provided by Demola ES¹². Every project group has one project facilitator specifically assigned to them. The project facilitators do not take any direct part in the detailed developmental project work. They more help with making sure the project groups work as teams, and help them to move forward in the project process. The project groups are also provided work spaces at the Demola ES facilities in Norrköping and Linköping, allowing them to attain continuous contact and support from their project facilitators. Continuously through the project work, both Demola ES and the university provide the solvers with mandatory events of e.g. pitch training, project feedback, and ethics seminars. The results of the projects are presented in the end of each semester. It is then decided whether the seeker is interested in buying the results or not. If the seeker buys it they are free to implement it or continue develop it as their own. If they choose not to, then the results stay with the solvers to do what they want with. This is, of course, without interfering with the initial idea, which the seeker still owns.¹³

Innovation intermediation is a platform with an infrastructure and rules that facilitate a transaction between two sides of a market. (Lopez-Vega & Vanhaverbeke, 2009) In the case of Demola ES this refers to the created interchange between seekers and solvers. The transaction between them is the innovation and development processes initiated by the project ideas, which through the project work results in concepts, prototypes, or finished products. In addition, Tidd & Bessant (2009) defines innovation as a process of a series of problem-solving stages, where anything initially is possible and hopefully leads to successful products or services to launch. This process is basically what the Demola ES service offering is all about, and is what needs to be examined when adding value to the user experience.

¹¹ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

¹² Hereon referred to as the project facilitators

¹³ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

1.2 Problem statement

Demola ES is based on a concept first created in 2008 in Tampere, Finland, as a collaboration between New Factory¹⁴, the Tampere University of Technology, and Nokia.¹⁵ This was the first Demola center, and it was started as an initiative to promote collaborations between university students and companies. The idea was to connect and mix students from different programs with companies through development projects. The project ideas would be initiated by the companies, and then executed by the students. (Bessonova, 2011) The concept is about creating interchange of value for all parties involved, as an effect of the collaboration itself. Since the start in 2008 the Demola concept has evolved into a whole network of Demola centers all over Europe. Today there are eight centers active, with several more under progress to start up within the next few years. All centers are operated and financed individually, usually by a science park or a similar type of organization. What they have in common is the Demola brand, and the concept of value interchange between students and companies through project collaboration. The Demola ES center in Norrköping was the first one to be established in Sweden. It started in 2012, with a first round of projects during the spring semester of 2013. Demola ES has since then quickly grown, both in aspect of employees and in extent of the innovation intermediary operations. The number of employees has gone from one to four, and two project rounds have already been completed, with a third one in progress. The number of projects, solvers, and types of programs has so far been:¹⁶

- First round, spring 2013: 3 projects, with 13 students, from 9 different programs
- Second round, fall 2013: 13 projects, with 50 students, from 5 different programs
- Third round, spring 2014: 9 projects, with 30 students, from 11 different programs

The first two rounds were basically test runs for sorting out kinks and to build the general structure of operations and the service offering. These were only conducted with students from the university campus in Norrköping. The third round in progress is the first one to be considered to include all factors of the complete Demola ES service offering. It is also the first time that students from the campus in Linköping participate. Still, Demola ES has plenty more ambitions and ideas for expanding the operations even further. However, not so much opportunity has yet been taken for reflection on the success so far. This has led to an interest in a more thorough examination of the current service offering, and a deeper understanding of what factors adds value to the users.¹⁷ As mentioned, innovation intermediation is not only about providing an immediate one-off service exchange, but to sustain a long term relational innovation capability. By extended collaborations with the customers¹⁸, the intermediary gets to know them better and can evolve the service offering, enhancing the added value (Howells, 2006). To achieve this Grönroos & Voima (2013) promote awareness of the customer experienced value of the service, including the potential value before it has been used, as well as the value after. However, the perhaps most important part of it all is while the service is being exchanged, when the provider still can affect its comprehended value to the customer.

In the aspect of this study, this means that in order of attaining insight and understanding of the user experience of the Demola ES service offering, the overall project process need to be examined, from perspectives of both seekers and solvers.

¹⁴ An innovation and business incubation center in Tampere

¹⁵ Demola East Sweden; all employees. 2014. Personal communication January 26-February 19.

¹⁶ Ibid

¹⁷ Ibid

¹⁸ In this case the customers refers to the users of Demola ESs service offerings; the seekers and the solvers

1.3 Purpose

The main purpose is to examine the experience of the users; the innovation seekers and solvers, in the aspect of what added values there are in the Demola ES innovation intermediary project process, and what could be further improved to the user experience.

1.4 Research questions

In order of answering the purpose, the study was examined in three aspects:

- What does the overall Demola ES innovation intermediary project process include in the experience of the seekers and solvers?
- What expectations for added value do the seekers and solvers have on participation?
- What added values do the seekers and the solvers actually experience, and what can Demola ES do to improve it even more?

1.5 Delimitations

This section describes the delimitations of the study.

1.5.1 The stakeholders of the Demola East Sweden

There are several stakeholders behind the operations of Demola ES, e.g. the municipality of Norrköping financially steers and owns Demola ES, the main Demola center in Tampere, Finland, directs the franchised concept behind Demola ES, and steering committees with representatives from the university, the municipalities of Linköping and Norrköping, and the regional industry provide structural input to the Demola ES operations. All these influence the Demola ES, but this study only includes the parties directly involved in the user experience:

- The project facilitators
- The innovation seekers
- The innovation solvers
- The examiner of the course provided by the university (though, only in informational purpose to fully understand the solver experience)

1.5.2 The course events provided by Linköping University

The university provides the solvers with mandatory course events parallel to their project work with Demola ES. This enables the solvers to gain course credits as result of their project participation. This study was conducted in the aspect innovation intermediation, which meant that the course events were only considered as a part of the Demola ES service offering, rather than events academically regulated by the university.

1.5.3 Contracts on intellectual property and other legal issues

As part of each Demola ES project there are contracts written and signed between all seekers and solvers. These cover issues on e.g. intellectual property, confidentiality, and other possible legal aspects needed to be considered. These contracts were not considered as factors of relevance of the study, and only regarded as static events to the general user experience. This since the focus of the study mainly was on the user experience from innovation and product development points of view, rather than legal perspectives.

1.6 Disposition

This section describes the disposition of the report, i.e. the general structure of it.

Introduction

This chapter is the main introduction to the study. It covers the defined background, problem statement, purpose, and research questions. This is followed by the delimitations of the study, and finally a description of the report disposition.

Innovation intermediaries: what it is and what they do

This chapter is mainly to provide the reader with contextual information on what innovation intermediation is. It also contains examples of three practicing innovation intermediary organizations.

Frame of reference

In the frame of reference chapter the theoretical frameworks behind the study is covered. It is divided into three main sections of content: *the service of innovation intermediation*, *the structures behind innovation management*, and *the practical implementation of innovation*.

Analysis model

This chapter covers the analysis model used in the study. It describes the three analysis units and the specified research questions that were defined for the analysis. The analysis units are the same as the main sections in the frame of reference chapter: *the service of innovation intermediation*, *the structures behind innovation management*, and *the practical implementation of innovation*. The specified research questions also follow these categories, but was been broken down into questions, connecting the theory to the purpose of the study.

Research methodology

The chapter of research methodology covers the research approach of the study, and the general conduct that was used for it. This includes what methods were used, and how they were applied.

Results

The results chapter describes and compiles the data collected in the study. It first of all covers the general project process of Demola ES, and then the results from the four project cases that were examined.

Analysis

The analysis chapter uses the theory of the frame of reference chapter and the results of the study, to answer the specified research questions defined in the analysis model.

Conclusions and discussion

The conclusions of the study are described in this chapter, answering the research questions. A discussion is also provided on remaining relevant issues that the analysis did not cover.

Recommendations and future work

This chapter covers recommendations and future works could be useful for further studies.

2. INNOVATION INTERMEDIARIES: WHAT IT IS, AND WHAT THEY DO

This chapter mainly serves as informational context for the reader of the study. It briefly describes the origin of innovation intermediaries, and mentions three existing examples of organizations that have adapted the innovation intermediary business model.

2.1 The history and meaning of innovation intermediaries

Around the 2000s the industry of innovation intermediaries started to emerge as a more generally spoken and defined organization business model. Often it had begun as a spin-off from the operations of a larger organization, as the solution of a need for e.g. external expertise or additional resources. As the innovation intermediary business model has expanded in practice, so has the market it serves for, and now it basically tend to organizations of any category, i.e. large, small, government and non-government originations, and so on. (Hossain, 2012)

The innovation intermediary concept otherwise derives from the theories on open innovation, and the challenges an organization tackles when approaching open innovation business strategies. (Chesbrough, 2006) In order to advance technologically, an open innovation model encourages organizations to use external as well as internal ideas and pathways to market. Technology is not only referring to solutions in the high-technological industry, but all cases where organizations convert input into goods and services, and offers them to a market. (Chesbrough, 2003) However, for an organization this action is not always as easily said and done. The open innovation approach first of all requires the organization to implement this new strategy into their current business model. Then, they also need to actually use it successfully. Obstacles to achieve this can e.g. be due to lack of resources, knowhow, or even motivation to sustain the effort of change. This is where the innovation intermediaries come in. As an external party they help these organizations to manage and fully enjoy the benefits the open innovation approach, without them having to implement the structural groundwork of it themselves.(Chesbrough, 2006) The construct of an open innovation intermediary is defined as an organization that uses open innovation platforms to bridge the gap between organizers that seek solutions to an innovation problem, and innovators that can provide a solution to an organizer's problem. (Hallerstede, 2013)

2.2 Three examples of actual innovation intermediaries

The adoptions of the innovation intermediary business model are very diverse are operated in several constructs. To promote a better understanding and context of it, three different examples on actual innovation intermediaries are mentioned in the following of this section. The examples are described in what context the organizations were created, what services they provide, how they attain and connect their clients, and how the operating innovation process is executed in general.

2.2.1 InnoCentive

InnoCentive started in 2001 as a spin-off company of from the R&D¹⁹ department of Eli Lilly, a drug making organization responsible for the development of i.e. Prozac. InnoCentive was intended as a way for Eli Lilly to elicit external solutions of new product innovation. This was considered a good solution because, even if the R&D department had a lot of potential ideas, often it seemed difficult to find enough resources to explore them. By using InnoCentive the innovative ideas finally got the required attention and resources to be explored and developed, but in a more time effective and low cost way. Eventually InnoCentive turned into its own standalone company, completely independent from Eli Lilly. This was an initiative to attract more external problem solvers to cooperate with, and by extension, also further expand the knowledge and competence pool. To do this InnoCentive needed to increase the number of interesting problems to solve, since this would probably be a way to attract and gain more problem solvers to cooperate with. The challenge of finding new organizations willing to share their problems mainly included two aspects. First of all, the organizations providing the problem needed to be assured there was no risk of vital or sensitive proprietary information being leaked, potentially ending up in the hands of competitors. Second, there was an important issue of defining when the external solution ended, and the internal use of the solution could begin. These aspects were solved by a balanced legal agreement, where the innovation seeker would agree to authorize InnoCentive to seek solutions only to certain specified challenges. The definition of what would constitute as a payment worthy solution, would also be hashed out before hand. InnoCentive would then act as an agent between the problem providing organization and the external problem solvers. (Chesbrough, 2006)

InnoCentive connect the seekers and the solvers through its website. The problem of the seekers is vetted and formulated by InnoCentive and then posted anonymously on the website for anyone to read. Any potential solver can offer a solution, it is not a first come first serve installment or a hiring process involved. If a solver wants to provide a solution they must provide InnoCentive with their contact information for potential awarding payment. Then, sign a legal solver agreement affirming themselves as rightful owners of the solution, and agreeing on confidentiality of any information shared by the seeker. When these contracts are signed, the solver gains full access to more detailed information of the problem. This information is often of sensitive of nature, e.g. detailed information on already attempted solutions. There is no direct contact between the seekers and the solvers, only through InnoCentive. This is in order to avoid inadvertent exposure of the seeker's sensitive propriety information. When a solution is ready to present, it is first reviewed and refined together with InnoCentive. When it meets the set up criteria, it is screened along other the eventual solutions submitted by other solver's, and InnoCentive chooses the best submission. InnoCentive then handles all monetary exchange between the seeker and the chosen solver. In order to attain the range of competence and knowledge among its solvers, InnoCentive work with a big variety of solvers with different kind of work experiences and in different stages in life. These include contract laboratories, retirees, students, university faculty, small pharmaceutical firms, biotech firms, organizations in the industry sector, organizations of certain scientific disciplines, and research institutes. The variation also reaches over six or seven continents and more than forty countries. (Chesbrough, 2006)

¹⁹ Department of Research & Development

2.2.2 NineSigma

NineSigma was created in 2000 as an initiative to fulfill a need in the general industry of an effective way to broadcast corporate needs to potential solution providers, providing a way to stay ahead of the technology curve. (NineSigma, 2014) The service NineSigma provide is based on a request process, connecting seekers and solvers through an extensive database of e-mail lists. NineSigma works with their clients by sending out targeted e-mail requests to subsets of the database. In contrast to InnoCentive, NineSigma publically submit the identity of the seeker when they solicit a problem in the database. (Chesbrough, 2006) When an organization with a problem contacts NineSigma, the first step is to articulate and define the need around the problem. They work together on this in order to create a well-defined document of request-for-proposal. The purpose is to find a way to make the problem relevant for innovators in other industries and technical areas. This document is sent out globally to specific targets within the database, where the targets are chosen through research by NineSigma. The inquiries and responses are all handled by NineSigma, who also assist with ranking and evaluating the proposals, and provide coaching through the solution acquisition. (NineSigma, 2014)

NineSigma has a successful approach on refining its contact network through the extensive database they attain. The database is an ever growing source of potential solvers to connect seekers with. This since each new seeker also can be added as a contact for possible further future co-operations as a solver. Since the database is also used as a platform for handling solution inquiries and responses, it is a good way of keeping attention on what factors seem to attract most interest from the solvers. This help keeping the targeting process highly effective on pinpointing the most relevant potential problem solvers, and in extension a greater probability of more qualified solutions. (Chesbrough, 2006) NineSigma operate providing their services in the public, private, as well as the not-for-profit sectors. (NineSigma, 2014)

2.2.3 The Big Idea Group

The Big Idea Group, or BIG, was founded in 2000 by Michael Collins, a former toy industry inventor. BIG was initially based on the recognized need for helping toy inventors having a hard time breaking into the industry. Today BIG also tend to the home-and-garden equipment sector. In these sectors Collins noticed the low scale of economies in invention, where the product development prototyping did not really seem to make much favorable difference between spending \$20 million or \$2,000. This meant there was an immense potential of opportunities for even individual inventors and small companies, to contribute with great inventions. However, the larger companies and retailers of these sectors seemed to typically disdain the contribution of the individual inventors and small companies, making it very hard for them to reach the market. For instance, the toy retailer Toys “R” Us often receive submissions made by private persons and small companies, but since Toys “R” Us do not have a defined process of handling these kinds of contributions they have to turn them down. This is what Collins began working around. In this case of Toys “R” Us, he negotiated a relationship with them letting BIG come in and scoops up the smaller inventors instead. (Chesbrough, 2006)

There are a number of ways in which BIG connects inventors with prospective buyers. For instance BIG organizes an event called Idea Hunts, where inventors are invited to demonstrate their inventions for a panel of judges assembled by BIG. They also solicit ideas from inventors through their website. Through these instruments, BIG receives hundreds of ideas every month. The ideas are, however, of varying condition and are often far away from being ready for market. BIG screen all submitted ideas, and those considered of potential merit attain help on being polished and developed further. This service often includes help on competitive research, repositioning the product, design and engineering enhancement, and even finding spare part vendors of lower costs. BIG also provide the inventors with a stronger protection for their ideas by generating trademarks, copyrights, and other protections necessary. They work with the inventors in an open and transparent approach, on up-front advances and ongoing royalties. This is to decrease the risks of surprises and “creative accounting”. All this adds value to the services BIG provide the inventors, which becomes very important to remember since the inventors only end up with a 40-50% of the value from their invention. The model that BIG applies has the potential to work in a number of industries. This is especially in areas like the toy and home-and-garden industries, where economies of invention do not affect the quality of the results in a significant way. The importance for BIG would be to build close relations with some of the key actors in that certain industry, and making sure to provide leverage of creativity from the external inventors. (Chesbrough, 2006)

3. FRAME OF REFERENCE

This chapter covers the frame of references used for this study. It is divided into three main category sections: the service of innovation intermediation, the structures behind innovation management, and the practical implementation of innovation. These three sections describe the theory used to analyze the collected data of the study, and they represent the same main areas that the analysis was structured around.

3.1 The service of innovation intermediation

This section describes different aspects of values and challenges to the innovation intermediary operations. A key aspect is the values that the users of the intermediary service offering is experiencing and expect. This connects with how to create added value through collaboration between the service provider and the users.

3.1.1 Values to innovation intermediation

There are a number of advantages to gain from using an innovation intermediary. An example could be the explorative aspect. By using an innovation intermediary the area of opportunities for finding new market approaches expands. The innovation solver likely uses a completely different spectrum of places to look for solutions and ideas, adding value to the created solution as it becomes innovation to the initial problem. Benefits can also be derived from a competitive point of view. The solver might already have a potential solution on hand, or at least a solution advanced quite far along in a development process. This could lead to a surprisingly short time to reach market, and thereby gain lead ahead of the competitors. (Chesbrough, 2006)

Innovation intermediation is a platform with an infrastructure and rules that facilitate a transaction between two sides of a market. Value for the innovation seekers is basically provided through help with search for solutions, handling intellectual property issues, reducing the expenses that come with resource exhausting research processes, especially in areas where the supply side is highly scattered. Value for the innovation solvers mainly comes from the window of opportunity to commercialize their innovations, solutions, or technologies in a successful way. Most important is, however, the aspect of the two-sided interchange, where the seekers and the solvers affect each other's success. If value is added to one side, it also fosters growth and value to the other. This effect is crucial for a successful innovation intermediation. Another advantage is the overlapping capabilities that the innovation intermediary has, especially if they operate with seekers and solvers in various market areas. The intermediary under this circumstance, have greater foundation to match seekers and solvers, beyond the traditional and expected forms. (Lopez-Vega & Vanhaverbeke, 2009)

3.1.2 Challenges to innovation intermediation

An important aspect when managing innovation projects is the difficulty that professional experts, including managers, can have on accurately and completely comprehend the real situation of their organization. First of all the external environment of the organization tends to be both complex, involving competitors, regulators and so on, and fast-changing with technical, social, and political change. This means that the present situation can be difficult to understand and judge, let alone to predict the future. Second, the view of the strengths and weaknesses of an organization is rarely completely conformed between the managers, mainly because their knowledge on what actually goes on inside is imperfect. (Tidd & Bessant, 2009)

Chesbrough (2006) identifies five challenges that an innovation intermediary face: *definition of problem*, *problem of identity*, *demonstration of value*, *access to a two-sided market*, and *establishing a positive reputation*. These issues are described in the following of this section.

Definition of problem

In order to successfully help the client,²⁰ the problem on hand needs to be properly defined. The intermediary brings in outsiders²¹ to solve the problem of the client, which means that the information revealed to the outsiders depend on a crucial play of balance. On one hand the definition of the problem needs to be extensively clear enough, allowing the outsiders to judge if they have enough knowledge and competence to solve the problem. At the same time, the intermediary needs to be careful not to reveal too much sensitive information about the client. (Chesbrough, 2006)

Problem of identity

In some cases the involved parties might not want to reveal identities to one another. It could be either the client to the outsiders, the outsider to the client, or outsider to outsider. The issue facing the intermediary is how to manage this, on whether when and why to potentially disclose the identities of the parties involved. Even for instance if a client prefer to be anonymous throughout the process, the outsiders being brought in might be unwilling to complete the transaction without knowing who it is for. (Chesbrough, 2006)

Demonstration of value

The problem solving process of the innovation intermediation is necessary in order to create value of the resulting ideas or technologies. This process is done by outsiders, beyond the control of the intermediary. Still, since the innovation intermediary operation is also a service offering, there need to be way of measuring the value coming out of it all. (Chesbrough, 2006)

Access to a two-sided market

The concept of open innovation is defined by retrieving ideas and solutions both externally and internally of the organization. A two-sided market flow you can call it. In the role of an innovation intermediary, the question is on how to access or create these two-sided markets. Since the intermediation is all about connecting parties on certain markets, the process of it depends much on the market state. A thick market with many sellers and buyers functions very well, and easily provide great opportunities of interconnection for an intermediary. However, if a market is highly illiquid, with few buyers and sellers, the intermediation operation is more challenging. (Chesbrough, 2006)

Establishing a positive reputation

Not to confuse with the third issue mentioned; assuring and demonstrate value, there is also another relatable factor to consider. This is referring to the importance of early on establishing a strong and positive reputation as an innovation intermediary. This might be particularly challenging since the concept of sorts is a novelty in itself, and still lack common knowledge as a possibility for innovation. Nonetheless, in order of reaching out to clients and outside parties to connect them with, it is crucial for the intermediary to clearly present what is offered. This offer needs to be grounded with the trust and the reputation necessary to assure confidence between all parties. (Chesbrough, 2006)

²⁰ Referring to the innovation seeker

²¹ Referring to the innovation solver

3.1.3 Understanding the user experience of a service process

Basically innovation intermediation can be considered as a service offering. Grönroos (2008) defines a service as a process where someone, like an organization, does something to valuably assist someone else, like a customer, in their everyday practices. In the aspect of innovation intermediation, Howells (2006) claim that the service is not so much about delivering a one-off service exchange, but working in a more long-term term relational innovation capability for providing added value. This is achieved by working in a close collaboration with the seekers and solvers to get to know them better, and through this evolve the service offering by identifying what adds value to it. The nature of this value, however, is not that easily defined (Grönroos & Voima, 2013). In order for a service providing organization to evolve and grow in their offering, Gustafsson & Johnson (2003) promotes the importance of a deeper understanding of what the customers go through in their interaction with the provider. Basically, the goal need to be to identify what problems the customers needs to solve, what they expect and value from the service, and why. By a service-based business logic this can be attained (Grönroos, 2008). This is mainly about continued assistance of the customers, even after the delivery of the service exchange. By doing this, the service provider attain a comprehensive view of the actual customer experience, and what potentially could provide greater value creation while the service is in use. (Grönroos, 2008) Though, it is also important to differ between what the customer say they value, and what value is actually created in the end. Value is created during the actual practice and use of the service, which means that understanding it becomes crucial. (Grönroos & Voima, 2013)

3.1.4 The user value of a service process

As mentioned, innovation intermediation is not only about providing an immediate one-off service exchange, but a long term relational innovation capability with the customers. This enables the intermediary to get to know the customers better, and through this allow the offering to evolve and add greater value to them. (Howells, 2006) In a service operation, the customer value can be considered depending on several factors. This can be categorized in three stages of the service process: *the stage where the service provider is creating and developing the service*, *the stage where the service is actually used by the customers*, and *the stage where the customers are done using the service*. These stages are all connected with the customer value and depend on each other. They are described as follows: (Grönroos, 2008)

- *Creation of the service:* In the first stage the service value is still only potential. The company providing the service is the value facilitator structuring the value foundation of the service. It is the creation of value-in-exchange. The success factor of it can only be determined when the service process is fully transacted.
- *Customer use of the service:* In the second stage the customers have the main influence on the service value; it is the creation of value-in-use. In this stage the value depends on what value foundation the customers themselves bring with them. If the customers do not have the needed skills to make full use of the service, or to acquire necessary additional resources, they will not be able to obtain much, or even any, value from it.

- *After the use of the service:* The third and final stage is after the customer is done using the service. This is where the actual value of the process is determined. This highly depend on the previous stages, especially in the aspect of if the customer had any use of the service. If they did not, then the exchange value does not exist, or might even be negative. This is since the customer then would have had put in resources like time and money, but for nothing in exchange. Otherwise, it is a measure of the effects of value-in-use accumulating over time.

All three stages are illustrated in Figure 2.

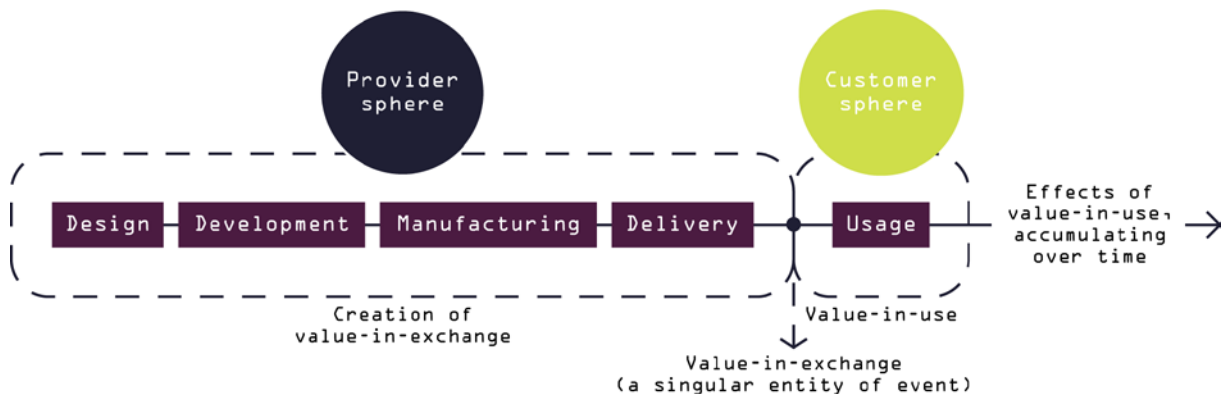


Figure 2 The three stages of a service process (Grönroos & Voima, 2013)

The three stages of a service process in Figure 2 are illustrated by a provider sphere and a customer sphere. In the provide sphere the value to exchange is produced through a generic development process by the provider. The service is then exchanged to the customer as a one-off action, transferring the service into the customer sphere, where the customer uses it. When the usage is done, the effects of the service continue to accumulate over time. (Grönroos & Voima, 2013)

In this complete process of stages of customer value, Grönroos & Voima (2013) also identifies three spheres of collaboration between the service provider and its customers. These include *the provider sphere* and *the customer sphere* mentioned earlier and shown in Figure 2, and in addition also *a joint sphere*. The provider sphere refers to the activities conducted by the provider before the service is exchanged, and the customer sphere to the activities of the customer after the exchange. In between them is a joint sphere where the provider and the customer directly interact. It is this interaction that is crucial for adding value to the service. As mentioned earlier in section 3.1.1, a continued collaboration between the service provider and the customer enables the provider to understand the customer experience, and to co-create added value with the customer during the usage of the service. (Grönroos, 2008) This is shown in Figure 3.

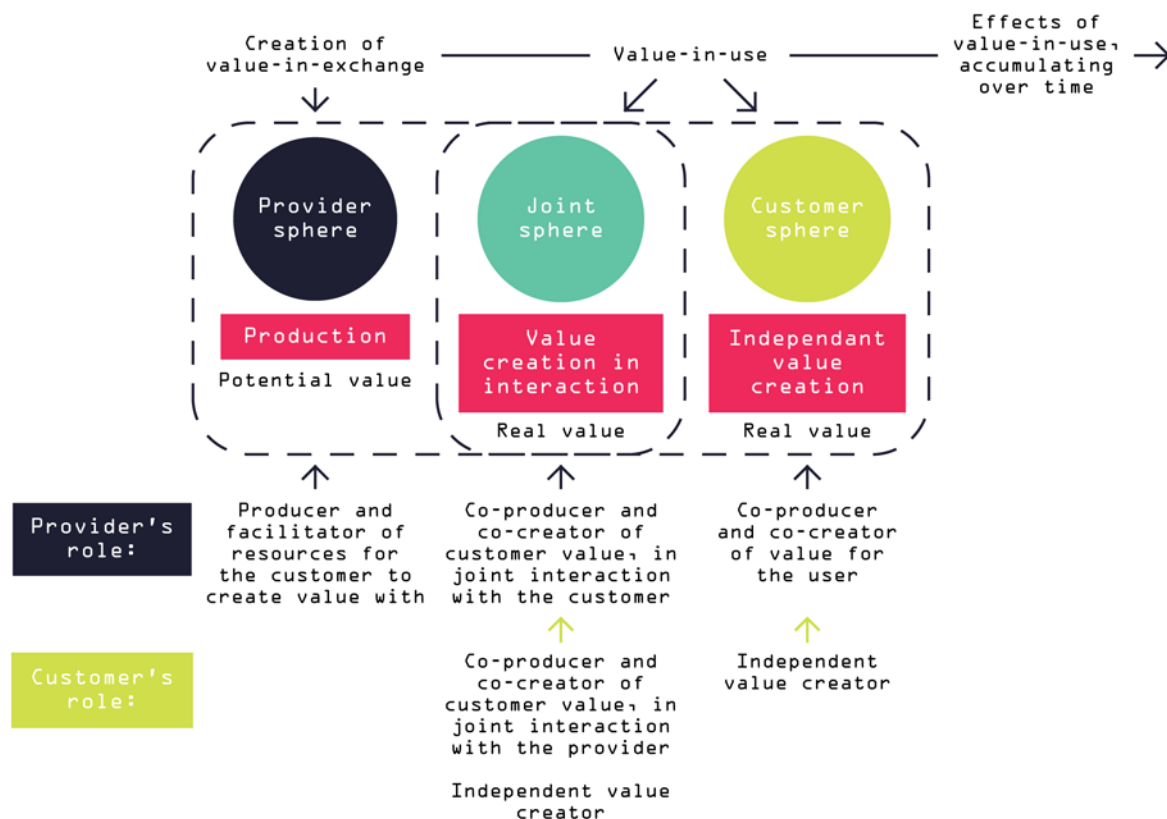


Figure 3 The spheres of collaboration between the service provider and the customer

Within these spheres the provider and the customer interacts direct or indirect, leading to different forms of value creation. The connection to the service process from Figure 2 is shown at the top of Figure 3. This show how the provider sphere correlate to the production of the service and the potential value, and the joint sphere and the customer sphere both correlate to the values from usage of the service. The customer usage of the service is alternating through the service process, both as a joint collaboration of value creation with the provider, and as an independent value creating action done by the customers themselves. Each part of the process contributes to the overall understanding and to what the customers in the end consider valuable from the experience. (Grönroos & Voima, 2013)

3.2 The structures behind innovation management

This section covers aspects of structure and managing context of product development and innovation. Focus is on describing what advantages and challenges that different structural and contextual approaches can provide in an innovation or product development process.

3.2.1 Advantages of a well-defined product development process

There are several ways of conducting a product development process and plenty of theories to presuppose them with. Each organization also basically employs their own process strategy, adapted to fit their specific means. Often the processes even adapt from project to project. (Ulrich & Eppinger, 2008) A common factor among them, however, is to keep a certain predefined structure throughout the process, with decision points and rules on go/no go decisions. (Tidd & Bessant, 2009) This is also suggested by Ulrich & Eppinger (2008), and pointed out as advantages of a well-defined development process:

- *Quality assurance:* By specifying phases for the process and wisely choosing checkpoints between them, the quality of the resulting product can continuously be assured as the process proceeds through the phases and checkpoints
- *Coordination:* Keeping a clearly articulated development process plan, defined with team roles of contributions, the members can keep informed on when their contributions are needed, and with whom they need to exchange information with in the different phases. A process plan should include a detailed development schedule, a strategy to minimize development time, and recognition of what resources are needed for the project.
- *Planning:* Predetermined timing of milestones in the development process is a way to anchor the schedule of the overall development project, increasing the odds to deliver on time
- *Management:* By comparing the planned development process with the actual conduct of it, possible problem areas in effort and performance of the process execution can be identified and resolved
- *Improvement:* By documenting the events of the development process opportunities for future improvement of it can be identified

3.2.2 Risk aspects of failure in product development processes

Both Ulrich & Eppinger (2008) and Cooper (2008) argue for practicing structure for development projects. In projects that tend to fail, Cooper (2008) identifies a few issues that are often directly caused by poor structure:

- Missing steps and activities during the process
- Poor organizational design and leadership
- Inadequate quality of execution
- Unreliable data
- Missed timelines

Also, in teams where there are members of lesser experience on design related product development processes, structure is much useful as well. A clearly predefined project process eases the understanding of the project process for all members and encourages commitment. The risk otherwise is that the more experienced members take greater assertive roles on deciding direction, while the lesser experienced tend to lack confidence for attempting to add valuable contributions. (Ulrich & Eppinger, 2008)

Another risk aspect is the environment and context for a product development process, which is not always conducive to success for a product development project team. Ulrich & Eppinger (2008) identifies four environmental characteristics that in some extent always are present in development projects, and that potentially lead to a dysfunctional development team:

- *Lack of empowerment of the team:* This refer to when managers of the project continually engage with intervention on details in the development project, without having a full understanding of the background to the team's decisions behind it

- *Functional allegiances transcending project goals:* Each project team consists of representatives of different competencies²². Dysfunction occurs if these representatives allow political biases for themselves or their function, influence decisions without regard for the final overall success of the product.
- *Inadequate resources:* Lack of staff, money, and equipment, or mismatch of skills might lead to inability for the team to complete certain developmental tasks effectively
- *Lack of cross-functional representation on the project team:* Dysfunction occur when key developmental decisions are made without representatives from all critical functions and competences of the team

3.2.3 The investment and effort of managing innovation

Tidd & Bessant (2009) mentions an example where Booz Allen Hamilton, an international management consultant, has conducted a survey of the spending on and performance of innovation in the world's 1,000 largest firms. It was found in the survey of 2008 that the spending on innovation was of significant difference between different sectors and regions. For instance, the software and the healthcare industries seem to be the sectors where the most intensity and effort are put on R&D, followed by the electronics industry, while in the more mature sectors the average R&D investments are nearly insignificant. However, Tidd & Bessant (2009) point out that studies on innovation and performance often show on no correlation between the spending on R&D, growth, and financial market performance. The more important factor more seem to be how R&D is managed and translated into successful new processes, products, and services. Those organizations appearing to have a more consistent leverage on their R&D spending are those who have a strong alignment between innovation and corporate strategies. They also pay close attention on customer and market needs. In general there is no single optimum strategy for innovation, but there can be a best strategy for any given organization. These studies often argue on three distinct clusters of good practices to keep in mind regarding innovation strategy: (Tidd & Bessant, 2009)

- *Technology drivers:* Using strong project and risk management capabilities to match unmet needs while scouting and developing new technologies
- *Need seekers:* Using strong design and product development capabilities by identifying emerging costumer needs, with aim to be first on market
- *Market readers:* Aiming on being fast followers with strong process innovation, by conducting detailed competitor analysis

The conclusion is that the key to innovation is not about how much money is being spent. It is directly connected with the effort put in to align innovation with strategy and the customers, as well as the entire process. (Tidd & Bessant, 2009)

3.2.4 Complexity and the innovation process

When explaining innovation Clegg, Kornberger, & Pitsis (2007) argue that rational planning and responsibility is not much of a relevant factor. Instead it is the innovation politics and the necessary balance of freedom and responsibility that is the key to autonomous and disciplined creativity. There is not a generic optimum innovation strategy to use in general. On an individual level, however, there is one for any given company (Tidd & Bessant, 2009).

²² For instance from different departments in an organization, like marketing, design, or manufacturing

This is also concluded by Clegg, Kornberger, & Pitsis (2007), where they claim there is no best way to reach innovation; there are many ways to do it. Sometimes even the best ways are attained meanwhile the management is busy somewhere else, planning it. Innovation challenges the more traditional management practices and theories, especially from the planning and steering point of view. Instead, the innovation process is complex and chaotic, and hard to beforehand predict and describe. The management can only attain a limited ability to organize and prescribe the process of new results. With this in mind the innovation process can be approached from another perspective; through connecting complexity theory with innovation. Clegg, Kornberger, & Pitsis (2007) mention Pascale's (1999) four principles on this, as a frame to use for the innovation process:

- *Equilibrium is a precursor to death:* In order for an organization to keep stability it needs to constantly keep on moving. If it stagnate and stop moving forward it will lose balance. In the fast pace of the industry, having an unbalanced organization is a recipe for death. By aiming on innovative and creative breakthroughs, the stagnation is avoided. It also increases a necessary element of variation, where the ideas of the innovation process do not risk becoming outdated.
- *Complex adaptive systems exhibit the capacity of self-organization and emergent complexity:* The element of radical innovation is important in order to reach real change. The definition is that there truly has to be a closure of the past for innovation to be radical. For instance, when complex, unexpected, and unplanned events like catastrophes occur, an order of things emerges naturally, and not by being organized by an orchestrator steering from the top. A co-operational pattern is attained spontaneously where planning would be an unaccomplished and restricting approach. Instead, reliance needs to be put on improvisation and the self-organizing forces in order for the radical innovation to emerge.
- *Complex adaptive systems tend to move towards the edge of chaos when provoked by a complex task:* A complex system is consistent of several chaotic and uncertain processes, and in order of preserving the system, collaboration is required between these processes. The same thing goes for innovation, in which multiple stages of trial-and-error eventually evens out and lead to successful innovation. Initially there seem to be a chaotic mess of actions and results, that progressively start to appear as a pattern of order. The meaning of what is created is not known until the creation is done. Even the mistakes or elements of whimsical "craziness" along the way, are part of successful results of innovation. Most of all, it can also be meaningful in sort of gained knowledge and wisdom for future endeavors.
- *One cannot direct a living system, only disturb it:* Small affects can have big effects and vice versa, especially in a complex organizational environment. However, when it comes to innovational processes, they are also very hard to plan and calculate. This is simply because the innovation that will be conceived, and the effects of it, is impossible to anticipate. The only useful strategy is to make sure the system does not reach stagnant equilibrium, but keeps on moving, seeing new ideas as opportunities and not threats.

3.3 The practical implementation of innovation

This section covers the more hands-on conducts of product development and innovation processes, and four process model approaches are described. This is mainly in the aspect of similarities and differences between them, and recommendations for a successful process.

3.3.1 The generic product development process

All types of product development projects, regardless if they focus on creating fundamentally new products, derivatives of existing ones, or incremental improvements, they all need their own certain structure of a product development process. Still, there can be a few general common factors among them. The product development process can in general be described as a sequence of steps or actions, in which an organization strives on conceiving, designing, and commercializing a product. (Ulrich & Eppinger, 2008) In addition, Ulrich & Eppinger (2008) identifies these in a generic product development process, shown in Figure 4.

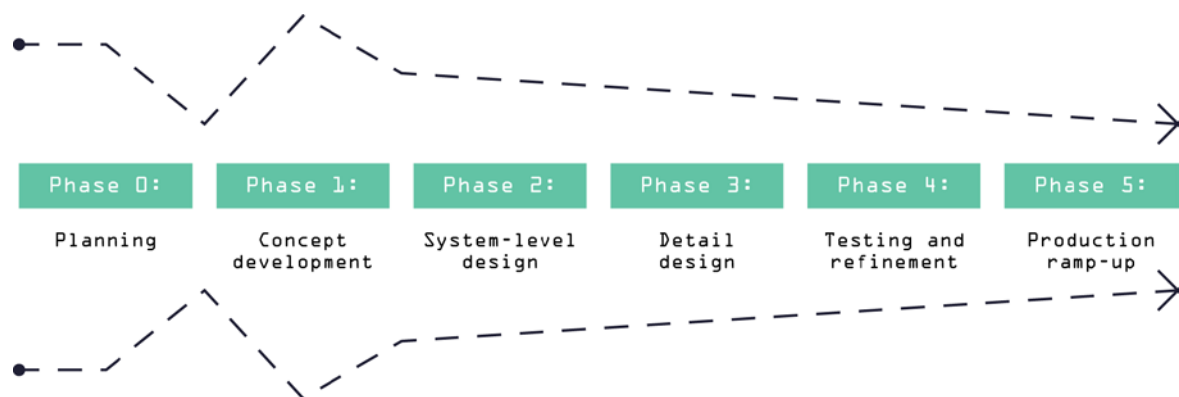


Figure 4 The generic product development process (Ulrich & Eppinger, 2008)

It consists of six phases: *planning*, *concept development*, *system-level design*, *detail design*, *testing and refinement*, and *production ramp-up*. The shape of the figure illustrate the focus span throughout the process, where the initial part is wide and open for numerous potential directions, and narrows down along the way. The process begins with planning, and through a series of development phases, aim on concluding in a product launch with a product available for purchase on the market. (Ulrich & Eppinger, 2008) The content and conduct of this generic process is described in the following of this section.

Phase 0: Planning

This initial phase precedes the actual development process, which is why it is numbered with a zero. It is conducted before the development process is formally approved to begin, before any considerable amount of resources have been put in, and before a main development team has been formed. The point of the planning phase is basically to maximize the efficiency of the projects, and to avoid inefficient factors like: (Ulrich & Eppinger, 2008)

- Inadequate coverage of target markets with competitive products
- Poor timing of market introductions of products
- Misjudging of the actual capacity of managing the number of projects started
- Poor distribution of resources for projects, like e.g. overstaffing versus understaffing
- Initiation, and consequential cancellation of poorly thought through projects
- Forced changes of direction during the projects

The output of the phase mainly consist of three factors: (Ulrich & Eppinger, 2008)

- Project definition in the broader business strategy. It is decided what product development projects will be undertaken, what mix of products and platforms will be included, how the projects relate to each other as a portfolio, and what the timing and sequence of the project will be.
- Selection of teams for the project
- A mission statement for the project team, guiding it through the development process. This defines what market segments should be considered in the product and feature design, what and if new technologies should be integrated in the product, what the manufacturing and service goals and constraints are, what the financial targets for the project are, and the budget and time frame for it.

These factors are considered the required input to begin the actual development process. (Ulrich & Eppinger, 2008)

Phase 1: Concept development

The planning phase is followed by a phase of concept development. This is the first phase of the actual development process. It includes three aspects: *the needs of the target market are identified, alternatives of product concepts are generated and evaluated, and finally one or a few of them are chosen to further develop and test.* A concept in itself is a description of form, functions, and features of a product, often mainly based on predetermined specifications of the product, analyses of competitive products, and economical justifications. (Ulrich & Eppinger, 2008) The identification of needs and the concept generation and selection, can be conducted in a number of ways.

Identification of needs

For the identification of needs a general recommendation is to first of all gather the raw customer need data. This is then needs to be sorted and hierarchically prioritize into a form translatable into concept development. (Ulrich & Eppinger, 2008)

Concept generation

The next step is concept generation. The input is the mission statement from the planning phase, the identified customer needs, and other identified product specified requirements. A structured strategy on concept generation is advised. This is to not overlook any potential possibilities from internal or external sources, or from other partially structured solutions. First the problem needs to be clarified, making sure the whole team is fully engaged with all parts of the problem and the information gathered so far. Then, there need to be an external search for already existing solutions that might be relevant to consider or to be inspired by. This external search is not only relevant for the concept development phase; it should be present throughout the whole development process. (Ulrich & Eppinger, 2008)

It is also useful to search internally, utilizing the knowledge that already exists within the team. When doing this it is important generate a lot of ideas, particularly keeping an open mind with suspended judgment, welcoming seemingly infeasible ideas. Initial ideas should be generated individually, since there both tend to be more and better ones than those created in a group. The group instead serves as a critical forum for reaching consensus, exchanging information, and refining the concepts. The internal search is all about finding out which assets are within the group. Far-fetched ideas seemingly impossible to realize, might turn out to be achievable as a group effort. It is also recommended to use graphic tools to show case ideas within the team, like sketches, foam, clay, or other tools providing physical attributes. Physical and geometric entities often are hard to describe by words or text. Physical evidence increases the ability to fully understand the ideas presented. Furthermore, at this point in the process there should be a wide span of ideas to demonstrate. (Ulrich & Eppinger, 2008)

Concept selection

Finally there is the concept selection. This is an iterative process on narrowing down one or a few more dominant final concepts to go further with. Each team has their own conditions to consider, and the methods for it can include anything from elaborate screening and scoring decision matrices, to intuitive choosing, pros and cons lists, or just by prototyping and testing the concepts. (Ulrich & Eppinger, 2008)

Phase 2: System-level design

The chosen concept leads to the system-level design. This is where the product architecture is defined along with the decomposition of the product subsystems and components. The physical elements of a product consist of separate chunks of building blocks. These are a collection of components that implement a certain function to the product. Together they are assembled as the complete product. The architecture of it is the schematics over what these chunks are, and how they correlate. The need for defining the architecture is connected with issues like: (Ulrich & Eppinger, 2008)

- *Product change:* The modular chunks of the product allows an overview of what kind of changes can be made on the product design and how they affect each other, including factors like upgrades, add-ons, adoptions, and replacement of consumed components
- *Product variety:* If a product has a clearly defined architecture, the chunks of components can more easily be varied when needed without adding complexity to the manufacturing
- *Component standardization:* By standardized chunks or components, they can be used in multiple products, allowing manufacturing in higher volumes and leading to lower costs and increased quality
- *Product performance:* By separately optimizing the chunks of the product, factors like minimized size and exact fit shapes, reducing material and manufacturing costs, can be attained
- *Manufacturability:* By minimizing the number of parts in a product, the costs will be kept down. It is more difficult to change the content or correlation of components the closer the product comes to being ready for production. This means that this issue needs to be relevant from early on in the process.

- *Product development management:* The responsibility for the detail design of certain chunks of a product is often held by individuals or smaller parts of the project team, or even by outside resources. This is mainly a practicality aspect, but it also means that each chunk of the product is developed in parallel lanes. To make sure the chunks fit together in the end and reaches set up requirements, there is a need for coordination and continuous exchange of updates between the chunk developers.

Phase 3: Detail design

This phase complete the system-level design by specifying the factors like geometry and materials, and deciding on which parts are going to be purchased from external suppliers. The output is the control documentation for the product, including drawings or digital files describing factors like geometries and specifications of the purchased parts. (Ulrich & Eppinger, 2008)

A usual approach in this phase is to use different “design for X” (DFX) methodologies. The X may represent a number of quality criteria like manufacturing, reliability, or environmental impact. The choice of X’s usually revolves around the most relevant issues, like costs, product quality, or attaining metrics to compare with alternate designs. Another aspect of this phase is to develop the robust design for the product, which refers to making sure it performs as intended. This is basically done by experiments and data analysis of the product design parameters that can be controlled. (Ulrich & Eppinger, 2008)

Phase 4: Testing and refinement

The testing and refinement phase revolves around constructing and evaluating preproduction versions of the product. Early prototypes are often constructed by parts with similar material properties and geometries that the intended final versions have. This is to test the product in the aspects of if the design will work and satisfy the customer needs. Later on, prototypes are also built with the actual intended parts of the final product. This is to test performance and reliability for identifying potentially needed engineering changes. In general prototyping is useful in several aspects: (Ulrich & Eppinger, 2008)

- *Learning:* A prototype can answer questions like “*Will it work?*” and “*How well does it meet customer needs?*”
- *Communication:* A prototype enriches communication with project involved parties, like management, vendors, partners, extended team members, and customers. By using visual, tactile, and three-dimensional modeling tools, the prototype provide a representation much easier to grasp than verbal or even sketched descriptions.
- *Integration:* The development of a product usually requires parallel work on different parts throughout the process, often in smaller subgroups within the team. A prototype help to make sure each part fit together as intended, and synchronizes the work between the subgroups.
- *Milestones:* A prototype demonstrates where in the development process the product is. It shows if the product has achieved the intended level of functionality. This is a quality check for deciding on whether the project is ready for the next step of the development process or not. It also reduces risk of costly and compelled iterations.

Phase 5: Production ramp-up

This is the final phase before the actual launch of the product. The production process of the product is tested through optimizing and eliminating problems of the process, gradually transitioning it into full production. (Ulrich & Eppinger, 2008)

3.3.2 The Stage-Gate approach

The generic development process presented by Ulrich & Eppinger (2008) is mainly a generalization of the product development process. It is to be considered only as a facilitating starting point, and there are a number of alternatives to it. For instance there is the Stage-Gate model presented by Cooper (2008), shown in example in Figure 5.

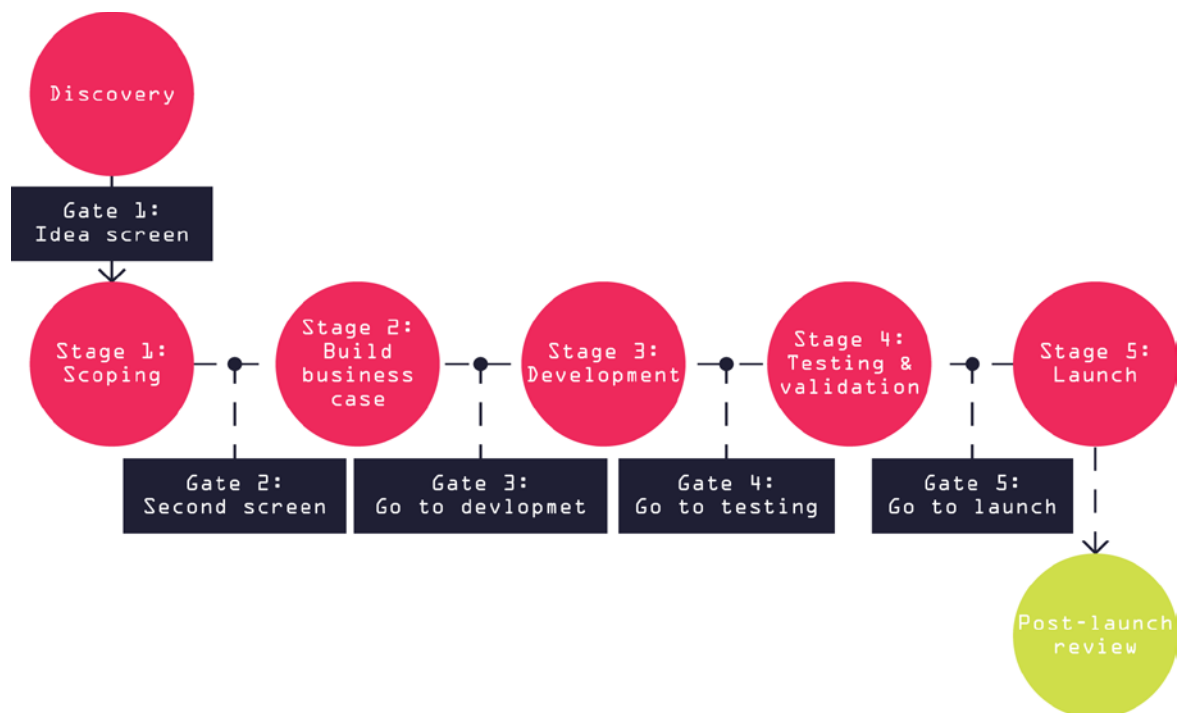


Figure 5 The Stage-Gate model (Cooper, 2008)

This model is in many ways similar to the Ulrich & Eppinger (2008) generic product development process. They can both be considered as conceptual and operational roadmaps for bringing new ideas to launch. They even contain very similar approaches of process order. Cooper (2008) describes the model as a series of stages in a project, where each stage ends with a quality check and a decision point on the further continued approach. The quality checked is both on the product itself and on making sure the process is on track. Each stage in the process is basically conducted in the same general procedure of three steps: (Cooper, 2008)

1. Initial gathering of stage relevant information and data
2. An integrated analysis of the attained results
3. A go/kill decision on how to continue with the project, or even kill it

While Ulrich & Eppinger (2008) is more focused on contributing with concrete ways of methods and insights on helpful elements of the process, Cooper (2008) provides more of a way of thinking. This includes both the smaller scope of the process stages, and for the bigger process as a whole.

Iteration in the development process

Another similarity with the Ulrich & Eppinger (2008) model is that they both may appear as very rigid lock-step processes. However, they also empathize to only be meant as suggestions; each situation should be designed by its own requirements and conditions. The point with both models is mainly to promote structure, as it is beneficial for any development process. They also both promote iteration within the phases of the development process. The Stage-Gate model is even meant as a looped process in itself, where iterations happen both within each stage, as well as back-and-forth in-between them. Some activities during the process can be conducted sequentially, while others need to be rested and revisited periodically throughout the process. (Cooper, 2008)

The gates as critical decisions points

A common challenge in the specific case of the Stage-Gate model is to not use the gates efficiently enough. In order for the model to fulfill its purpose the gates need to be critical decision points, where there actually is a sustainable decision made. The gates can be helpful tools for making sure a project is viable, and if it turns out not to be, then the gate is an assurance of detecting trouble before too much damage is done. If so, then the gate is a decision point on either going back in the process for rework and to getting back on track, or to terminate the project if it has become too problematic or is affecting other operations. The important aspect, however, is to make sure the gates are properly used for their intent and that there is no hesitation on making the tough decisions might needed to be made. The farther the project progresses, the more invested the project becomes. The costs become higher and higher, making it a bigger decision to shut it down or to send it back for improvement. However, the number of unknowns and uncertainty factors also reduces with progress, allowing increasingly reassured decisions. These needs to be made on robust and transparent decision-making criteria, meaning it must not be based on e.g. personal, speculating, or political agendas, or by a one-single-person-that-knows-all basis. (Cooper, 2008)

Cross-sectional development process

Throughout the process, each stage of the Stage-Gate is cross-functional. There is no certain stage earmarked for e.g. research and development, production, or engineering. All departments or functions need to be present and affecting decisions through the whole process. By dividing the process into separate departmental stages, the process instead tends to be longer. This is due to inevitable ball-dropping caused by miscommunications or lack of commitment. The cross-sectional approach is a way to assure quality to the final product. (Cooper, 2008) This is also recommended by Ulrich & Eppinger (2008). All members of the team should be involved from the start, all the way to launch. (Cooper, 2008). At the same time it is also argued for keeping the project groups small, since smaller teams are more efficient than larger ones. Most important though, is that each team needs to adapt a process approach that fit their specific premises. (Ulrich & Eppinger, 2008)

3.3.3 The innovation process

Another type of development process is the innovation process described by Tidd & Bessant (2009). This model help organize the innovation process and to create a framework where innovation can be managed successfully. The innovation process can be complex and depends on the circumstance, varying from case to case and from one innovative organization to another. These varying factors need to be adapted and shaped in each case in order to create an innovative process that gains its strived purpose.

Like with the earlier described product development processes, the innovation process also identifies a common general pattern. It is from this Tidd & Bessant's (2009) model derives from. The model is created around a core process of four phases: *search*, *select*, *implement*, and *capture*. Surrounding this is a framework of contextual issues to the process: “Do we have a clear innovation strategy?” and “Do we have an innovative organization?” (Tidd & Bessant, 2009). A simplified illustration of this innovation process is shown in Figure 6.

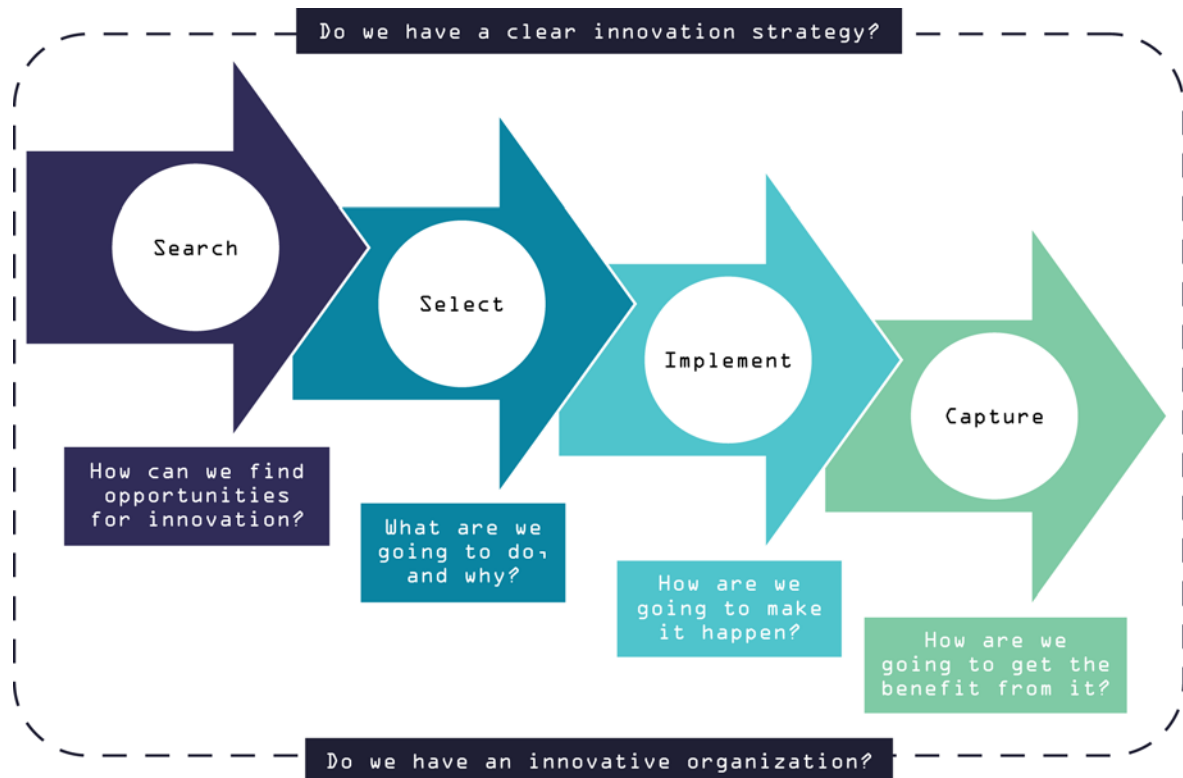


Figure 6 The innovation process (Tidd & Bessant, 2009)

The innovation process model can be considered in two main components: *the generic core innovation process*, and *the contextual issues* that define it. The core process is structured around the four phases illustrated in Figure 6: *search*, *select*, *implement*, and *capture*. This is the executing part of the process. However, in order to carry out this core process successfully, it is important to also be fully aware of the context that surrounds it. The context creates comprehension on what is possible and what innovative needs, basic conditions, and advantages, the organization has before the process starts. This is crucial to choosing a suitable core process strategy, able to sustain a successful innovation process. In this model the context derives from the questions “Do we have a clear innovation strategy?” and “Do we have an innovative organization?”. It is emphasized that in reality the innovation process is rarely as linear as the illustration of model indicate. It is often a more generic cycle of actions, where the phases of the processes need to be iterated repeatedly. With this in mind, the purpose of the model is mostly a guideline and a supportive structure on how to manage innovation effectively. This is done by focusing attention to the most essential key aspects of the innovation process. (Tidd & Bessant, 2009)

Contextual issues

The contextual issues are described by Tidd & Bessant (2009) as followed:

- *Do we have a clear innovation strategy?* This refers to defining a strategy on how innovation will take the organization forward, and what the roadmap for this will be. This means that tools and techniques to develop and enable analysis, selection, and implementation of innovation, needs to be determined.
- *Do we have an innovative organization?* This refers to establishing an understanding of the structure in the organization behind the innovation process. The key concepts of the organization need to be mapped out, e.g. like leadership, structure, communication, and motivation, and what roles they have to one another.

The core process

The phases of the core process are defined by Tidd & Bessant (2009) as followed:

Search

The first searching phase of the core process is mainly about probing the environment for potential change. The point is to explore areas where something helpful might be found, and through this either pull change to the organization through innovation, or create push through new opportunities. (Tidd & Bessant, 2009)

Select

The second phase is about resolving the input from the searching phase into ideas that can be formed into concepts. These concepts then need to be screened through three main factors: (Tidd & Bessant, 2009)

- What possible technological and market opportunities are there available for the organization?
- What current knowledge base and competence does the organization have?
- Do the proposed changes fit with what capabilities the organization actually has?

The third factor is the most important one, concentrating on how well the changes fit in with the overall business. It's important to make sure that the business strategy aligns with the proposed innovation, and that the change actually is beneficial. (Tidd & Bessant, 2009)

Implement

The first two phases is much about picking relevant trigger signals for change, and making a strategic decision on how to pursue them. The next step naturally is to turn these ideas into a reality. This can be in the form of a new product or service, a change in a process, or a shift in a business model. (Tidd & Bessant, 2009)

Capture

The fourth and final phase constitutes on how to capture value from the innovation effort. This refers to the importance of learning from the experience of the process accomplished, and how this can be used to do it even better the next time. By doing so the organization ensures on keeping an approach of learning and adapting, with constant capability upgrading. (Tidd & Bessant, 2009)

In order to likely reach success in the innovation process, Tidd & Bessant (2009) promote that the whole process must be completed.

3.3.4 The funnel of uncertainty

The innovation process should be considered as a process of reducing uncertainty, with knowledge increasing along the way. To do this, some sort of structured decision system is more effective than an ad-hoc approach. An example can be the innovation funnel as a strategy. (Tidd & Bessant, 2009) The funnel is illustrated in Figure 7.

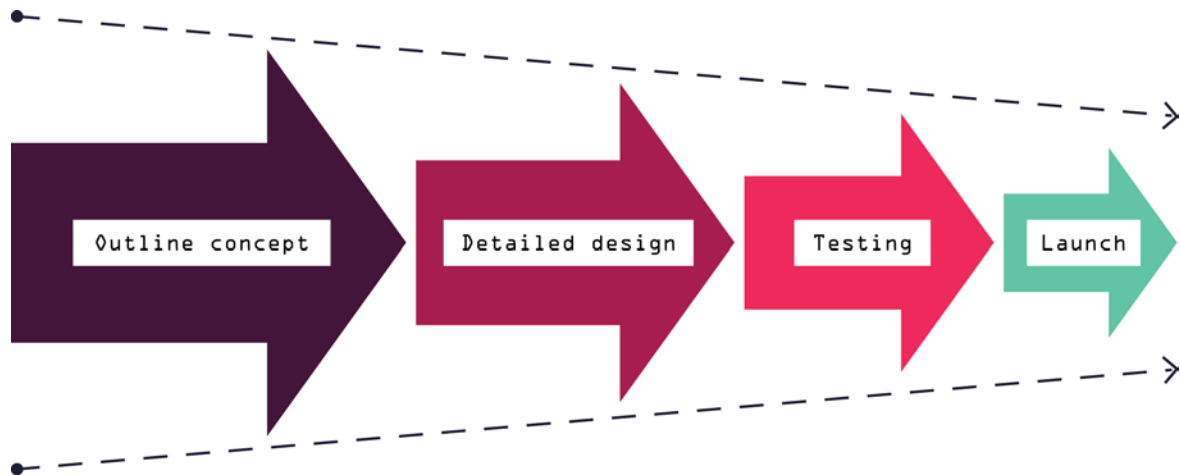


Figure 7 The innovation funnel (Tidd & Bessant, 2009)

This model is a roadmap for making decisions while moving from uncertainty to making well-calculated risk assessments. The uncertainty is reduced by the continuously increasing knowledge on technologies, markets, competitors, and so on, which is gained throughout the process. The funnel suggests making an initial concept outline at the beginning of the process, followed by eventually circling in and deciding on a more detailed design, and then testing. The final step is to launch the finished product. This model has much in common with all three previously mentioned models; Ulrich & Eppinger's (2008) generic product development process, Cooper's (2008) Stage-Gate model, and Tidd & Bessant's (2009) innovation process. The innovation funnel also promotes using each stage of the process as decision check-points to decide if the process is ready for the next step, or if it needs to be held back and revised. The point is, aside from minor differences in detail, most process models of this kind share a general conduct, all with the advantage of being possible to adapt and apply for any kind of development process. This is regardless of it being in sectors like manufacturing or services. The differences instead lie within what they are being used for; while a big international organization requires a highly procedural system, small organizations tend to benefit more from a faster flowing light-touch approach, with less scrutiny and complexity than with the larger organizations. (Tidd & Bessant, 2009)

4. ANALYSIS MODEL

This chapter describes the analysis model used in the study. The model was structured around three analysis units representing the main theory areas of the study. The analysis units were broken down into specified research questions connected to the purpose of the study, and then used to analyze the collected data.

In order of analyzing the collected data of the study there was an analysis model defined. This was mainly based on connecting the purpose and research questions of the study, with the theory of the frame of reference. Three analysis units were identified from this, and then broken down into specified research questions. These questions was answered in the analysis of the collected data, and then used to draw conclusions for the study and to answer the main research questions. The purpose and research questions were presented in sections 1.3 Purpose and 1.4 Research questions.

4.1 Analysis units

The analysis units were defined as: *the service of innovation intermediation, the structures behind innovation management, and the practical implementation of innovation*. Yin (2007) recommends letting the purpose and research questions set the frames for the analysis units. This is to keep the scope of the study within the area of relevance, and to avoid trying to cover “everything” of possible interest. The correlations between the analysis units and the purpose and research questions were defined as follows:

- *The service of innovation intermediation:* This analysis unit attends to the service offering of the Demola ES innovation intermediation. It corresponds to what needs to be considered in order of understanding the user experience of the seekers and the solvers. It also covers aspects of values and challenges more specific for innovation intermediation service offerings. This analysis unit mainly corresponds with the second and third research questions, covering aspects of expectations and actual experiences of added value to the solvers and the seekers.
- *The structures behind innovation management:* This analysis unit attends to the structures, critical issues, and risks for failure that need to be considered when leading and conducting an innovation or product development process. This analysis unit mainly corresponds to the third research question, covering the experiences that the seekers and the solvers have in relation to structures behind their project processes, and issues of risks and failures that can be identified from them.
- *The practical implementation of innovation:* This analysis unit attends to the more hands-on conducts of the actual innovation and product development processes. It covers aspects that well conceived processes share, and recommendations on useful guidelines to conduct a successful process. This analysis unit mainly covers the first research question, covering the general conduct of the Demola ES project process.

These analysis units also constitute the main sections of the theory in the previous frame of reference chapter. Furthermore, they are a part of the more general research design used for the study, based on a case study design presented by Yin (2007). This adoption is shown in Figure 8.

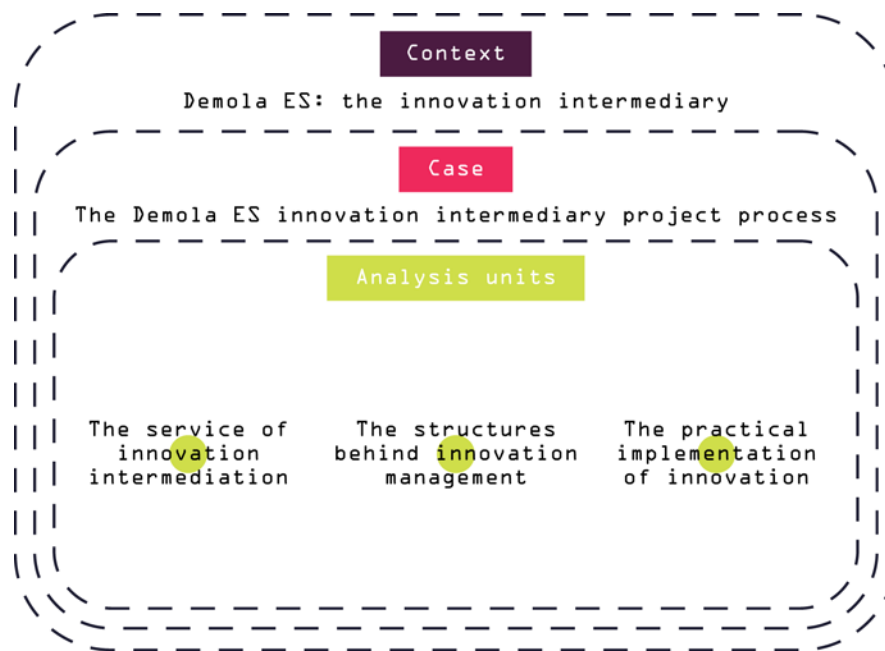


Figure 8 The dimensions of the case study approach for this thesis

This design consists of three dimensions of the study to consider: *the context*, *the case*, and *the analysis units within*. (Yin, 2007) The context in this case was Demola ES as innovation intermediary. The case was focused on examining the innovation intermediary project process. Within this, the three units of analysis were defined. Yin (2007) promotes the use of several units of analysis, because it enables a more thorough analysis with attained insight in the studied area. It also helps keeping the study on track, without losing the connection to the defined purpose and research questions. The actual analysis of these units was conducted by using the input of collected data from the Demola ES project facilitators, the seekers, and the solvers, or more precisely, the mainly involved parties in the Demola ES innovation intermediary project process. This input was then used to answer a series of specified research questions that had been broken down from the analysis units. This is shown in Figure 9.

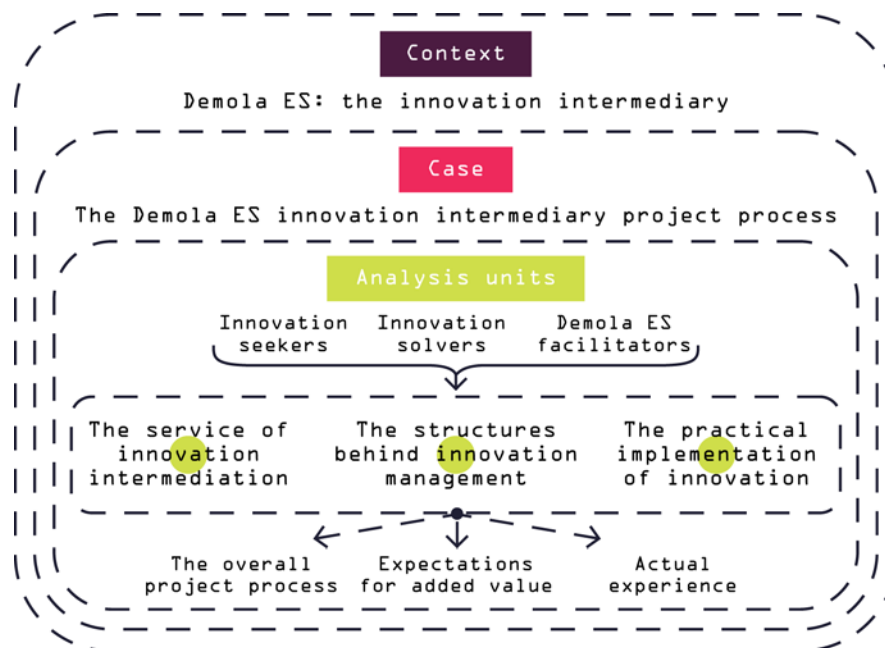


Figure 9 The analysis process of the study

Figure 9 show the analysis process of the study. The input for analysis to the analysis units came from the ES project facilitators, the seekers, and the solvers. By using this to answer the specified research questions, the results could be used to draw the conclusions of the study. The specified research questions are described in the following section.

4.2 Specified research questions

In this section, the specified research question will be described along with the correlating theory issues they are based on. They are all divided by the specific analysis unit they correspond to; *the service of innovation intermediation*, *the structures behind innovation management*, and *the practical implementation of innovation*.

4.2.1 The service of innovation intermediation

Aspects on values

Innovation intermediation is not an immediate one-off service, but a long term innovational relationship between intermediary and user. By identifying what problems the users need solved and what they expect and value from the service, the offering can evolve and add greater value to the user. Through continued collaboration during the service use, the values created from it can be identified. This also means that the provider can co-create and add more value to user, even during the use. The values that the user create for themselves also need to be considered. This means both how the user have the capability to maintain the value when they use the service independently, and what the effects of it are.

1. What can identify as the problems that the seekers and the solvers need solved by using the services of the Demola ES innovation intermediation?
2. What do the seekers and the solvers expect and value from the Demola ES service offering, i.e. what is the view of potential value produced by Demola ES?
3. What can be identified as the co-created added value for the seekers and the solvers?
4. What can be identified as requirements for the seekers and the solvers to maintain and create value for themselves during their independent use of the service?
5. What effects or added value can be identified in accumulation over time for the seekers and the solvers?

Interchange between seeker and solver

One of the most distinct values from an innovation intermediation process is the aspect of the two-sided interchange, where the seekers and the solvers affect each other's success. If value is added to one side, it also fosters growth and value to the other side.

6. What correlations can be identified in a mutual two-sided aspect of success between corresponding seekers and solvers?

Structural proceedings behind innovation intermediation

There are a few known challenges that an innovation intermediary often need to tackle. For instance, how detailed the problem definition of a project should be. It both needs to provide enough information for the solvers to do something useful, and still limited to not reveal too much seeker sensitive information. Since the innovation intermediary neither is the one who solves the problem, or even controls it, there also need to be a strategy for measuring and assuring value to the solution. Another challenge is to find good seeker and solver matches. This connects to the importance of a good reputation from a clearly presented service offering, and the trust and reputation to assure competence and confidence between all parties.

7. What approach can be identified on defining the project descriptions provided by the seeker to the solver?
8. What approach can be identified on measuring and assuring value of the solutions generated by the solvers, and what approach is there for when projects starts going off-track, headed in a potentially failing or risky direction?
9. What approach can be identified for Demola ES on maintaining a good reputation, i.e. a clear service offering presentation, trust for confidence and competence, and matching seekers and solvers?

4.2.2 The structures behind innovation management

General structure and management of development project processes

Each process model of innovation and product development needs its own approach to fit the specific purpose and circumstances on hand. Still, there are recognized common traits among these approaches. One is by working in an iterative process with phases structured on certain go/kill decision points. These are quality check-points for assuring quality to the product and for making sure the process is on track. It is important to choose checkpoints wisely and actually use them as intended. This includes making sure the project is on a viable track, and if not, having the courage to make the tough decisions on what to do. By keeping an anchored schedule with milestones, problem areas in the process can be identified comparing the plan to the reality. However, there will always also be environmental factors affecting the functionality of the team, leading to possible dysfunction and failure. These can e.g. include lack of empowerment of the team, internal political biases transcending project goals, or inadequate resources.

10. What specific innovation or product development model, with phases, decision points, and other milestones, can be identified for the overall Demola ES innovation intermediary project process?
11. What purpose does these phases, decision points, and other milestones serve, i.e. how is quality assured by them and what effects of dysfunction can be identified?
12. What approach can be identified on detecting problem areas?

Managing development project teams

By keeping a clearly defined process plan with specified roles of contribution within and around the project group, the group members can keep informed on with whom they need to exchange information with, and what they are expected to contribute with. This assures quality and reduces risk of inefficiency from lack of commitment or ball-dropping due to misunderstandings.

13. What general coordination within and around the project groups can be identified, i.e. what are the definitions of roles and contributions, management and leadership?

4.2.3 The practical implementation of innovation

Planning

Often there is an initial planning phase before the projects start, where issues like project description, structure, and context is defined. This includes creating a mission statement and defining conditions for the project teams to use as a roadmap to help them move forward and be guided by through the project process.

14. What does the initial mission statement from the seeker and Demola ES include, and what other guidelines are given for the project process?
15. What approach can be identified for how the solvers interpret and adopt the given mission statement to fit their own purposes?

Development project process

The planning is usually followed by initiating the actual project process with searching and probing. This is often from both internal and external searches as well as expert and user research, and research on published literature. From this, concept ideas can be generated and selected, where one or a few of them are chosen to go further with. The next step is often about design and defining details. This is followed by testing activities, where prototypes or mockups are built for e.g. user tests, and figuring out implementation, i.e. what to do to realize the concept. Finally there is a phase of finishing the project and launching it to production and the market. Successful innovation requires the whole process to be completed.

16. What search and concept development phase of the project process can be identified, i.e. what is done to probe for information and inspiration for ideas, how is the concept ideas generated and selected, what factors affect these decisions?
17. What issues affect the detail design development of the chosen concept, and what approach on testing and refinement can be identified?
18. What approach on implementation and launching the concepts into finished products can be identified, and what factors of success or failure are there for the projects, i.e. do they reach production and market, or are there other definitions of successful innovation?

Capturing the effects

A strategy for capturing the value of the process after it has been conducted is beneficial for making sure that attained knowledge can be used for further improvements. It is also to preserve possibilities for new project ideas. For this, continuous documentation throughout the project process can be valuable.

19. What kind of capturing approach can be identified, and how are the results of it used afterwards, i.e. does it add any intended value?

5. RESEARCH METHODOLOGY

This chapter describes the research methodology behind the study. It covers the research approach chosen, with additional aspects on research objective, quality and quantity, as well as scientific design. The chapter continues with describing the research procedure of the study, i.e. the four phases of planning, mapping, analyzing, and conclusion that have maintained the main structure of the research conduct. This also includes descriptions of the method procedures used to collect data. Finally, issues on validity and reliability to the study are described.

5.1 Research approach

This section describes the research approach for the study, and what factors was considered to it. The chosen approach was also structured in regard to related issues on research objective, quality and quantity, as well as on scientific design.

The research approach of a study is what defines the technical structure on how to reach its purpose and to answer the research problem. (Lekvall & Wahlbin, 2001) There are a number of factors to consider when choosing approach, and when doing so it is important to know that there is not always an obvious choice. What matters is instead choosing the approach that seems to fit the best. (Yin, 2007) According to Lekvall & Wahlbin (2001) there are three types of approaches to take in research study: *a cross-sectional approach*, *a time series approach*, or *a case study approach*. The cross-sectional approach is used when comparing several cases at a certain point in time. The time series approach is used when examining the development of a single case over an extended time period. The case study approach is used when examining a single case in exploratory or descriptive research. This approach is often qualitative both in data and analysis, and conducted with the purpose of gaining detailed understanding of a case in relation to a certain context.

5.1.1 The chosen approach

The chosen approach for the study was the case study conduct, examining the case of the innovation intermediary project process of Demola ES.

A case study allows a research structure that does not need all factors of research identified and chosen from the beginning. Instead it encourages forming the study and sorting the factors of importance along the way. However, in regard of this it is also important be aware of the potential weakness of case studies. This means that there is always a risk of a case study turning out to be something different than initially planned. This ultimately risks the researcher to either receive or to give an inaccurate view of the case, also affecting the comprehension on what information is relevant to collect and explore. To avoid this it is necessary to thoroughly examine the case before hand, and to not rush into the main research without having a clear view of the situation first. By also involving more than one case in the study, this can be prevented. However, if the case study only includes one case, another useful approach to avoid this can be to structure the study around multiple units of analysis within the case. (Yin, 2007)

In this case, Demola ES was the only innovation intermediary examined, making the study less applicable in the greater context of innovation intermediaries. However, the main purpose of the study was not to find results for generalization in the context of innovation intermediation in general, or even project processes. The purpose instead focused examining the specific project process of Demola ES, and the user experiences it. The contribution was for Demola ES to use it for awareness and understanding on user experiences and added value to improve their service offering. The generalizing factor was instead met by focusing on the three units of analysis, directly connected with the context and purpose of the case. The collected input data for the analysis also included four project cases within Demola ES, which provided the context necessary to generalize internally within the case.

5.1.2 Research objective

The objective of the study is also an important part of the research approach. Research objectives can be identified in four different types: *explorative*, *descriptive*, *explanatory*, or *predictive*. These can be described as: (Lekvall & Wahlbin, 2001)

- *The explorative objective* is used for attaining primary knowledge and understanding of a certain problem area, and is often used as foundation for specifying and defining problems for further research
- *The descriptive objective* is used for mapping facts in correlation to one another in a certain situation or area
- *The explanatory objective* can be considered as an extended approach on the descriptive objective, and is used for also trying to explain the correlations of causality factors
- *The predictive objective* is used when trying to forecast what will happen under certain given circumstances.

Usually these objectives are used in combination, and if then, in the chronological order as described. Going from the explorative objective, they increasingly expand in extent and depth, and basically build on to the results from the previous objective.

In this study the explorative, descriptive, and explanatory objectives were used. The explorative objective was used to first of all understand what Demola ES do. This was necessary for defining relevant research questions, and to identify the full context of the study. The descriptive and explanatory objectives were then used to describe what the intermediary project process looked like, and what expectations and experiences of value the process brought to the seekers and the solvers.

5.1.3 Quantitative or qualitative research

The approach on quantity and quality in a research study also need to be considered. In the terms of research approaches Lekvall & Wahlbin (2001) defines these factors in two dimensions:

- *How the collected data is expressed* in relation to the analysis of the study, meaning whether the data is being coded as numbers, in words, in images, or other kinds of expression
- *How the analysis is done*, meaning whether the used analysis methods calculate and make statistical compilations, or develop verbal reasoning's and mental figures

Basically it is all about how the collected data is expressed and analyzed. Quantitative studies are often considered as data expressed in numerical form, analyzed by statistical methods. Qualitative studies, as an opposite, include data not possible to quantify in a meaningful way, and is analyzed by non-calculative methods. Both approaches can be used in a case study, either in the sole form of one another, or as a combination. (Lekvall & Wahlbin, 2001)

In this case the main approach was mainly focused on qualitative research, both in data and analysis. The main purpose of the thesis was not to compare statistics and numbers, but to understand the user experience and what values it contains. The smaller amount of quantity was included in forms of adding context to the study, and to the observations and interviews.

5.1.4 Scientific design

Qualitative studies are strongly connected with the aspects of *philosophical* and *theoretical frameworks*, which frame the scoping perspectives and the scientific design of the study. (Cresswell, 1998) This section describes in what aspect these issues have been approached.

Philosophical assumptions

Philosophical assumptions refer to the researcher's basic set of beliefs or assumptions affecting their inquiries of research. Five assumptions can be identified: *ontological*, *epistemological*, *axiological*, *rhetorical*, and *methodological*. These are described as follows: (Cresswell, 1998)

- *The ontological assumption* is about the question of what the nature of reality is. In a study multiple realities exists, all in the different point of views of the researcher and the participants in it. Each view contributes to evidence of different perspectives within a certain theme.
- *The epistemological assumption* focus on the relationship between the researcher and what is being researched. In qualitative studies the researcher interacts and collaborates with those studied to minimize the relational distance of the observational role, and to become more of an "insider" than "outsider" during the field work.
- *The axiological assumption* refers to the role of values in the research. The close collaboration from the epistemological assumption provide value laden information that, along with the researcher's own biases and values, shapes the narrative and interpretation of the research.
- *The rhetorical assumption* is about the language of the research. In qualitative studies the writing is literary in a narrative and informal style, using qualitative and limited term definitions. The terms as they are defined by the informants are more important.
- *The methodological assumption* addresses the process of research. This connects all of the other four assumptions on how to conceptualize the research process. Either the process is deductive, using established theories to explain findings from empirical research, or the process is inductive. The inductive process uses empirical findings for creating new theories. In qualitative research, inductive work is most common. It is a layered process where the initial scope is broad and quite unprejudiced. The gathered information first represents multiple themes, which narrows in scope through the process, dividing the data into broader and more abstract categories.

In this study each of these aspects were considered. The ontological assumption was addressed by conducting multiple observations and interviews, both with the Demola ES employees, and with seekers and solvers from different projects. From each project examined, the respective seeker, solver, and project facilitator was interviewed. This provided three perspectives of reality within the project cases examined.

The epistemological assumption was met by mainly using the Demola ES offices in Norrköping as the workplace for the study and the research tasks around it. This allowed a closer relationship with the Demola ES employees, and in some extent also with the solvers. This since the Demola ES offices also provides spaces for the project groups to work on their projects.

The epistemology aspect was also met by participating in several Demola ES events where interactions between project facilitators, seekers, and solvers took place. This included occasions like project group meetings with the project facilitator, pitch events where the project groups presented the current status of their project, or internal meetings within Demola ES.

The axiological assumption was mainly issued by explicitly specifying origin of source throughout the written report. Also, to make sure the collected data provided a versatile view within the study, the project cases included as sources of data were multiple, and they each included the perspectives of the corresponding project facilitator, seeker, and solver.

The rhetorical assumption was considered through the narrative of the report. The conduct and context of the study was described in the aspect providing a report easily apprehended for the reader.

The methodological assumption of the study was mainly inductive. In the case of innovation intermediation there is still a lack of dedicatedly specified literature, which means that a deductive study would be difficult to conduct in the first place. The purpose of the study was instead about examining the case of the project process of Demola ES as an innovation intermediary. This was done by using empirical methods for data collection in a layered process. The initial scope was very wide before the context and purpose of the study was defined. There was no predefined hypothesis on what would be found and how the study would be connected with existing theory. The process was very iterative on narrowing down the study content and conduct. Deduction was used in a smaller extent in the initial phase of the study. This was to study theory on the innovation intermediation process with the purpose to attain knowledge for understanding and defining relevant context for the study. The results from this set up the structure and framework for the continued study conduct.

Use of theories

When preparing for a case study it is also important to be aware of the possible challenges that can arise through the conduct. The preparation includes e.g. going through literature on the area of research, to use in the structuring of the research design and when collecting data. It is also important to be aware of theories that can relate to the study. This can e.g. include the area of social sciences, with theories on i.e. urban development, technological development, and market relations. Another example is organizational sciences, with theories on i.e. organizational structure and functions, successful organizations, and partnership between organizations. (Yin, 2007)

In this case theory was mainly focused on three main areas:

- The aspect of values and challenges of innovation intermediation as a service offering, and how value can be added to user experience
- The aspect of approaches to product development and innovation in the context of structure and management
- The aspect of conducts of product development and innovation processes, mainly focusing on common similarities, differences, and guidelines for successful results

5.2 Research procedure

Along with the research approach, a general structure for the study was chosen. This section describes this overall conduct of the study, which was divided into four phases: *planning*, *mapping*, *analyzing*, and *conclusion*.

5.2.1 Structural overview

The structure of the study was based on a research model presented by Lekvall & Wahlbin (2001), and the adaption of it is shown in Figure 10.

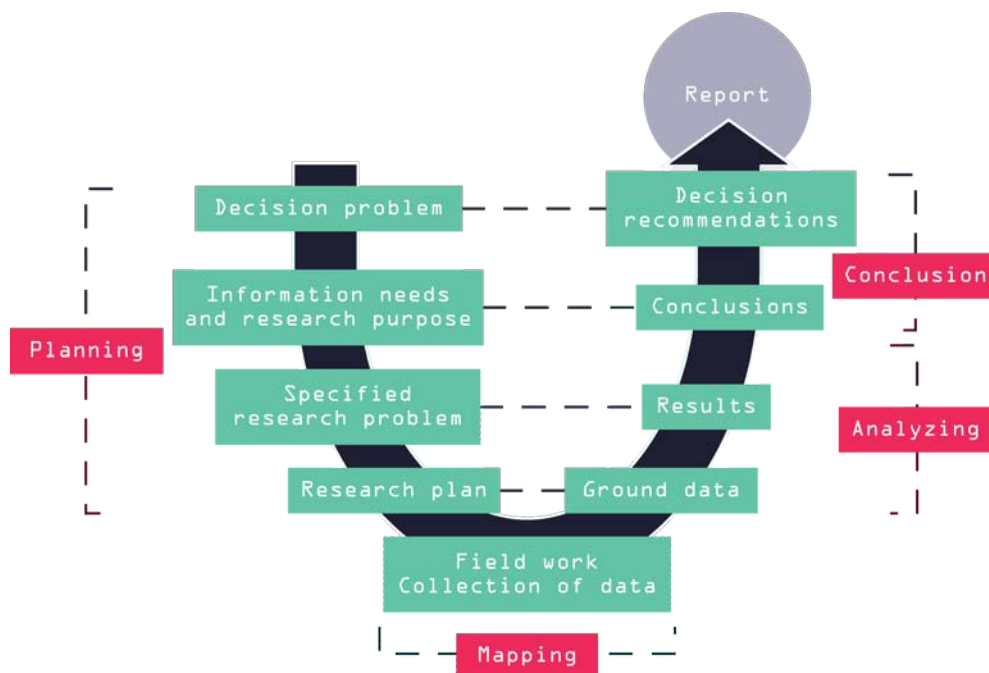


Figure 10 The general structure of the study

The process includes a series of stages marked by the green boxes in Figure 10. The model is mainly meant to be a referential framework for planning a research process. The stages are all implemented at some point, but not necessarily in the illustrated order. Each research process needs to adapt the model to fit its own means. (Lekvall & Wahlbin, 2001) In this case the process was divided into four phases, still following the main structure with the same stages, but in each phase the stages was completed iteratively and parallel with each other. The four phases are represented by the pink boxes in Figure 10, and include: *planning*, *mapping*, *analyzing*, and *conclusion*. The conduct of each phase is described in the following sections.

5.2.2 The planning phase

The planning phase set the general structure and context for the study. It includes the stages of: *identification of the decision problem, identification of information needs and research purpose, specification of research problem, and development of a research plan*. The phase and the correlated stages are highlighted in the minimized process model in Figure 11.

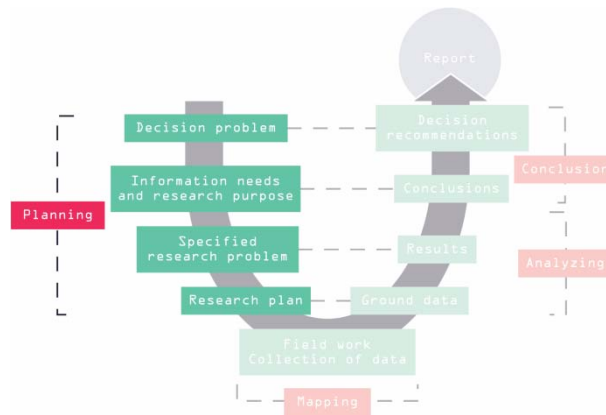


Figure 11 The planning phase

The decision problem is about identifying how the decision situation originated, and what the causality issues and alternatives of action are. These factors are used to decide what information is needed to solve the problem on hand, and to define what the purpose of the study is. In order of being able to properly plan and execute the study, the research problem also needs to be specified. This usually includes gathering facts, literature studies, and developing a referential frame for the study. The specification of the research problem is either done by an exploring, describing, explaining, or predicting approach. The next step is to choose an approach of the study, which can be defined as the fundamental structure of it. This addresses whether the analysis of data should focus on depth in a singular case study, on describing and analyzing several cases cross-sectional, or on correlating analysis to development over time. When the approach is chosen, the methods of collecting data can also be selected. This should also include reflection on method criticism and authenticity of the research, regarding issues like validity and reliability. (Lekvall & Wahlbin, 2001)

The general conduct of the planning phase

In this initial phase of the study the first step was to plan the conduct of it. This refers to the general structure of the study presented in Figure 10. With this structure of conduct set, the next step was to define the details to it. This first of all included gathering theory on the problem area of the study, i.e. innovation intermediation in the perspective of the user experience. It also included gathering information on case study conducts and what methods to use for collecting and analyzing data. The results of the planning phase was then used as the frame work for the more practical aspects of the study, i.e. the following mapping, analyzing, and conclusion phases. It was also used to define the case study design presented earlier in section 4.1 Analysis units, with the context, case, and analysis units of the study. To do all this literature studies were conducted.

Literature studies

Literature studies are often used as a way to gather background and theoretical information for a research study. The purpose can be to identify a current scientific knowledge status, or to gather domain knowledge in a certain area. Sources of relevant literature can be found searching databases and the Internet, as well as libraries for articles, books, guidelines, and any other kind of published literature on a specific area. (Osvalder, Rose, & Karlsson, 2008)

In this study literature studies were used to set up the theoretical framework, establishing context and gain knowledge on relevant areas of research, methods, and analysis. Literature was gathered from books, scientific articles and papers, and other similar types of published material. All literature used in the study are continuously referenced in the report and compiled and displayed in the chapter of

References. The sources used for finding literature included e.g. the campus libraries at Linköping University, different databases like Google Scholar, or ones provided by Linköping University, like UniSearch, DiVA, and LIBRIS.

5.2.3 The mapping phase

In the mapping phase the actual *field work of data collecting* was conducted. The phase is highlighted in the minimized process model in Figure 12.

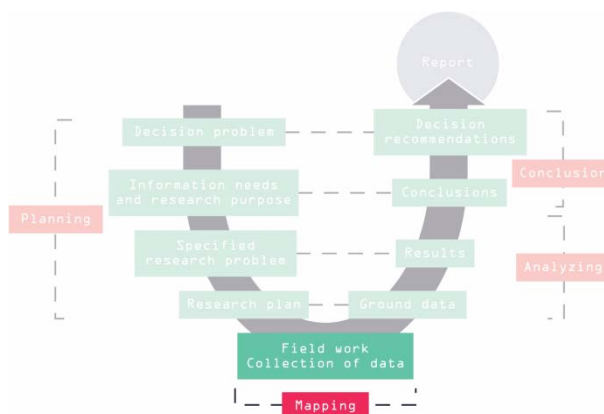


Figure 12 The mapping phase

The mapping part of a research study results in ground data material like e.g. completed survey questionnaires or audio files of interviews. Parallel throughout this data collecting, the material is transferred into a more manageable format to use for the analysis. The completed survey questionnaires, or other types of numerical data, can e.g. be transferred into a data base, and the audio files transcribed into written form. This material is strongly connected with the issues of authenticity, and needs to be taken in consideration. By doing so, the methods and techniques for collecting the data is also evaluated. (Lekvall & Wahlbin, 2001)

The general conduct of the mapping phase

This mapping phase was conducted in three steps, where the results of each step were used as input to the next one. The first step focused on becoming familiar with the Demola ES operations, i.e. understanding what Demola ES do as an innovation intermediary, and what different activities and processes are included within this objective. This was closely connected to the planning phase, as it combined and completed the gathered theory with the specific context of Demola ES. This connects to the context and case aspects of the case study design presented earlier in section 4.1 Analysis units. These are highlighted in the minimization in Figure 13.

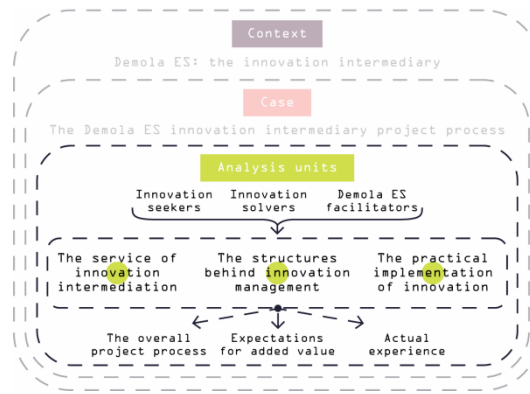


Figure 13 The context and case aspects in correlation to the mapping phase

In connection to Figure 13, this first step of the mapping phase was used to complete the context of the study, i.e. Demola ES as an innovation intermediary, and the case studied, i.e. the Demola ES innovation intermediary project process. The methods used were *observations* and *interviews* with the Demola ES employees. The results of it were used to decide which factors would provide the data for analysis. This led to the decision of using four project cases as data input to the analysis. This was to attain a versatile view of the case, with input from multiple sources, and with different contextual perspectives to it. By also including the view of all three main parties of each project case, another layer of perspective was attained. The three main parties refer to the project facilitators, the seekers, and the solvers. This connects to the analysis unit aspect of the case study design, which is highlighted in the minimization of the design model in Figure 14.

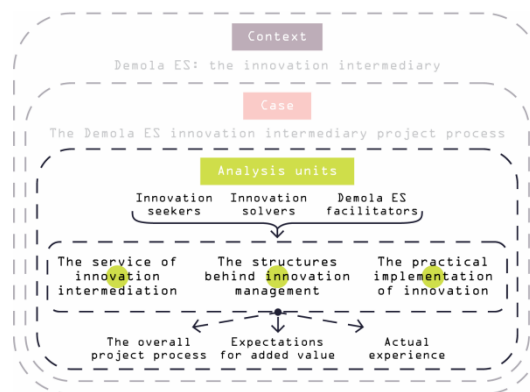


Figure 14 The analysis units in correlation to the mapping phase

In connection to Figure 14, the results of the first step of the mapping phase led to the decision on using the main three parties of four project cases as input data to the analysis. With this as input to the second step of the mapping phase, interviews were then conducted with *the university examiner* and *the project facilitators*. The purpose was part to choose relevant project cases, and part to gather information for structuring the interview guides for the interviews on them. The four project cases were chosen to cover contextual variations on:

- *The project facilitator*, covering possible differences between project specific providers of the Demola ES service offering, in the direct seeker and solver interaction
- *The project round of project conduct*, covering possible values accumulated over time since the service was used
- *Type of project*, covering possible differences in project processes between e.g. high technologically focused projects, and projects in the area of social sciences

- *Type of innovation seeker*, covering possible differences of collaboration with seekers like e.g. big international organizations, and private persons
- *Factor of success versus problematic issues*, covering possible issues on greatly added value, versus more negative effects from the service offering
- *The results being bought by the seeker*, covering possible issues of regarding the initial expectations and the actual results of the service offering

These correlating factors and the project cases chosen are shown in

Table 1.

Table 1 Correlations of the four chosen projects cases to the contextual variation factors

PROJECT CASE	PROJECT FACILITATOR	PROJECT ROUND	TYPE OF PROJECT	TYPE OF SEEKER	SUCCESSFUL/ PROBLEMATIC	RESULTS BOUGHT
A	a	3 (in progress)	Applications of communication technologies on thin film	Multinational organization in communication technologies and services	Successful so far	N/A
B	b	3 (in progress)	Social platform for exposed target groups	Private person	Successful so far	N/A
C	a	2	Programming tool for user simplified programming	SME IT-consultancy organization	Problematic	No
D	c	2	Marketing app for visualized demonstration of what the organization do	Multinational organization in power and automation technologies	Successful	Yes

In the first column to the left, each project case is categorized by the capital letters of A, B, C, and D. The remaining columns represent the six contextual variation factors previously listed. Each row connects the project cases to their specific contexts. An issue to keep in mind is that project cases A and B do not provide full information in all columns. This is since these projects were still in progress during the conduct of the study. All data from this second step of the mapping phase were then used as input to the third and final step, where the main interviews were conducted on the four chosen project cases. The results of all this were then used as the input to the analysis phase.

All separate interview guides are included in the appendixes. These also include complete lists of all observation and interview occasions in Appendix 1 List of observations, and Appendix 2 List of interviews. In the following of this section, the conduct of the observations and interviews are described.

Observations of the Demola ES employees

As a first step of the mapping phase observations were conducted of the Demola ES employees. Observations can be used to gain knowledge on how people act in different situations or at a specific event of interest. The purpose is to gain information on what people actually do, and not what they say they do. This is information otherwise hard to obtain only from e.g. interviews. (Osvalder, Rose, & Karlsson, 2008)

The observations were conducted in a direct and mainly unsystematic manner. This means that the observations took place in real environments like the Demola ES offices, and not in fictive environments, like arranged laboratories. It also meant that there was no extended objective on what information was strived for, i.e. the initial scope was very wide and unprejudiced. (Osvalder, Rose, & Karlsson, 2008) Since this is a thesis conducted mainly in the area of innovation intermediation and the project process of Demola ES, the scope was still narrowed to fit this area of research. The observations were conducted by shadowing the employees through meetings, everyday work tasks, and other potentially interesting events encountered in the objective of innovation intermediaries. The occasions for these observations was chosen based on covering as many areas of the operation as possible, and through this gain a complete overall contextual understanding. This included internal meetings, as well as interactions with students, idea owners, and other stakeholders, both existing ones, former, and potentially new ones. A complete list of observational occasions is listed in Appendix 1 List of observations. The observation data was recorded in the form of written notes from each observational occasion.

Interviews with the Demola ES employees

Along with the initial observations interviews were also held with the Demola ES employees. Interviewing is a versatile technique, since it can be used to collect data in so many types of situations. The results are subjective data based on the opinions of the interviewees, making it a good complement to observations in the qualitative aspect. (Osvalder, Rose, & Karlsson, 2008)

The interviews were conducted in an unstructured manner, which is a qualitative method of gathering data. The unstructured interview is conducted similar to a casual conversation. The interviewer only loosely steer the conversation around a starting subject, asking follow up questions along the way, allowing the interviewee to express an extensive and personal view of the subject. (Osvalder, Rose, & Karlsson, 2008) The purpose of these interviews was basically the same as with the observations, i.e. to understand what Demola ES do as an innovation intermediary, and what different activities and processes are being conducted within this scope. The interviews were held with all four employees on a day to day basis in the form of brief conversations. The questions asked was not prepared, but asked during the continuous work throughout the mapping phase. This was basically when issues or opinions on the operations needed to be clarified for the work of research planning. The questions included both quantitative and qualitative subjects, like how many solvers each project round included, which university programs they were studying, as well as questions regarding the organizational structure of Demola ES, and the international Demola network. The main benefit of conducting interviews is the minimized risk of misinterpretations. This is because the interviewees can be asked to clarify the answers, or even the other way around if the interviewee do not comprehend the questions (Osvalder, Rose, & Karlsson, 2008). In this case, the view of the Demola ES operations could be thoroughly apprehended, reducing the risks of misconceptions affecting the continued research. These interviews were recorded by written notes.

Interview with the university examiner

Part of the Demola ES service offering for the innovation solvers includes participation in academic course activities provided by the university. In order of getting an all-covering insight on the full solver experience it was necessary to find out what this part included. This was done by interviewing the course examiner from the university.

The interview was conducted in a semi structured manner. This means that a basic design for the interview is defined beforehand, including prepared questions. During the interview, the questions do not need to be asked in the prepared order. Follow up questions can be asked to elaborate answers, or to find new unexpected perspectives of the subjects. It is important, though, to be aware of the key purpose of the interview, and to make sure the results will still be relevant. This generates both qualitative and quantitative results possible to systematically analyze and compare, as well as it generates information on a more subjective level. (Osvalder, Rose, & Karlsson, 2008) The subjects of the interview covered what kind of role the examiner had in the course and in the general collaboration with Demola ES, what the course included and why, what the future prospects are, as well as general thoughts on the collaboration so far. This data was then used as part of the foundation for the interview guides on the chosen project cases. It was also used to help map the full content of the innovation intermediation project process. The interview guide is included in Appendix 3 Interview with the university examiner.

Group interview with the project facilitators

In addition to the interview with the course examiner, a semi structured group interview was conducted with the project facilitators. This was also part of preparing for the main interviews on the chosen project cases, and added to the complete view of the intermediation process. The interview was conducted in group form, with the three project facilitators that had been involved with the chosen project cases, and it included the head of Demola ES.

The group interview was chosen since it is a beneficial method to attain versatile perspectives and a comprehended view of a subject. By loosely steered discussions around predetermined subjects, the strength of the group interview comes with the group effort, where the participants can associate and reminisce further on each other's answers. The results are subjective and mostly qualitative. (Osvalder, Rose, & Karlsson, 2008) The prepared questions focused on general differences between the project rounds conducted, and what the chosen projects and their processes had included. Questions were also asked on whether the chosen projects were considered successful or not, and if there were any additional special events or circumstances in these cases to keep in mind for the interviews on them. This interview guide is included in Appendix 4 Group interview with the project facilitators.

Interviews with the project facilitators, the seekers, and the solvers

In the third, and the main step of the mapping phase, semi structured interviews were conducted with the project facilitators, the seekers, and the solvers of the four chosen project cases. In total this included four interviews with solver project groups, four interviews with seekers, and three interviews with the project facilitators of the project cases. Both individual and group interviews were conducted. The purpose of the interviews was to generate an all covering view of the seeker and the solver experience in the Demola ES innovation intermediation project process. This meant that all main parties involved in a project case were considered as sources of valuable input. At the same time, it was the project cases in themselves that were the crucial input to the analysis, which meant that the individuals of the cases were not the main focus. Yin (2007) argues this as an important issue to be aware of since it distinguishes the difference between a single case study with multiple analysis units, and a multiple case study. This case study was an examination of the single case of the Demola ES innovation intermediary project process, which meant that the examined project cases mainly needed to be viewed as contributions to this premise. This is why the project cases are presented anonymously, emphasizing them more as general sources of input and perspectives in the greater diversity of the Demola ES users.

All interviews were structured around a common foundation of four areas, i.e. what happens before the project process starts, what happens during the process, what happens after, and finally, thoughts on the overall experience. The prepared questions are included in Appendix 5 Interviews with seekers, Appendix 6 Interviews with solvers, and in Appendix 7 Interviews with project facilitators.

5.2.4 The analyzing phase

To the mapping follows the analyzing phase, which is about turning the ground data from the mapping phase into a manageable format for the main analysis of the study. The results of the main analysis are then used to form a conclusion and to answer the research questions of the study. This phase is highlighted in the minimized process model in Figure 15.

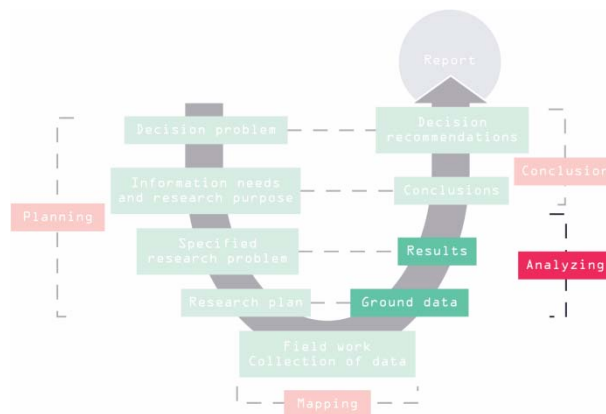


Figure 15 The analyzing phase

The analyzing phase included an *initial analysis of ground data*, followed by a *main analysis* of these results.

Analysis of ground data

The initial analysis of ground data is mainly about sorting it into categories and themes. When the case study is connected to a certain process or development over time, it is preferable to sort the descriptions along a chronological time line. This makes it easier for the reader to understand what happened. When the data mostly contains of a few cases to be analyzed in depth, this initial sorting is usually done by creating summarized descriptions. These will constitute as the framework for the main analysis, and should directly correlate in sorted structure to the specified research questions. (Lekvall & Wahlbin, 2001)

In this study the ground data was attained from the transcribed results of the mapping phase. The material from the four project cases were initially sorted into categories identified from a pattern found in the data:

- Seeker, solver, or project facilitator
- Role as a project mentor, project group members, or project facilitator
- Initial contact with Demola ES
- The project idea
- Reasons for participation
- Expectations on the collaboration
- Working with student solvers
- The execution of the collaboration
- The mandatory events
- Structures within the project group
- The results of the collaboration
- The process of collaboration as a whole

This material was then transformed in to narrative descriptions of the general Demola ES project process and the conducts of each project case. The general project process was described in a chronological order, and the project cases were sorted into the same categories as the analysis units: *the service of innovation intermediation*, *the structures behind innovation management processes*, and *product development and process models*. This was mainly to ease the analysis process, making the project process and the correlated factors of the project cases easier to compare and connect to the analysis model.

Main analysis

The main analysis of a research study can be conducted in a number of ways, it can e.g. be important that the analysis is quantifiable. In case studies it is instead the description and further verbal analysis that often matters most. It is common to work close with the ground data to create an overall case view. The goal is to obtain a coherent view of what is examined and to find patterns. From the initial ground data analysis factors like critical events, key individuals of a process, or key factors affecting the process development can be identified. By constructing examples of typical proceedings within a case, unimportant details can be screened, and the essentials be highlighted. In a descriptive study the purpose is to express causality factors between examined phenomena, mainly interpreting patterns observed in the data. In addition, there are also issues on fundamental interferences to an analysis that needs to be aware of: *the hidden real causalities* and *the false causalities*. Hidden real causalities refer to the problem of not beforehand being able to certainly know how previously known causing factors correlates. If these known causing factors do not appear as expected in the results of the study, the analysis can be broken down into more detailed levels. By doing so the known causing factors can be found, and provide information on why things do not always go as expected. False causalities refer to faulty assumptions on what factors are causing a certain event. This interference is hard to expose, especially in case studies. The interviewees often have an explicit personal view of factors causing a certain event, and when expressed convincingly, easy for the researcher to also accept. (Lekvall & Wahlbin, 2001)

The main analysis of the study followed the analysis model presented in chapter 4 Analysis model. The results were used to answer the research questions and to draw final conclusions.

5.2.5 The conclusion phase

The conclusion phase finally connects the analysis to the purpose and the research questions of the study. This also includes additional discussions, recommendations, and thoughts on future work. The phase is highlighted in the minimized process model in Figure 16.

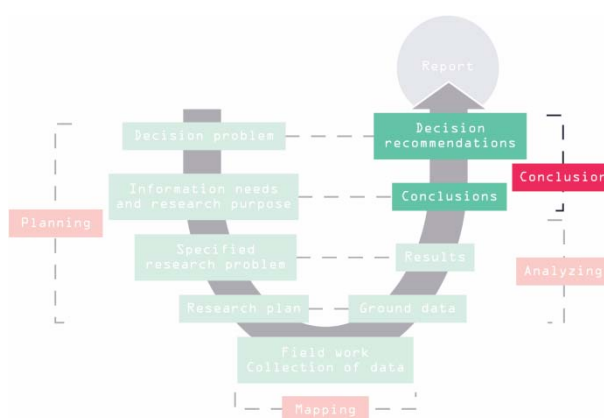


Figure 16 The conclusion phase

5.3 Validity and reliability

This section discusses the issues of quality to the study, in the aspects of *validity* and *reliability*.

5.3.1 Validity

The validity of a case study can be considered in the aspects of *construct validity* and *external validity*.

Construct validity

Construct validity refers to forming real operational and subjective measurements for the issues being studied. This means to clearly define what concrete factors are causing certain events to happen. To do this, first of all the events of interest for the study need to be chosen and connected to the initial purpose of it. The next step is to show how the causing factors of the event actually are affecting the situation. By using triangulation this can be achieved. Triangulation refers to the use of multiple sources of information during the data collection, enabling a verifying aspect of consensus within the study. The results and conclusions are considered more convincing and accurate, the more grounded it can be with multiple sources of information confirming one another. Different methods of collecting data need to be used in contribution to reach a valid common conclusion. Another tool for assuring construct validity is by creating a chain of proof, allowing an external observer to be able to follow each step and decision made throughout the study. It should be possible for the observer to clearly cross reference the different methodological conducts of the study to the resulting effects. This can also be connected with the benefits of letting the study be externally reviewed throughout the process. By letting participants and informants of the study reviewing it, the validity can be assured from the feedback, i.e. on concrete facts, conclusions, interpretations, as well as the general quality of it. (Yin, 2007)

In this study the triangulation aspect was met by combining several forms of methods, like observations, unstructured and semi structured interviews, and literature studies. The interviews and observations focused on covering several perspectives of certain topics. For instance in the project cases examined, the project facilitators, the seekers, and the solvers all were interviewed regarding their participation and the interchange they had with each other. The chain of proof was considered by continuously cross referencing correlating aspects of the study in the written report, like conducted interviews to related results. Also, the conducts to collect data was been described, and all materials used for it are included to the appendix chapters, covering lists of observation and interview occasions, as well as interview guides. In addition to this, the study was also reviewed throughout the process by the university supervisor, the examiner, and the opponents of the thesis. It was also reviewed by the appointed supervisor at Demola ES.

External validity

The external validity correlates the generalization of the results of the study, i.e. whether the results also can be applied in other cases. In case studies this specifically means analytical generalization, where the results of the study are compared with existing theories used as templates. The empirical results of the study are considered stronger as a correlation to the higher number of cases, conforming to theory. This is connected to the logic of replication, where the results of the study need to be proved in replication in an additional second area. This is for the results to be considered as strong support of the formed theory. (Yin, 2007)

In this study there is only the sole case of Demola ES examined, which means the factor of replication is poor. However, the purpose of the study was not about forming general theories to apply in the greater area of e.g. innovation intermediation. Instead it was mainly to help Demola ES to evolve thorough enhanced insight and understanding of the user experience of their innovation intermediary project process. Also, innovation intermediation still is a fairly unexplored theoretical area. This meant that at the point of this study, there were not that many other cases to possible use in the purpose of replication. Instead the focus was more put on the analytical generalization from the four examined project cases. Between them, validity could be attained from the recognized factors of consensus identified regardless of the differences in the cases.

5.3.2 Reliability

The reliability of a case is about showing that the conduct of the study would achieve the same results if it was repeated. This is not to be confused with replication, which refers to replicating the results from one case by doing another. The key to reliability lies within documentation of the case study conduct, i.e. without thorough documentation the study cannot be repeated by another researcher. This is achieved by structuring the research around as many operational stages as possible, which then can be repeated again and again with the same results. (Yin, 2007)

This aspect was considered in several conducts, where first of all the whole research process has been documented in this written report. All methods used, and the additional material created for them, have been described and added to the report. This also includes descriptions on the analysis model used to analyze the collected data. The results generated through each phase of the study have been cross referenced to what part of the process they correlate to, and what was conducted to attain them. However, the methods used have been mainly qualitative, which means that they include elements that are specific to each situation. Lekvall & Wahlbin (2001) mentions a few examples of factors that can be influential to the collected data:

- Differences in individual circumstantial attributes, like health, weariness, motivation, or stress between interviewees
- Situation bounded factors like the interaction with between the interviewer and the interviewee, or distractions in the interview environment
- Variations in the way of asking the same interview questions in every interview occasion

These aspects was considered by using the same structure of questions in the interviews of the project cases, and by conducting the interviews by letting the interviewees in the extent possible, choose conditions of the interview regarding time and place. This was to assure the interviewees were as comfortable as possible, and to try reducing the risks of elements like stress and weariness. Though, a permanent condition was that all interviews would be held in secluded areas, like in personal offices or conference rooms, were there would be a minimum of potential distractions.

6. RESULTS

In this chapter the results of the data collected is described. This covers the general Demola ES innovation intermediary project process, and the four project cases examined.

6.1 The Demola East Sweden innovation intermediary project process

This section describes the general project process of the current Demola ES innovation intermediary operations. Figure 17 show the illustrated process with all mandatory events of the process, and the contributing parties correlating to them.

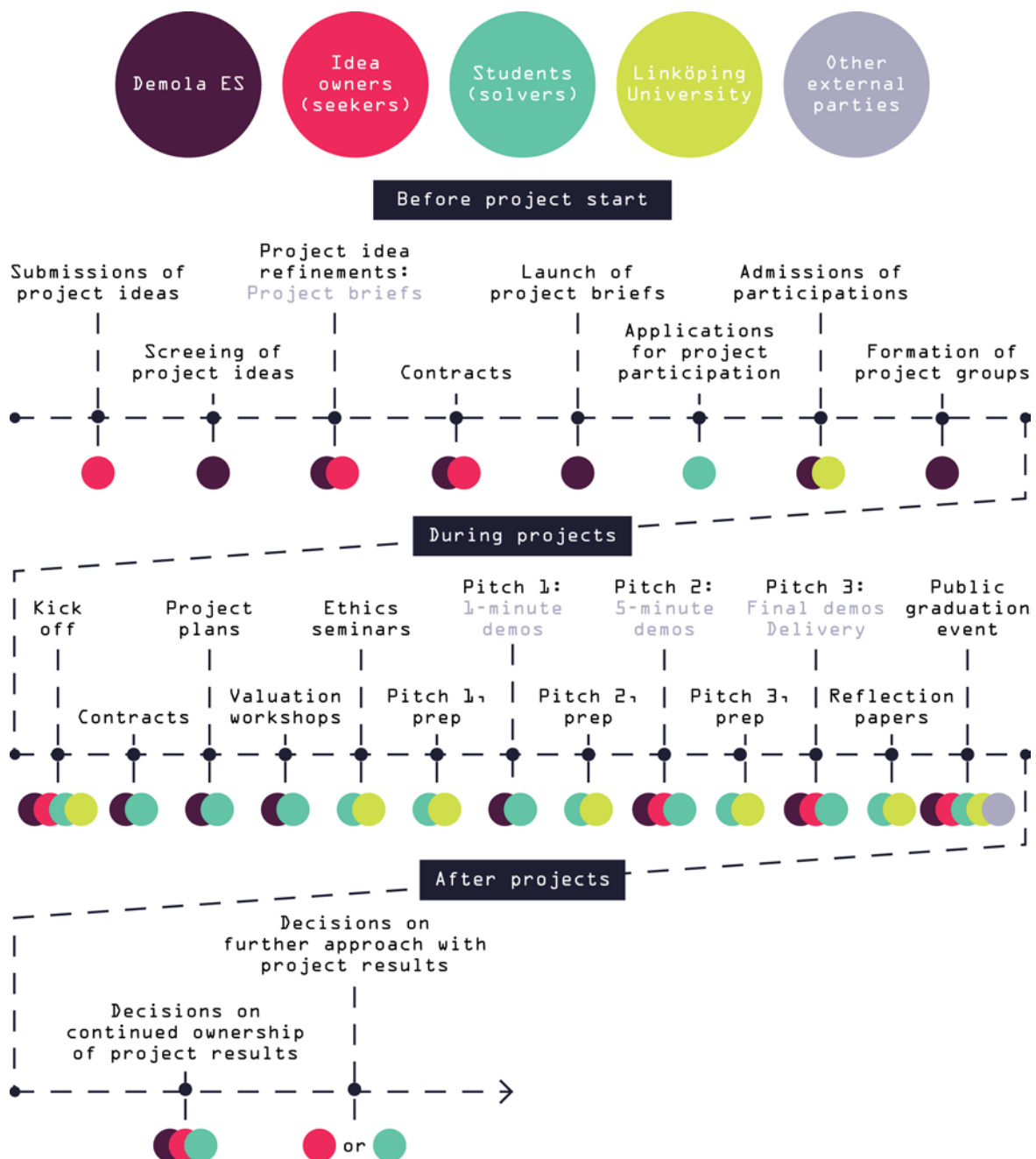


Figure 17 The complete Demola ES innovation intermediary project process

Figure 17 illustrate the entire project process, from the start where the seekers submit their project ideas, to the end where the solvers present their results and decisions are made on further progress with it. The general project process is shown chronologically, where the top row include all events taking place before the actual projects starts, the middle row include the events of the actual project process, and the bottom row include the events after the projects are finished. Each event is marked with what parties are involved in that particular event. These parties include Demola ES, the seekers, the solvers, the contributions of the university, as well as other possible external parties. In each individual project case there are also other elements included in the development process, and these are further described in section 6.2 The examined project cases.

6.1.1 The process before the projects start

This section describes what happens in the Demola ES project process before the projects start. This part of the process is shown in Figure 18.

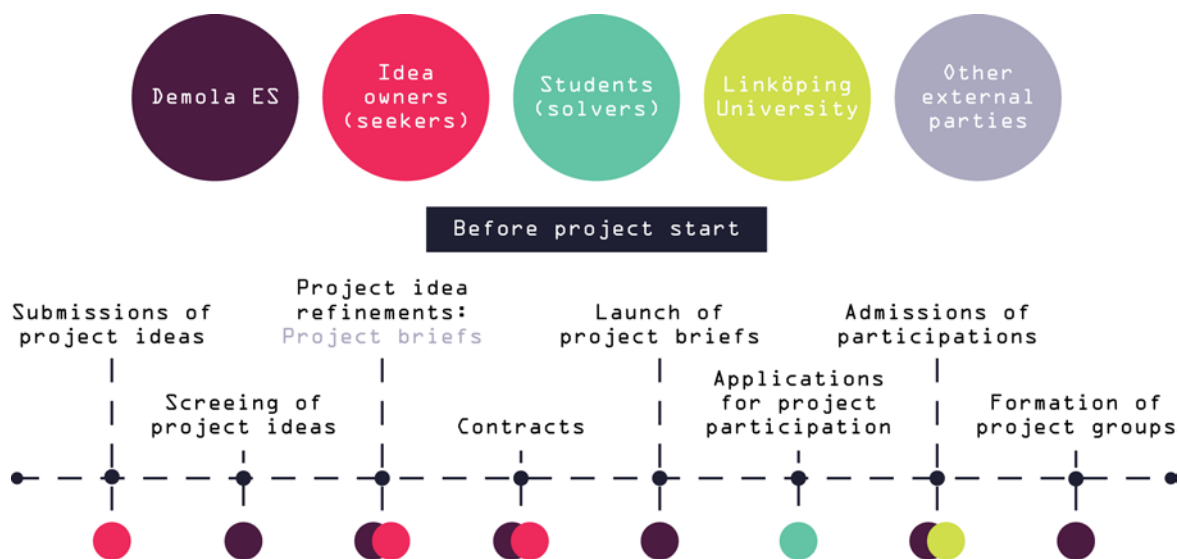


Figure 18 Events before the Demola ES project process starts

The events of this part mainly include Demola ES and the seekers. The seekers first submit project ideas, which are screened and refined. Then contracts are set up. Not until this is done can the chosen projects be launched for solvers to apply for. The solvers are also screened through different admission regulations before admitted and formed into project groups.

Project idea submission, screening, refinement, and contracts

The Demola ES innovation intermediation services begin with a number of preparatory events before the actual project processes start. This takes place during the preceding semester of the project round kick-off. It is basically initiated by the submissions of project ideas from seekers. Demola ES receive these continuously and they are all screened before potentially accepted as project cases. The conditions of what project ideas to move forward with is much about making sure the project is suitable for the solvers. A common issue to this can be that the projects are too specific on the expected outcome. This would instead relate more to a commissioned job, and perhaps be more fitted for the seeker to outsource to a consulting company, or even as degree project work. Demola ES is more about creating innovation possibilities explored through conditions that the solvers feel inspired by. Another screening aspect can be too extensive or too complex projects. The solvers are only students, and these kinds of projects would probably be more suitable for e.g. scientists or consulting companies.

If the project ideas do not seem to fit in, Demola ES either reject the idea or work with the seeker to refine it into a format more conform to the Demola ES purpose. Demola ES often provide the rejected seekers help with contact mediation to other possible ways for realizing the project ideas. Due to the very nature of the innovation intermediary operations, Demola ES do have many contacts within the industry and have vast possibilities to provide valuable interconnections even outside their main business. Demola ES is also part of the municipality owned Norrköping Science Park, which operates in an extensive network of regional industry promoting organizations. This includes services like help with business start ups and incubation. This means that even the rejected innovation seekers can make use of getting in contact with Demola ES.

In parallel with the process of refining the submitted project ideas, there is also a process of working out contracts with the seekers. These contracts include issues on intellectual property, confidentiality, and other possible legal aspects that need to be considered. These are to assure that the seekers and the solvers can go into the collaboration with a mutual understanding on the legal terms and conditions for the interchange.

Launch of project briefs, solver applications and admissions

The refined project ideas lead to project briefs. These are basically the mission stating descriptions of what the solvers need to solve. These are often very short, basically within the span of 500 words. They provide information on the seeker and the background to the problem, what needs to be solved, and what type of solution the seeker hopes for. Demola ES promote the seekers to keep the descriptions as concise as possible. This is mainly to highlight the essence of the project ideas, making it easier for the solvers to quickly comprehend them. It is also to make sure the projects does not become too specific or too steered, but allows the solvers to make their own interpretations to the problems, and be inspired to conceiving something they are interested in. The briefs are also recommended to be written in a selling point of view, more in style of an ad. The more enticing a project description is, the bigger the chance of solvers being interested to be part of it. If there are no solver applicants for a project, then the project will not be part of the upcoming project round, and the project idea will not be explored. In these cases, the project ideas are often instead put in rest for another shot in the next project round. All project briefs for each project round are launched at the same time on the Demola ES website, i.e. twice a year. The briefs are open for anyone to read, and the interested solvers apply directly via the website. Each solver applies for three projects that they are interested to partake in. At this point the potential solvers also need to register themselves to the website and provide information including e.g.²³:

- *Personal info*: name, phone number, e-mail address, place of study, and a brief personal presentation
- *Knowhow and skills*: descriptions on what they want to do or achieve in a Demola ES project, resumes, and in what preset categories of skills they can be included:
 - Business & concepts, environment, coding, governance, design & art, healthcare, education, media & communications, engineering, and social science

²³ Demola East Sweden. (2014, 05, 17). *User account*. Retrieved from Demola East Sweden: <http://eastsweden.demola.net/user/register>

Demola ES then use this information for an initial screening, where applicants not registered as students at Linköping University are sorted out. The applicants left are then sent for another screening to be admitted by the university to gain course credits for participation. In this second screening, solvers who have not yet reached either their third year to a bachelor's degree, or at least their fourth year to a master's degree, are sorted out.

Formation of project groups

When the screening process of solvers has been conducted, Demola ES forms them into project groups. In this process the main objective is to take the wishes of the solvers into consideration, referring to the three projects choices they have applied to. The solvers also specify which of these they are most interested in. Demola ES also strive for mixing the solvers as much as possible regarding university programs. The point to this is to enhance the multidisciplinary aspect of the projects. This approach is strongly connected with the main service offering that Demola ES provide to the seekers and the solvers, meaning innovation attained by unexpected combinations of knowledge.

6.1.2 The process during the projects

This section describes what happens in the Demola ES project process during the actual projects conduct. This part of the process is shown in Figure 19.

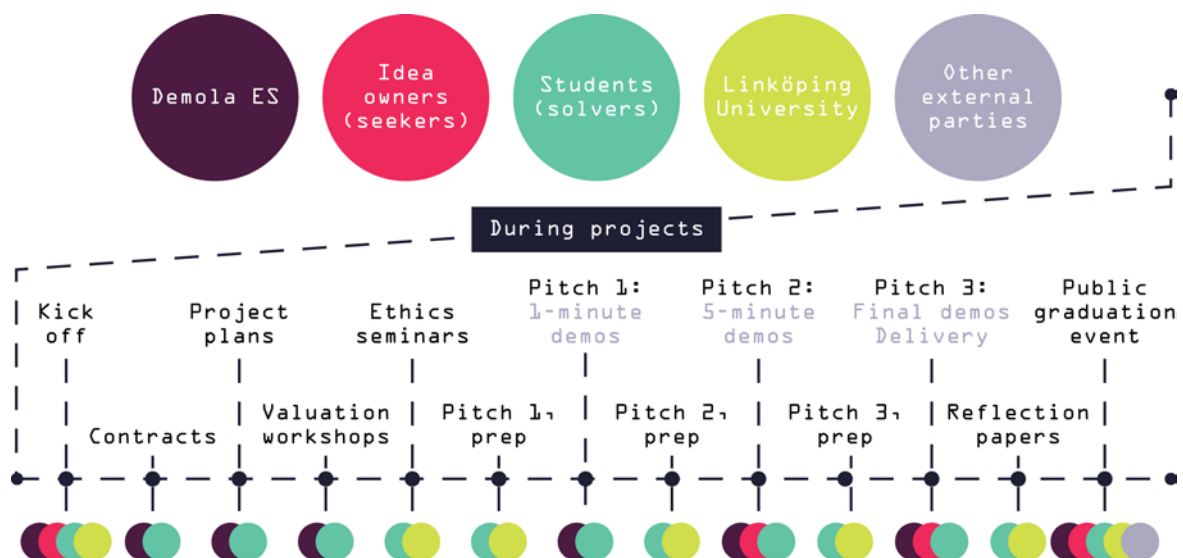


Figure 19 Events during the Demola ES project process

Kick-off and contracts

The actual project process takes place over the course of a semester. It is officially initiated by a kick-off event where the seekers and the solvers are presented with information on the project process to come, and the respective seeker and solvers pairings are introduced. The seeker presents the project case to solvers, and the solvers get an opportunity to ask initial questions. Demola ES also provide each project group with a project facilitator to mainly help with guidance and support to the seekers and the solvers through the process.

At this point the solvers are also presented with the contracts set up by Demola ES and the seekers in the phase before project start. In order for the solvers to start working on the projects, these contracts need to be signed.

Project plans, valuation workshops, and ethics seminars

The first more practical course of action in the project process is for the solvers of each project group to set up a project plan. These are sent to the respective project facilitators. This is mainly to assure that the solvers have gotten started and have discussed sustainable plans for what they want to achieve, and how to do it.

The next event is valuation workshops. These are held by the project facilitators for the solvers of each project group. The purpose is for the solvers to discuss what they want to achieve, contra what the group as a whole want. During the workshop the project facilitators brings up predefined discussion issues for the solvers to discuss. This includes subjects on:

- *Basic issues:* e.g. who the customer versus user is, stakeholders, project goals, and success criteria to the project
- *Design work issues:* e.g. decision making in the group, what design work methods will be used, and who will do the design work in the project
- *Transition issues:* e.g. possible external sources of input, how to decide when each part of the development process is finished, and what to continue with next in the project
- *Demo work issues:* e.g. what methods will be used for prototyping and demos, who will do this work, and what is the approach to possibly changing directions during the project process
- *Working demo issues:* e.g. how to know if the project problem has been solved, when is the value of it delivered, and what else has been produced in the project

The valuation workshop is then followed by the first university provided mandatory event, i.e. ethics seminars. All solvers are provided with scientific papers on ethics issues, which are each project group then discuss separately with the university examiner. The ethics issues are discussed in the specific aspects of each project, including issues like e.g. what potential harm the technology of a project can do in an ethical point of view.

Preparatory pitch 1, and pitch 1

The next step in the process is for the solvers to make first pitches of the progress so far in each project. This is the first one of multiple pitch events conducted throughout the project process. All pitch events come in the set of two at the time, where the university first provides a preparatory pitch event²⁴ for each project group separately. A few days later this is followed by a “main” pitch event provided by Demola ES. These are all held to provide the solvers with useful input on their projects and for them to practice presentation techniques.

In this first set of pitches, each pitch is a maximum of one minute, and no visual aids are allowed. In the pre-pitches, the solvers of each project present their project cases to the university examiner, who then presents feedback on the presentation techniques. At the following “main” pitch held by Demola ES, multiple project groups are present at each pitch. After every project pitch, all project facilitators provide feedback, both on the presentation techniques and on the quality of the projects. The floor is also open for the solvers of other projects to fill in with questions or feedback. The seeker is not present at either pitch event.

²⁴ Hereon referred to as pre-pitches

Preparatory pitch 2, and pitch 2

The first set of pitch events are followed by a second set. The difference this time is that these pitches instead are five-minute pitches, and visual aids are now also allowed. The pre-pitches are otherwise conducted the same way as the last time, where the projects are presented separately to the university examiner, and feedback is attained on presentation techniques. During the “main” pitches, however, the seekers of each project are also present this time. After each pitch, the project facilitator, the seeker, and the solvers of each project sit down together to discuss the project and to exchange input and ideas on how to move forward.

Preparatory pitch 3, and pitch 3

The second set of pitches is followed by a third set. In these pitches the final results of the projects are presented, once again in the five-minute format and with visual aids. Both the pre-pitches and the “main” pitches are basically conducted the same way as in the second set, but the solvers this time also deliver the actual results to the seeker after the “main” pitch.

Reflection papers

As a final event provided by the university, each solver need to write an individual reflection paper and submit it to the university examiner. This paper should cover issues on e.g. the experiences the solvers have had through the process and what they have learned from it.

In order of gaining the course credits, each solver need to have completed all the mandatory university provided events, i.e. the ethics seminar, the pre-pitches, and the reflection paper.

Public graduation event

As a more official closure to the project process, the solvers of each project present their final pitches again in a public graduation event, held right before the start of the next semester. To this event anyone is welcome, and all stakeholders to Demola ES and the projects are invited.

Continuous events of the project process

Besides the mandatory events during the project process, there is also of course the actual project work conducted by the solvers. Figure 20 illustrate the aspects included to this.

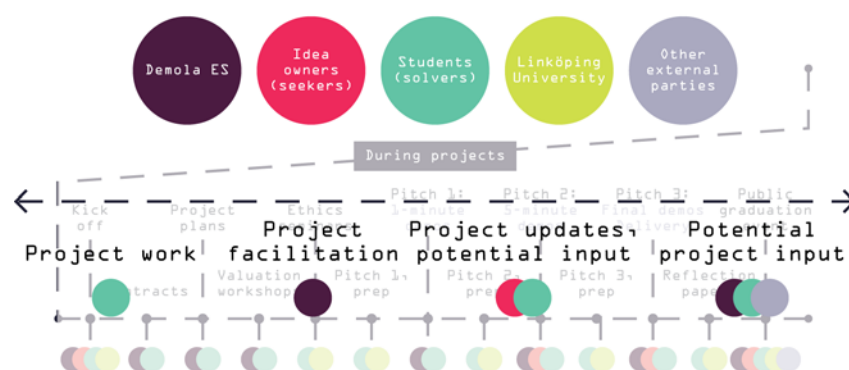


Figure 20 The continuous events taking place during the project process

The continuous events taking place during the project process first of all include the project work conducted by the solvers in each project. To this work the project facilitators, the seekers, and other potential sources of input in some extent also contribute to the continuous project work.

In the continuous project work conducted by the solvers, the more project specific conducts are different from project case to project case. It depends much on what type of project it is, e.g. if it focuses on technology or on social sciences. It also depends on what type of results are being produced, i.e. what the goal for it is, like e.g. a physical prototype, or a concept idea. What they all have in common, though, is that there is a development process taking place.

The continuous contributions from the project facilitators are mainly to help the solvers of each project with guidance and support. This can include anything from help with issues on group dynamics, or tips on how to move forward from stagnated ideas. The project facilitators can also be mediators of useful contacts with external sources of information, for instance, companies doing research on technologies relevant for a certain project. The project facilitators are not meant to provide specific solutions for the projects, but more to help the solvers to work better as a team in the development process. The solvers can also contact their seekers for potential expert input, or to just update them on the project progress.

6.1.3 What happens after the projects

This section describes what happens in the Demola ES project process after projects are finished, and the results have been presented to the seeker. This is shown in Figure 21.

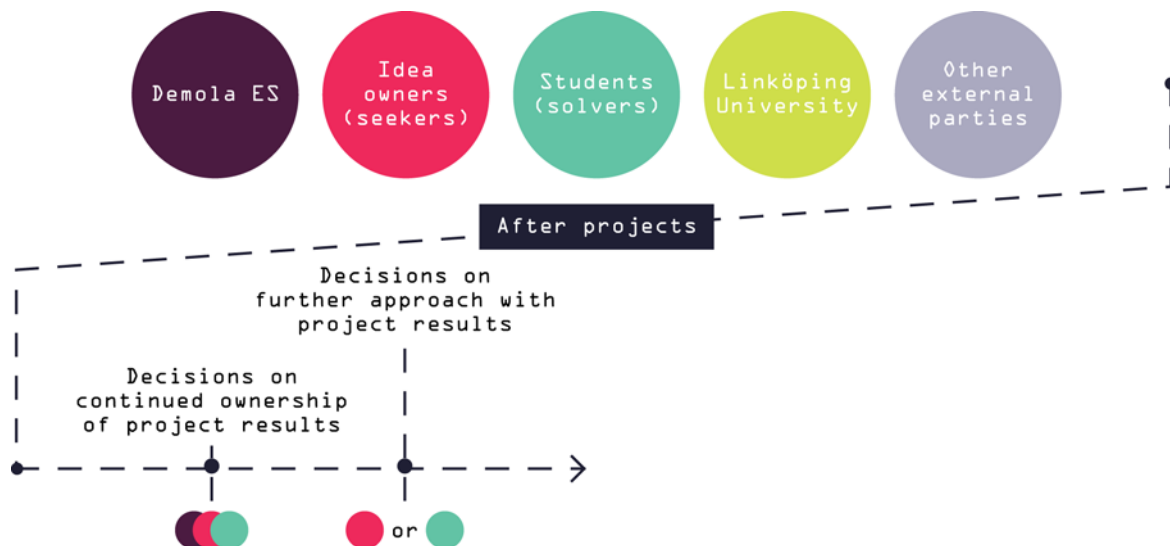


Figure 21 Events after the project process of Demola ES

In this part of the project process the seekers review the project results and the material delivered by the solvers. This can e.g. include physical prototypes, or just stacks of papers of sketches and notes produced by the solvers during the projects.

Decisions on further ownership of results, and further approach with it

This is where the solvers decide whether they want to buy the results or not. If they do decide to buy it, the seekers get to choose one of three prize figures preset by Demola ES. These are the same for all seekers and all projects, in every project round. All administration on these issues is handled by Demola ES, including money transactions, and legal issues on ownership of the results produced. Modified types of payment do happen occasionally, including e.g. joint continued ownerships between seeker and solvers in a spin-off company based on the project results.

Even after the projects have been finished, Demola ES keep in touch with the solvers. As students the solvers recognize a value to maintain contact with Demola ES, due to the extensive network of contacts that Demola ES have. Demola ES can help the solvers on mediation of contacts for possible summer jobs, degree project work, or careers after graduation. The project facilitators are also sometimes asked to be references on job applications for former solvers.

6.2 The examined project cases

This section describes the more project specific conducts, expectations, and experiences, of the four examined project cases.

6.2.1 Project case A

Project case description

This project case was about exploring applications of communication technologies on thin film surfaces. The seeker of the project is a multinational organization in the communication technologies and services sector. The appointed seeker mentor works with strategy development in the seeker organization, and is involved with several projects of external scanning and innovation within the organization. The project group of solvers consisted of three students:

- 4th year master of science student in Engineering, Physics and Electrical Engineering
- 5th year master of science student in Engineering, Product Design and Development
- 4th year master of science student in Engineering, Electronic Design

The project was conducted in the Demola ES project round 3, which means that this project was still under progress during this study, and the final results of it could not be included.

The service of innovation intermediation

The seeker

The project idea had not been explored or developed much by the seeker before submission. The idea had instead originated from an identified need from a client of the seeker. The area of the idea itself was still fairly unexplored as a technology, and seemed to be trending as an area of potential innovation interest for the seeker. The seeker often uses methods for trend forecasting, mainly by using “trappers” to scan for upcoming trends in different areas of technologies. Through the collaboration with Demola ES, the seeker hoped to possibly achieve this kind of results. The project idea was otherwise submitted for two main reasons, i.e. to meet students in prospect of future employees, and to attain innovative ideas from a still fairly “unspoiled” source, preset from habits on how things “should” be.

The seekers expectations on results were mainly to see something they had not seen before, something they could build new project ideas on. They hoped to be presented with concept solutions and problem descriptions to use for this, i.e. either to be continued within the seeker organization, in collaboration with an external partner, or even as another project submitted to Demola ES. A disappointing result would be an underwhelming solution that already is commonly adapted and used on the market. Even a failed attempt would be more interesting. It is the process behind the results that is the most interesting part, referring to what choices was made, what was rejected, where the solvers has looked, and so on.

The seeker in general see many benefits of working with students, and often brings them in for degree project work. This, however, also, require certain efforts and resources, making the collaboration with Demola ES very appealing. The project idea does not need to be as precise as it with degree project work, and this way Demola ES handles all practical aspects, i.e. they provide all support and resources that the students need through the project process. This allows the seeker to simply being the provider of the project idea, and only if needed, to help with expert advice. In this project, the seeker basically did not have any contact with the solvers at all during the project, other than the kick-off event and the second pitch.

Other values that the seeker had attained from the collaboration so far, included seeing how the solvers worked, i.e. what approach they had taken on the problem. The seeker also found it interesting to see how the concept of Demola ES actually would work, i.e. on creating connections between companies and students. The seeker considered this kind of collaboration to be very valuable, because there was no requirement for commitment or extensive input of resources for the seeker. This was expressed as the main strength of Demola ES, and an absolute necessity for the seeker to be able to partake. If there would be more involvement required, i.e. an investment of more resources, then the seeker would also want to put higher demands on the results. In the current form of collaboration the seeker can instead allow a more loose approach.

So far the project was considered to promisingly be moving towards the kind of successful results that were hoped for. The seeker could also absolutely consider working with Demola ES again in the future.

The solvers

The main objectives for the solvers to partake were part to gain experience from working in real projects, with a more practical approach than courses at the university. Demola ES provide an opportunity, and freedom, to risk failing without consequences of a failed grade due to unfinished results. Another part was to collaborate with students from other programs, which neither group member had done before. A third part was to get in contact with the seeker organization as a potential future employer. The project itself also was very appealing, as it encouraged the solvers to do with it what they felt inspired by, to do something cool. The solvers all considered the project process itself as the most important part of their participation. If the results would be bought by the seeker in the end, it would only be a bonus. Still, they hoped that the results would inspire the seeker to actually use and apply into something real. The only possible aspect of failure would be if the project got stuck somewhere in the process, leading nowhere.

Throughout the process the solvers had much use of their project facilitator. They attained much support on moving the project process to forward, especially when the flow of ideas had stagnated. The project facilitator did not provide input on technical solutions, but more to helpfully trigger decision making. The project facilitator set the solvers up with an inspirational study visit at a company doing research in the same area of technology that this project focused on. In addition, there was also a mediation of contacts set up with another company in the technology area, to help the solvers towards more possibly useful information.

Regarding the mandatory events, the solvers felt that these had taken a lot of time, both the Demola ES and the university events. The solvers considered it important to put effort into what they presented in each event, which also requires time for preparation. Ultimately this was considered as valuable time taken from the actual project work. The solvers were certain they would have come further with the project at this point, if there would have been less mandatory events. Still, the events were also considered useful, the pitch events in particular, both from Demola ES and from the university. These provided relevant tips on improvement on presentation techniques and on the project. The only considered non-useful event was the ethics seminar. It did not contribute with much, since the project does not involve any ethically controversial or harmful technologies. The events are also very similar, and the solvers would rather see the respective pre-pitches and pitches merged, as well as the valuation workshop and the ethics seminar.

So far, the solvers considered the project to do very well. They considered the main gain attained as the opportunity to go a bit crazy on using their academic knowledge attained from their education. It was also a confirmation, of some sorts, that this knowledge actually is there, and can be used to make valid and competent assessments. Another plus was the useful contacts made towards potential career opportunities. This was an effect the solvers think Demola ES should enhance even more. The solvers would readily e.g. have taken part of organized mingling events with organizations and people as either sources of project inspiration, or as contacts for career opportunities.

The only direct negative experience regarded issues in connection to the collaboration between Demola ES and the university. The solvers would appreciate if there was a more conform approach from the two.

The structures behind innovation management

The seeker

The seeker chose very actively to not take a steering role through the project process. This unrestricted approach was mainly to challenge the solvers to engage in the task of generating completely new ideas, readily with an element of surprise or even something a bit crazy or whimsical. The seeker did neither have any interest in partaking in the process of putting together the solver project group. Part because the seeker felt they had not enough insight on what the different programs of the university provides, and part because this would require the seeker to put in more resources of time to the collaboration. The current arrangement of involvement was considered satisfactory.

The seeker only met with the solvers at the kick-off event and at the second pitch. While the kick-off was basically just a meet-and-greet- with the solvers, the pitch event was much more substantial. The seeker thought it was very informative, and at the meeting with the solvers afterwards, the seeker gave input as tips on how to continue the project in sustainable way. The seeker also recommended continued directions that would help the project to not stagnate in limiting ideas.

The solvers

The solvers of the project group all considered themselves to bring with them their own set of skills to contribute with. Among the group members they included competences in engineering, coding, project work and group collaborations, and design. There were otherwise no formal roles within the group, i.e. with a group leader or similar. The solvers neither felt they lacked any competences, basically because they chose the direction of the project based on the set of skills they had among them. As a practical work approach they most often worked on the project together, allowing them to make quicker decisions. This since they this way could discuss ideas and do research continuously during the work session.

From the valuation workshop with their project facilitator, the solvers were recommended to work iteratively, i.e. to first search, form a concept, and then test it. This recommendation was considered very useful, and the technique was used repeatedly in through the development process. The input from the project facilitator at the first pitch event was also considered very useful. At this point the solvers had collected much information and generated many ideas, and were basically recommended to just go with the coolest one they felt they had, the one that was the most “out there”. At the second pitch event, where the seeker also was present, the solvers were recommended by the seeker to continue with the technology they had chosen, but to drop the application concept for it. The solvers decided to do so, i.e. both because they trusted the expert input from the seeker, but also because they felt they probably would not be able to get much further with the idea anyway. There would simply not be enough resources and competence within the group for it. The solver only had contact with the seeker at the kick-off event and at the second pitch event. This extent of contact was considered sufficient. No additional contact was considered necessary.

The practical implementation of innovation

The seeker

The project brief was very short, and basically only asked for ideas on different inspiring concept solutions where communication technologies could be applied on thin film.

The solvers

The solvers started by trying to concretize what the project process was going to focus on, i.e. what they wanted to achieve. From start it was decided to develop a concept solution, and not a physical product or prototype. This decision was based both on what the seeker had implied to want, and on what the group felt was possible to achieve with the resources and competences on hand. The solvers initiated the project by brainstorming as many ideas as possible, and by screening them through scenarios of possibilities they could lead to. This was done by scanning the Internet for different technologies that would be interesting for potential thin film application. Two areas of application were chosen to focus mainly on.

The next step was to choose which technology to use. This decision originated from one of the contacts mediated by the project facilitator. Since this technology area of the project was fairly unexplored, and there had not been much application of it yet, the solvers much appreciated the input as a foundation to go forward with. Based on the recommendation from the project facilitator at the first pitch, the solvers chose their coolest, most extreme concept idea to go forward with. After the second pitch the solvers felt they could not continue much further with the concept idea at that point, and decided back up again in the development process, and to re-widening the scope.

The final project goal for the solvers was to deliver a concept idea to the seeker, and to also hand over everything produced during the project process. This basically included a set of structured documents with descriptions of e.g. choices that had been made, Internet search paths, and so on. The purpose would be to provide the seeker with information that could be understood and potentially useful.

6.2.2 Project case B

Project case description

This project case was about creating a business plan for a social platform, where Swedish sponsor families could be connected with newly immigrated ones. The project was based on an idea provided by a private person. This seeker otherwise work as a multi entrepreneur, and has started several businesses, either to sell further or to continue run in-house. The project group of solvers consisted of four students:

- 3rd year bachelor of science student in Engineering, Computer Engineering
- 2nd year student of single-subject courses towards a bachelor degree in Sociology
- 5th year master of science student in Engineering, Information Technology
- 3rd year bachelor of science student in Social Work

The project was conducted in the Demola ES project round 3, which means that this project was still under progress during this study, and the final results of it could not be included.

The service of innovation intermediation

The seeker

The project idea originated from a personal interest the seeker and the seeker's family had to be connected as a sponsor family to a newly immigrated one. The purpose was to do something fun together as a family, while also doing something supportive and valuable for someone else. The seeker looked around for existing services on this, but basically did not find any. This led to the idea of a new business for the seeker to start up. Since the seeker is a private person, the resources of time and money were important issues for realization, and mainly is why the collaboration with Demola ES was initiated. Through a Demola ES project the seeker could do a low risk pre-study of the potential of this business idea, with a low investment of effort, time, and money. The hope was for the results to be used as a starting point for a foundation or a similar non-profit organization, which the seeker would start up and then leave for others with a shared interest to run.

Another aspect for the Demola ES collaboration was to get in contact with students as potential future employees. The seeker runs multiple companies and had identified a need for working with students before they graduate. This would basically be to "try them on", i.e. to find out if they might be interesting to work with after they graduate. There was also a considered advantage of working with students as solvers. The solvers do the project on their own conditions, where they put in the time they want to put in, and without limitations of financial frameworks. This would benefit both the seeker and the solvers. The seeker hoped that the solvers would gain a learning experience from working with something real, and if the results would be possible to realize, they would also really have been a part of making it happen.

The seeker was so far very pleased with the direction the project had taken. The seeker appreciated that the solvers really had expanded the initial idea into their own approach. The seeker considered that the solvers idea had real potential, and also considered it a success so far. Whether the results would be bought or not, would depend on what effort the seeker would be required to add for realization. The seeker is a private person, which means limited resources of spare time. If the results would be too difficult to continue with, then it also would not be bought. In this regard the seeker expressed a few practical aspects of the project, where the seeker would have wanted to be consulted. These were mainly issues on e.g. acquisition of a domain name, and the set up of a website. The solvers had taken a few initiatives on their own on aspects like these, without involving or coordinating with the seeker. The seeker already runs multiple companies, and has a certain common conduct for these kinds of practical issues. If these conducts could have been inserted into this project also, then it would also be easier and more probable for the seeker to be able to later realize the results. The risk otherwise is that these unsynchronized practical issues, will make the results too complicated and time consuming to deal with. The time issue is in general the most important key aspect the seeker, and the fact that there has not been much required involvement in the project process has been considered valuable.

The seeker would consider collaborating with the solvers again, either as a possible continued collaboration with this project, or if suitable opportunities emerge in the seeker's companies.

The solvers

A main reason for choosing this project was because it focused so much on doing something good for society. While the other projects were more about developing a product or exploring a certain area in the name of a company, this project was more about creating a contribution to the society in general. Also, the prospects of this project seemed to require more extensive fieldwork of testing viability of the idea on real people, which were appealing to the solvers. A Demola ES project would also provide a welcome break from the regular study environment. For some solvers of the project group it would also be the first experience of working in a project with a practical conduct, as opposed to previous only theoretical projects.

The solvers believe that the advantage of them being students was the factor of inexperience. This probably makes it easier to find new unexpected perspectives, leading to a greater commitment and drive in the project. A company e.g. would deliver exactly what the seeker asks for, but student solvers would be curious to explore even more. A possible downside to student solvers could be a possible lack of commitment due to participation to only gain course credits.

The solvers all felt like they had put in more time to this project than they would have in a regular university course. They did not mind putting in this extra time because they enjoyed doing the project, and believed they would not have reached as far with it otherwise. The goal was to reach as far as possible. This was both to make sure the seeker would have something substantial to take over, but also because the solvers hoped to be asked to continue the project as a summer job if the results were good enough. A failed result would be if the seeker would say the results were good, but not possible to do anything with. Still, the solvers believed in their own idea, and if this would happen then they would consider realizing it on their own instead. Yet, the solvers believed that the seeker was impressed by the results so far.

The solvers considered the communication between Demola ES and the university to have been unsynchronized. All information would not need to be given simultaneously between the two, but it would have been preferred if they had seemed to be more aware of each other. The solvers also expressed an interest in conducting the whole project experience in English, both the university and the Demola ES events, with pitches and all. The solvers considered this would be a useful opportunity to practice these skills. The solvers also expressed that they did not want the university to take a bigger part in the collaboration, i.e. with even more elements of seminars and such. Though, they would like to see the Demola ES projects as a more recommended course to do before the degree project work.

The project facilitator was considered very useful to the solvers by continuously checking in and asking questions about the decisions the group had made, and make suggestions on what they might need to consider instead. All project facilitators did this, and it was considered very valuable that the solvers would not have to make appointments ahead for this feedback. What the solvers otherwise gained from the project experience, was to learn how to focus on a direction in such a chaotic and ambitious project like this had been. The structure of the project work was also a valuable lesson that the solvers would bring with them in their upcoming degree project work. The solvers found it inspiring to work in a real scenario with real companies, and with result that would actually be used. This instead of just thrown away or get stuck at the university. These results would instead be possible to use as an achievement to put on paper. The solvers would, otherwise, not mind seeing some kind of collaboration with the other Demola centers, like e.g. with study visits, or even a national or international contest between all projects from a semester, where all project groups would meet up for a communal prize ceremony. This would probably push for more ambition in the projects.

All solvers of the project group would be interested in working with Demola ES again, either again as a solver or as a part of a seeker company.

The structures behind innovation management

The seeker

The seeker did not have much initial expectations on what contributions would be required in the project process, other than to potentially answer questions the solvers might have. The seeker maintained the solvers with a very loose steering approach for the project conduct.

The kick-off event was good since it required the seeker to think again about what the project idea actually was about, and why it was initiated. The seeker thought the second pitch event was very interesting. This was the first time the solvers presented their progress to the seeker. The pitch in itself was considered difficult to grasp since the concept idea was not described concrete enough, but the meeting with the solvers afterwards was much appreciated. The seeker especially valued working together with the solvers on potential progress for their project idea. This was the most rewarding part of the project process so far for the seeker.

The solvers

The solvers chose a project approach with very little initial delimitations set up. Instead they would identify delimitations and the continued directions along the way. The next steps of each part of the project were discussed on a week to week basis, where the solvers basically added new parts to it as they finished others. It was continuously calculated if there would be time left for adding more to the project results. This approach was, however, addressed by project facilitator, warning the solvers of this potentially becoming a stress factor instead. The project facilitator meant that if the solvers would not define what they wanted to achieve, it would be difficult to measure how well the project was going, and when the goal would have been reached.

There were no formal roles within the project group. All group members each contributed with their specific competences, like web design, fact checking, sales, and making new contacts. They were all usually also involved with the decision making, where even if only one member would execute the practicalities of e.g. web design, all members would give input to it. The solvers considered themselves more as friends at this point, and the only problematic issue they had encountered had been about differences on commitment. This issue was discovered early on in the project, and a meeting with the project facilitator was held where it was discussed. The issue was discussed openly, and covered e.g. how to make decisions, and what the goals of the group members were. This meeting solved the problems, and the group members were from that point more confident on telling each other when they would not agree.

The solvers would not want to be involved in choosing the members of the project group, because they all instead saw this as an opportunity to learn how to cooperate with people of other backgrounds and different ways of thinking. The solvers also attained help from external resources for creating a logotype, and help with coding. These sources were personal contacts to the group members, such as fiancés and friends. The only competence that the solvers felt that they had lacked within the group was someone with insight on financial and legal aspects of starting up a business.

In the aspect of the mandatory events, the solvers did not consider the first pitch event as particularly useful. The event was mostly about getting feedback on the project from the project facilitators, which the solvers already felt they continuously attained from the day to day project facilitator checkups. The second pitch event was very useful, because the solvers got plenty of questions on issues they had not thought of. The input attained from university examiner on the pre-pitches was also considered useful, but mostly only on how to conduct presentations in university related contexts. The solvers did not consider there was a need for any additional mandatory events, i.e. these already take up enough time as it is.

The practical implementation of innovation

The seeker

The seeker submitted the project idea to Demola ES, and was then helped to write it as a project brief for the solver applicants. The brief contained a short description of the problem background, and what the hope was for the project results. To write the brief was the most time consuming part of the project process for the seeker.

At the kick-off event the seeker met with the solvers for the first. The seeker then basically only introduced the project as it had already been described in the project brief.

The solvers

The solvers started by discussing what they wanted the project to focus on, and first chose to focus on the sponsors and the immigrant families as the main perspectives. However, the solvers soon realized that these would be difficult to access for user input, and instead chose to work in the perspective of starting an organization. This organization would be about free-of-charge connecting of sponsor and immigrant families through mutual interests. The families would be able to create or sign up for one-time events, that either party would be able to initiate. The idea also included for sponsor companies to be able to sign up to provide contributions to these events, like tickets to a concert or supplies for making a big dinner. This was the concept idea that the solvers chose to proceed with.

The solvers chose a very user centered continued approach, where the next step was to test the concept idea on potential users. The solvers booked five meetings with prospective sponsor families, companies, and other parties of potential interest to the concept. At these meetings the concept idea was discussed in the aspect of what families and companies would want from the concept.

The solvers also decided they wanted the concept to be structured around a website, which would be the main platform for connecting the families and companies. The design and content of the website was discussed within the group, and inspiration on conduct was gathered from other similar websites, like online dating sites.

The final goal was for the solvers to deliver a tested and reality based solution to the seeker. In this, a functioning website would be included, a compilation of potentially interested users, a defined solution for matching the users, and basically a business plan for it. Everything would not need to be completely finished, but more of a solid suggestion for how to realize the results.

6.2.3 Project case C

Project case description

This project case was about developing a graphic interface for programming functional flows. The seeker of the project is a SME²⁵ IT consultancy organization. The role the appointed seeker mentor has in the organization is part as business developer, part as chairman of the board, and part as head of a department for development towards smaller businesses and organizations. The project group of solvers consisted of five students:

- Two 5th year master of science students in Engineering, Media Technology
- Three 3rd year bachelor degree students in Graphic Design and Communication

The project was conducted in the Demola ES project round 2.

²⁵ Small and Medium Enterprises with up to about 250 employees

The seeker

The submitted project idea was part of a bigger project within the seeker organization, and it was a part they had not started working on yet. Definition of the project idea was both open and steered for the solvers. It was open in the aspect of the developing the graphic interface, but steered to the recommendation of letting the project be about programming functional flows.

The main reason for the seeker to participate was to support Demola ES as an organization. The seeker considers the concept of Demola ES as a great idea with much future potential. Another reason for participation was the opportunity get in contact with students, which is something the seeker already works actively for in the recruitment of newly graduates. What was appealing about using Demola ES for this was the mix of students from different programs, where they would work in projects directly connected with companies and the companies' own project ideas.

The seeker did not have many expectations on what the collaboration would lead to, even if it certainly would be considered pleasing if the project would generate an applicable solution. The interest was more in seeing what the collaboration between students in media technology engineering and students in graphic design would lead to. The project itself was a mixture of both elements. The domain competence of the project was very technology focused, where the application in turn had a strong focus on user interaction, connecting the technology with the graphic design aspects. The seeker expected to have to provide extensive support for the solvers during the project, and had prepared test environments and equipment for visualizing the project work if there would be any need for it.

The results of the project were not bought by the seeker in the end, basically because there was no considered actual solution to buy. The seeker was prepared to buy the results anyway, for good measure, but was recommended by Demola ES not to. The results were not possible for the seeker to use for anything else either, i.e. new project ideas, degree project work, or any other possibilities. Still, the seeker did compliment the solvers for doing great and exciting work on the project. The seeker was especially impressed with what the graphic design students had accomplished. They had managed to take on a task they did not understand at all, and to still take it and deliver something. This has triggered an interest with the seeker for potentially recruiting graduated graphic design students in the future. The collaboration with Demola ES has provided this opportunity to get in contact with students in a way that otherwise would not be possible. The seeker has not had any continued contact with the solvers of this project, but would be interested in working with Demola ES again.

The seeker recommend Demola ES to more affirm and engage the seekers during the project process, since this would probably assure the solvers to get more out of the results too. When the companies are willing and interested in providing their commitment, it needs to be gladly welcomed. The seeker also believe that the projects would probably benefit from being more narrowed, focusing more solely on finding interesting solutions to the seeker challenges.

The solvers

One of the solvers of this project had participated in a Demola ES project in the previous project round, and knew about the concept from this experience. The other solvers were completely new to the concept. This project was chosen because it basically sounded interesting, i.e. it matched the personal interests of the solvers well.

There were not many expectations on what the project would incline, but there was a hope for it to potentially leading to a job at the seeker company. Between the two types of students in the project group, there were different expectations on what the goal for the project should be. While the media technology student solvers wanted to create a basically finished product, or working prototype, the graphic design student solvers only wanted to focus as far as a to concept idea. In this case the solvers never seemed to really be able to agree to a common approach, and the results produced became something in-between. The results were much a compromise between a concept solution and a finished product, and neither explored and developed enough to be of much use.

The results was not bought by the seeker, and none of the solvers chose to go further with the work either. The solvers appreciates that there would probably be about a year of work left before it would be anything applicable, and neither of the solvers seem to have interest enough for it. Still, the solvers believe the seeker was impressed with the results, but would have preferred either a working prototype or a more developed concept idea. In that case, the seeker would at least have had something concrete to continue with. The media technology student solvers of the project group considered that a working prototype as would have been successful result. They had hoped to get an opportunity to use the seeker's test equipment and test environments, and to do this they would have needed prototypes finished enough to test. The graphic design student solvers on the other hand, considered that a concept prototype would have been successful result. Since neither of the solvers really got what they wanted, they consider the produced results as failed and they do understand why the seeker did not buy it. The solvers in the group all had the ambition on creating something useful for the seeker. The solvers believe that it might have been better if they would not have let themselves be so steered from the seeker's wishes. They should instead have chosen something they wanted for themselves as a group.

What the solvers gained from the project was a new awareness on what roles they wanted, and what roles they should and could take in a project group. Also, by using the Demola ES project work spaces, one of the solvers got in contact with a company in the same building. The solver now works part time with this company, in parallel with the regular studies. A disappointing aspect of the experience for the solvers, was that the project did not lead to much opportunity for them reach full potential and really contribute with much competence. The contributions needed were instead mainly on things the solvers already knew and had done before.

The structures behind innovation management

The seeker

The seeker was instructed by Demola ES to not induce much contact with the solvers during the project, and the seeker adapted to this. There was basically no contact between them outside of the initial kick-off and pitch events. At the kick-off event the seeker informed the solvers on what help could be provided if needed, and basically answered the initial questions the solvers had.

The seeker felt there was not much gain from the pitch events, and basically considered that the solvers did not get much out of it either. Mainly it was the conduct of the pitches as sales pitches, where the results were presented as finished products within only a couple of minutes that to the seeker felt to be irrelevant. The seeker also believes that the solvers had to integrate too much business, pitch, and academic influences into their project. The results of the project would probably have been better if the solvers would have had more opportunity to focus their time and effort on developing the actual idea. This critique has been presented to Demola ES. The seeker also recognizes that Demola ES was still in an early test-run stage of their operations, and due to the changes made since, they probably work better now.

The solvers

Since one of the solvers had been part of a previous project, and had the experience of the Demola ES project conduct, there seemed to be an initial unspoken role as a leader put to this solver. However, the solver knew that this was not a role that would fit very well, and instead tried to avoid it. This was probably an issue that led to the planning phase of the project taking longer than it should have. Other than this, the role distributions were mainly about coding and graphic design. There was no explicitly chosen project leader, which the solvers perhaps felt they should have had. At least there was a need for someone who would have kept the project on track more, and had triggered the group to make decisions. The issue was not because the solvers did not get along within the group, but more that they became more like good friends and were uncomfortable with being too decisive and disagree with each other. The solvers also believe that another aspect to this time inefficiency was because of the differing expectations and goals within the group. However, this issue was addressed by the project facilitator in a meeting, even if the solvers felt that this meeting would have been necessary for them much earlier. As it was now, they lost a lot of valuable time on their indecisiveness.

Otherwise, there was an issue of ambition in the project. There seemed to be more focus on gaining the course credits than creating something exciting. This affected the whole group and brought the common ambition level and motivation down for all the solvers. The solvers believe that it is important for Demola ES make sure to mainly appeal to solvers capable of working in this undemanding project form. In these projects there are no clear aspects of failure or goals that have to be achieved. Otherwise Demola ES need to be put higher demands on performance for the solvers.

The practical implementation of innovation

The seeker

The seeker created and refined a project brief together with Demola ES, to make sure it would match the Demola ES concept.

The solvers

The project process had a long planning phase, where the project group tried to decide on what direction they wanted the project to take, and what the goal should be. The solvers wrote down different ideas on post-its, and discussed questions like when, where, and why. They also worked with this idea generation in a commonly shared excel-document, basically doing the same thing. Both methods eventually lead up to the same conclusions, and the solvers chose an idea to go forward with. The main issue was to choose something that felt achievable.

The next step was to start sketching on concept ideas. In this process sketches were produced, discussed within the group, and then refined some more. This eventually led to something more concrete, but the project process so far had taken a lot of time and this phase was reached quite late in the semester.

The results were an interface and a concept idea of how to use it. Also, a graphic profile was produced.

6.2.4 Project case D

Project case description

This project idea was about creating a cell phone app for marketing purposes for the seeker. The app was meant to be created as fun way to inform people about what the organization do. The seeker of the project is a multinational organization in power and automation technologies. The seeker appointed project mentor works at the corporate research department of the organization, with research on software architecture and user experiences of the seeker products. The project group of solvers consisted of four students:

- Two 5th year master of science students in Engineering, Media Technology
- Two 3rd year bachelor degree students in Graphic Design and Communication

The project was conducted in the Demola ES project round 2.

The service of innovation intermediation

The seeker

The seeker considered the concept of Demola ES as interesting both for their own purposes, but also for the solvers as students. Getting in contact with companies during the education period can be really valuable. The value for the seeker was basically mutual, i.e. to attain contact with students. This would be an opportunity to be visible and interactive in a student context, where the seeker could show who they are and what they do. This would be a way to catch the students “in the making”, as potential future employees. It was also a possibility to identify competences that might be missing in the organization. In addition, and more as a bonus, the seeker could attain new project ideas as well.

The project idea submitted was based on the fact that the seeker operates in multiple market areas and has a wide span of products. On this subject, the seeker initially submitted a project idea on using image recognition technology. This idea focused allowing a user of the seeker's products to be able to snap a picture of a product, and then attain product specific information on it. However, right before project start the seeker changed their minds, and chose to refocus the project to a more open objective. The seeker knew that the Demola ES concept was much about providing projects inspiring to the solvers, promoted to freely interpret and explore. The seeker considered that this new direction could provide to that concept even more, gaining the solvers as a potentially even more inspiring project. The new project was instead basically presented as creating a marketing app, where people in a fun way could get to know the seeker and what products they do. The expectation was for a prototype to be produced, but the main objective were more about testing the Demola ES concept and see what it would lead to. The seeker expected to contribute with information and support during the project, and they were instructed by Demola ES that the solvers would make contact if help was needed.

The seeker thought that the results presented were successful, basically a fun idea, and it was bought by the seeker. A failed result would have been if the solvers would have presented something that had been seen before, something without innovation. The innovation aspect was an important factor to the seeker, perhaps even the most interesting part. The results could possibly provide opportunity to solve problems that the seeker is interested in. The most valuable part of the collaboration to the seeker was the contact with the solvers as students, and to see how the Demola ES concept works. The seeker also thought that the final presentations of all the other project groups were interesting to see at the final pitch. The concept of working with students like this has been interesting to the seeker, and one of the solvers from the project has been in contact afterwards. The purpose was to explore the opportunity for a degree project at the seeker organization. Unfortunately the timing did not work out, and there were no degree projects available at the time.

The only main negative aspect from the Demola ES collaboration was the issue of distance. The seeker is located in a city about two hours from where Demola ES operates. The seeker would have preferred a closer location between the two, since it would have enabled a closer kind of interaction with the solvers. Instead, the interaction beside the pitch events had to be conducted via e-mail and Skype. The time issue was another critical consequence to this, since traveling to the pitch events required a bigger time investment than the seeker would have preferred. The seeker have otherwise been happy with the experience over all, and satisfied with the extent of involvement. They would consider working with Demola ES again, but if it would be possible, more nearby the seeker would make it even better.

The solvers

The solvers chose to apply to Demola ES mainly to gain course credits. Much was because this was an option that seemed more appealing than gaining them from the other courses available at the time. A Demola ES project would also be bigger and more reality based than any other project the solvers had conducted before. Here something real would actually be produced. Another aspect was the opportunity to work with students from other programs, providing an experience more similar to what work life in reality will be like. The reason the solvers chose this particular project, was part because it focused on working with image recognition technology, a new and unexplored area to the solvers. The other projects included no new elements like this, which made this project more interesting for learning something new. Another part was that this project felt achievable and not too difficult. It was in the area on where the solvers felt they could contribute to the project work.

The solvers expected to contribute with i.e. programming skills and making of graphic manuals, concept prototypes, and dummy menus. They thought their contribution to the seeker would be something completely new, and something produced from a perspective the seeker would not attain anywhere else.

The results were bought by the seeker, and the solvers believe that this was more of an action to show appreciation. There would probably be more time and money required for realizing the results than the seeker would be willing to put in. The solvers do, however, also believe that if they would want it, then they would certainly have an in with the seeker for future employment. A failed result would have been if the solvers in the project group would not have been able to contribute to the project. The definition of success would basically be the opposite, where the solvers would feel like they contributed to something they were proud to present.

The solvers feel that they have learned from the project that there seem to be a choice made between doing a project fast, or to do it good. In this case they chose to do it fast. They also learned much about how they work in the aspect of different programs. The graphic design student solvers were really impressed with what engineers do, and the media technology student solvers realized that there is a need for more thought before execution, i.e. that a project is not just about finishing it.

The solvers would consider working with Demola ES again.

The structures behind innovation management

The seeker

The seeker participated at the first kick-off event, the second pitch event, the final pitch event, and the graduation event. These were all interesting for the seeker to see that the project actually produced something real. Outside these events the seeker only had contact with the solvers about 2-3 times during the project process. This contact was initiated by the solvers with questions to check interest on suggested project ideas, and to update on the project progress.

The seeker does express a potential interest in being involved with what kind of solvers to collaborate with in a project. Though only as an option for a seeker to make requests on e.g. working with more solvers from a certain area of competence or program, like graphic design or technology oriented students.

The solvers

In general the solvers did not have a spoken model that they followed in their project process, but instead chose to plan the work around the time they had. If they would have done every phase of the project thoroughly from the start, then they would not have had time to finish at the end. They had limited time and resources, and worked with a lot of shortcuts and basic intuition.

The first phase before the project really started was a bit chaotic. The seeker changed their project idea to a new one that the project group had not heard of before. This led to a process where Demola ES had to discuss if the new idea was relevant for Demola ES, and if the contracts had to be rewritten. This led to the project group not being sure if it was okay to start the project and to start making decisions. It took a while before the project group could start up the real project process.

During the project process the solvers had a few meetings with the seeker via Skype. The meetings was about updating the seeker on progress and attaining feedback. Ahead of each meeting the solvers carefully considered what to present to the solver. This was mainly to assure that the seekers would not steer the project too much. The positive effect from continuously having to evaluate the project like this was that the solvers quite early on realized they would not be able to make a completely finished prototype. Instead it would be better if they went for a more thorough concept solution.

From the mandatory events, a main issue was that the feedback from Demola ES and the university in some aspects contradicted each other. The solvers in the end chose to go with the recommendations by Demola ES, since this was where the project originated from. Still, the solvers would rather see that Demola ES and the university would synchronize more. It would probably have been better if Demola ES had managed all mandatory activities. Also, the activities provided by the university in general only covered issues that the solvers already had gone through earlier in their education. The Demola ES pitch events was considered very useful. To the solvers they basically were project gates, where they knew they needed to have reached to a certain point in the project process before each pitch. It was also good to practice presentation in front of people, both on how and on what to present. It was useful to have to think through what was important about the project, and why certain choices had been made. The feedback from the pitches was considered crucial for the continued progress of the project work. The general support from Demola ES was considered good, especially with the continuous feedback during the project process. It was very positive that the project facilitator often just came by only to quickly check in, while the solvers were working at the Demola ES project spaces. It was useful to get input on how to manage the feedback acquired from the seeker, on how to approach it, and how to get out of a limiting direction. The solvers were also presented with a few options of companies to get in contact with that could be useful to their project. The solvers appreciated the possibility, but did not feel it would be necessary in their case.

The role definitions within the group were focused around programming and graphic design contributions. There was no project leader to take the structure role. Instead, the pitch events filled that purpose, assuring new results had been produced between each one. Since the group also only consisted of four members, the decision making process was effective and would not need steering from a project leader. The solvers recognize that the start up process of the project might have been more effective if each project group chose its own members, but the gain from not choosing is the good practice for real work life situations.

The practical implementation of innovation

The seeker

In the initial process of the collaboration, the seeker first submitted their project idea. This initiated the work with the contracts. This process was quite extensive time wise, but also considered necessary to make sure no legal repercussions would be at risk.

The results were bought by the seeker, and the current status of it is as a potential future project. It is put in the seeker's idea box for the time being. This is mainly because the seeker is a big organization, where the decision process for new projects is long and slow.

The solvers

Initially the project group put much time on generating ideas for concepts. The seeker's project idea was very open and loosely defined. The seeker basically wanted an app where would be possible to for people to name drop seeker products, and be shown what these did. This was the main difficulty for the solvers at this point, since they themselves did not know really what the seeker does. This meant that they had to start by finding this out. With post-its on a whiteboard they mapped and linked all main organization areas of the seeker, linking companies the seeker worked with, to what products the seeker produced for different market areas.

The solvers then thought of what they wanted the app to mediate, e.g. like the core values to the seeker, or what the seeker do for the environment. These ideas were presented to the seeker, but the response felt quite hesitant. The solvers had put a lot of time into this idea, working on personas and so on, but after the dubious response, the solvers realized that the idea perhaps was too narrowed from what the seeker had hoped for. Instead, they went ahead with another concept that had been discussed, which was an idea based on the app as a game. This idea was much better received by the seeker. This idea was first more jokingly suggested as a whimsical idea, but it grew on the solvers, and eventually it felt both more fun and more achievable than any of the other ideas.

When this concept had been chosen, the solvers continued with a brainstorming process, where they discussed how the game would be structured. They chose to do it as a SimCity inspired game, where a city would be built by the seeker's products.

The results of the project were a prototype of an app, and an instructional video of what it contained and how to use. This was to make sure that the concept would be rightfully presented even if the solvers would not be there, i.e. if the seeker would want to go through it by themselves. There was also additional documentation included in this, describing the concept as a whole.

7. ANALYSIS

This chapter covers the analysis of the study. This includes the specified research questions from section 4.2 Specified research questions, and the analytical discussions drawn from the results of the collected data.

7.1 The service of innovation intermediation

This section covers the different aspects of values and challenges affecting Demola ES in their operations of innovation intermediation as a service offering. A key aspect is the values the seekers and the solvers expect and experience from it. This also connects to how the added value is created through the collaboration between Demola ES, and the seekers and the solvers.

7.1.1 Aspects on values

1. *What can identify as the problems that the seekers and the solvers need solved by using the services of the Demola ES innovation intermediation?*

The seekers do not necessarily collaborate with Demola ES to solve a specific problem, i.e. at least it usually is not the only reason. The seekers often mainly look for a way to get in contact with students. In the role as companies the seekers identify a need for working with students before they have graduated. It is both to potentially recruit them, but also for exploring what kind of competences might be missing in the company, and would be interesting to bring in. An issue can also be to attain new innovation ideas from sources with completely new perspectives, not limited by squared notions and financial frameworks. This correspond with examples used by Chesbrough (2006) on advantages of using an innovation intermediary i.e. expanded opportunities for finding new markets. The seekers of Demola ES seem to also have identified this advantage, and through the solvers they hope to attain a new spectrum of ideas and solutions.

These reasons would of course not be completely transferrable to private person seekers, where the main issue instead is more about an opportunity to realize a project idea. In those cases the seeker's problems mainly focuses on lack of resources, like time, money, or even competence. Though, the private person seeker included in this study did run multiple companies as a main occupation, which meant that even if the Demola ES project was initiated in the spare time, the seeker still saw this as an opportunity for potential recruitment as well. Lopez-Vega & Vanhaverbeke (2009) also sees these more practical aspects of innovation intermediation, where the seeker receives help with resource exhausting research processes. The private person seeker certainly more easily falls under a category where resources are limited, and where the knowhow of innovation might be lacking, which means the services of Demola ES really do apply to this kind of seeker as well. Especially since Demola ES practically do not require the seeker to make any financial commitments, neither for submitting ideas, for being involvement during the development process, nor for buying the results. This issue is also important to the company seekers, but then mostly because it is a way to save valuable time. By initiating a project that the company eventually would look into anyway, time can be saved by letting these solvers do it instead. If the solution then does not turn out to be useful for the company, there is no harm done.

The solvers mainly see Demola ES in two aspects, i.e. part as a way to get in contact with companies, and part as an interesting addition to the regular university study activities. The contact with the companies is to get an in with potential employers for careers after graduation, or for summer jobs and degree projects during the studies. The part as an interesting addition to the studies is much about an opportunity to work with a real problem, provided by a real company or person, and where the results has potential of actually being used. This is something the solvers find lacking in the regular studies and as a useful experience that they want to add. The solvers also see an opportunity in working with students from other programs, which they usually do not get to do. This is in correlation with the useful experience factor, where the solvers identify a need for practicing projects more similar to a real work life conduct. This means a situation where multiple types of competences work together in a project team. Lopez-Vega & Vanhaverbeke (2009) sees the value to the solvers as a way to commercialize their project ideas in a successful way. In the case of Demola ES the solvers are more after the experience of the innovation intermediation service offering. For these solvers it is not the finished product that is the purpose of the collaboration, but the interchange they can attain with the seeker and the lessons they can learn from a real project. This is probably what differ Demola ES from a more common innovation intermediary, like e.g. NineSigma or InnoCentive mentioned in section 2.2 Three examples of actual innovation intermediaries. These are mainly about actually creating innovative products and concrete solutions, while in the case of Demola ES the main objective is to create other more abstract values between seeker and solver.

2. What do the seekers and the solvers expect and value from the Demola ES service offering, i.e. what is the view of potential value produced by Demola ES?

The seekers expect a time efficient and low risk investment from the Demola ES collaboration. This applies to both company and private person seekers. The fact that Demola ES basically handles all practical issues of the projects and the support of the solvers is considered very valuable, and in the cases of the bigger company seekers it is essential. If they would need to be more involved, they would not be able to participate in the collaboration. Then they would have to invest more time and effort, of where they would also want to have more of a say on the produced results. This aspect is crucial for Demola ES to balance, because these conditions determine the higher value for the solvers to be involved. If the seekers would be able to steer the projects as an ordered project, then there would be very limited pay-off for the solvers. The solvers are participating as part of their university studies, and are not guaranteed to get paid for their contributions. The value the solvers attain is instead from being able to choose the approach they feel inspired by in the projects, i.e. the direction they feel will bring them the most personal value. These values are basically individual from solver to solver, including e.g. opportunity to work with a new technology area, do something good for society, and trying on working with students from different programs. This aspect would be diminished if the seekers would be free to steer the projects to their own agendas. Because of this it is very important for Demola ES to make sure the seekers involvements matches their correlated need for investment in the results, and that the solvers feel free to angle the projects to their own interest. Otherwise the crucial balance of a two-sided interchange that Lopez-Vega & Vanhaverbeke (2009) promotes would be hard to reach, leading to an imbalance of attained value between the seekers and the solvers.

Otherwise both seekers and solvers seem to not have that many concrete expectations on what the collaboration with Demola ES will incline. The concept is still fairly new, and Demola ES has not practiced it for more than three project rounds so far. Most seekers and solvers that have participated have made the choice based on the described Demola ES service offer. The bigger company seekers were mainly interested in seeing how this kind of concept would work as a way to get in contact with students. Private person seekers were mainly interested in the opportunity to potentially realizing their project ideas. Solvers were mainly interested in a break from the regular university studies, and to also get an opportunity to work in a real project, with a real company. What is important for Demola ES is to assure that the service offer presented matches the expectations the seekers and the solvers have. Chesbrough (2006) argues for the importance of this to structure trust and confidence between all parties of an innovation intermediary. The risk is otherwise that Demola ES attain a lesser reputation based on misunderstandings from what the seekers and the solvers expected for their participation.

3. What can be identified as the co-created added value for the seekers and the solvers?

Co-created value can be identified both between Demola ES and the seekers, and between Demola ES and the solvers. While the collaboration between Demola ES and the solvers is quite close and take place frequently during the project process, the corresponding collaboration with the seeker is much less extensive. While Demola ES promote the seekers and solvers to not have much contact during the projects, this is an approach that Demola ES also seem to practice. Demola ES should be aware of the possible advantages of keeping a closer contact with the seekers. As it is now, Demola ES mostly co-create value with the solvers, but in order of evolving the seeker experience, Demola ES need to be close to the seekers too. This is promoted by Howells (2006), referring to that a close collaboration is necessary with both seekers and solvers, and in this case it is for Demola ES to improve their seeker service value. In fact, seekers have expressed appreciation for the time-to-time involvement during the projects, especially with the solvers at the second pitch event. The seekers value the updates on the project progress, and find it rewarding to work together with the solvers on their ideas in the meeting after the pitch. At the same time, the seekers are also satisfied with the effort to the current state of involvement. To achieve co-creation with the seekers, Demola ES need to find a way for it without requiring an extended effort from the seekers.

The co-created value between Demola ES and the solvers mainly correspond from the close contact the solvers have with their project facilitator. The solvers much appreciates that the project facilitators continuously checks up on the projects during the process, and provide feedback and support to keep it moving forward. The project facilitators also help the project groups with other issues on e.g. group dynamics and possible conflicts within the group. The advantages of this kind of close collaboration between solvers and project facilitators once again correspond with Howells (2006). In this respects it is crucial for Demola ES to keep this current approach of getting to know the solvers, to identify what can be done for adding value to their participation. A good example where Demola ES practice this is in the arranged study visits and mediation of contacts between project groups and companies useful to particular projects.

4. *What can be identified as requirements for the seekers and the solvers to maintain and create value for themselves during their independent use of the service?*

This issue mainly concerns the solvers, and is strongly connected with the requirements on the solvers academic achievements. The seekers expect valid and competent attempts on their project ideas, which are met by the Demola ES and the university screening processes of the applying solvers. Through this, the solvers actually partaking in the projects can be assumed to be competent enough to also for themselves maintain and create value in their participation. These solvers should have capabilities to conduct research, independently conduct a project process, and also know how and when to seek required help. In agreement with Grönroos (2008), the solvers will not be able to make full use of the Demola ES service, if they do not have the needed skills to use it or to bring in necessary supportive resources. This would lead to the solvers not being able to get any value out of the participation. The screening process of the solvers is therefore crucial for Demola ES, mainly to assure that the participating solvers are able to actually get something out of it. It is also to assure that Demola ES will be able to demonstrate value of the service to the seekers, as Chesbrough (2006) promotes.

5. *What effects or added value can be identified in accumulation over time for the seekers and the solvers?*

Due to the extensive network of contacts that Demola ES have, the solvers in the role of students seem to recognize the value of keeping in touch with Demola ES even after their projects are done. Demola ES help solvers to find opportunities for summer jobs, degree project work, or careers after graduation. This can certainly be considered as a value accumulated over time, or even perhaps an extended adding of value to the service offering, referring to Grönroos (2008) and Grönroos and Voima's (2013) theories on service value. This can also be directly correlated to Howells's (2006) argument on innovation intermediary services being about sustaining a long term relationship with the users, allowing the offering to evolve and add even greater value. By maintaining this relationship with the solvers, Demola ES have a valuable opportunity to attain input and insight from solvers that have gained some perspective on their experience, and can identify effects provided in hindsight. Most importantly, this provides Demola ES with information to use for improving their service offering, or even confirm what values are most appreciated and should be enhanced.

7.1.2 Interchange between seeker and solver

6. *What correlations can be identified in a mutual two-sided aspect of success between corresponding seekers and solvers?*

The seekers have expressed a preferring to being consulted on certain detail issues during the project process. These mainly include smaller aspects that would make the produced results more accessible for the seeker to later realize. However, this also conflict with the Demola ES concept of promoting the solvers to take their own approach with the projects. The risk on allowing the seekers to have too much of a say, even on details, is a balance on how much steering should be allowed before it becomes an ordered project mission. Still, it can also be a risk worth taking for adding value to both seeker and solvers. Lopez-Vega & Vanhaverbeke (2009) argues for the two-sided interchange, where if value is added to one side, value and growth is also fostered on the other. In the case of Demola ES this could mean that by letting the seeker be involved in some extent, the gain for the seeker could be a higher possibility to successfully realize the results. This would also gain the solver, since there usually is hope of contributing with result that the seeker actually will have a use for. Realized results, or at least used results, would satisfy the anticipation for the solvers of having produced something real.

Another aspect to the Lopez-Vega & Vanhaverbeke's (2009) issue on the two-sided interchange is the fact that seekers tend to be looking for students in their Demola ES collaboration, and solvers for getting in contact with companies. This very mutual purpose for participation is something Demola ES should be much aware of, and perhaps even explore more to elaborate in their current service offering. Solvers have especially expressed an interest in a more extended mediation with companies during the project process. This would be both for potential use for the projects, but also for opportunities to create contact in career aspects. A suggestion has been Demola ES sponsored mingling events, where solvers get to meet companies and other potentially interesting parties. By enhancing this mediation effect, the values to the two-sided interchange could possibly be increased even more.

7.1.3 Structural proceedings behind innovation intermediation

7. What approach can be identified on defining the project descriptions provided by the seeker to the solver?

Demola ES help the seekers with defining their project ideas into project briefs, refined to fit with the Demola ES concept, and written as appealingly to the solvers as possible. This is important for making sure that all parties are fully aware of what the projects will incline. For Demola ES it assures that the project validly represents the Demola ES concept, once again corresponding with Chesbrough (2006) arguing for the importance of a clear service offering. This way, the seekers also will be fully informed that their project ideas might not lead to the exact specifications they might hope for. The projects are not ordered projects, and it is important that the seekers participate for reasons corresponding to the actual Demola ES service offering. Chesbrough (2006) otherwise claims a risk of neither seeker nor solver will be satisfied with the collaboration. The solvers need to be provided a clear enough project definition from which they will be able to judge if the project is interesting to them or not.

8. What approach can be identified on measuring and assuring value of the solutions generated by the solvers, and what approach is there for when projects starts going off-track, headed in a potentially failing or risky direction?

Chesbrough (2006) claims that in order of being able to demonstrate the value of the solutions provided through the innovation intermediary services, there need to be a strategy for measuring it. This mainly because the innovation intermediary is not the one who actually produce or even control the solution. In the case of Demola ES, this would correlate to the academic requirements on the solvers, and their abilities to solve complex problems independently and making competent assessments to it. Even if solvers as students in the earlier levels of their education certainly could have useful input to provide, there is an aspect of seeker expectation to consider. The seekers of Demola ES seem to have a notion that the results will reach a certain level of advancement, regardless if it is a finished or a failed attempt of a solution. This can either be due to them looking for potential employees among the solvers, or to be provided with the possibility for innovative solutions to implement and launch as their own, or develop further. Nonetheless, the seekers seem to anticipate legit and valid solutions. Solvers that have not reach the latter part of their education naturally does not have as much academic experience and knowledge to contribute with. This is an important factor for Demola ES to be aware of, much because there is no extended recruitment process of the solvers. The only information Demola ES attain is from the resumes and personal details that the solvers provide upon registry at the Demola ES website. The measurements of value instead need to come from the ability to assure the solvers the solutions provided are generated by solvers of a certain academic level, and that these solvers have chosen to participate in the projects due to personal interest.

9. *What approach can be identified for Demola ES on maintaining a good reputation, i.e. a clear service offering presentation, trust for confidence and competence, and matching seekers and solvers?*

The seekers and the solvers of each project signs contracts on issues like intellectual property and confidentiality before project start. This is a way assure trust between all parties, which Chesbrough (2006) promotes to maintain good reputation as an innovation intermediary.

A challenge for innovation intermediaries can be to find good matches of seekers and solvers in illiquid or very specific market areas. (Chesbrough, 2006) In the case of Demola ES this issue can be identified in the project ideas rejected to proceed with. A reason for rejection can be due to there being no solver applicants for the projects. Demola ES chooses to solve this by allowing these projects to “rest” and to be tried again in the next project round. For the seekers with project ideas rejected by Demola ES, help is provided by useful tips and contact mediation for finding other ways to realize the project ideas. The vast network of contacts that Demola ES have, mainly in the regional industry, enables them to help even the rejected seekers. This is a good way to maintain a good reputation of the values of looking for collaboration with Demola ES as an innovation intermediary. The novelty of innovation intermediation as a business concept, with the lack of common knowledge around it, can be a challenge that needs to be aware of. Chesbrough (2006) argues to this on the importance of early on establishing a strong and positive reputation by assuring and demonstrating value of the service offering. By using the advantages of the innovation intermediary offering, providing the rejected seekers with possible other solutions, Demola ES has found a good way to demonstrate value. This is especially important as the rejected seekers still might be possible future seekers with other project ideas, and maintaining a good relationship with promise of possibilities to future value, becomes crucial.

An issue once again connected with the required academic level of the solvers, is the importance of a clear presentation of the innovation intermediary service offering. Chesbrough (2006) argues that a clear service offer presentation is crucial for assuring confidence and trust between all involved parties. If Demola ES e.g. would choose to include students in lower grades as solvers, or even any other possible changes on solver requirements, then the service offer presentation would also need to be revised. This is to thoroughly emphasize for both the seekers and the solvers what they should expect from the collaboration, reducing the risks of disappointment or negative effects on the service reputation. For instance, if students in lower grades would be included, then seekers looking for possible solutions to implement as their own would need to be aware that there is a higher risk that the solutions might not be elaborate or valid enough for it. For seekers looking to recruit students as employees after graduation, they would need to be made aware of that the students working on their project idea might not graduate for several years yet. Also, the solvers would need to be made aware that the projects they participate in might not be able to reach a level as advanced as with a project group with only students of higher grades of year. Demola ES do have plenty of plans for future development of their operation, and either way the issue of a clear service offer presentation need to be continuously present and kept updated.

7.2 The structures behind innovation management

This section covers aspects of the Demola ES structure and the managing contexts of their product development and innovation projects.

7.2.1 General structure and management of development project processes

10. What specific innovation or product development model, with phases, decision points, and other milestones, can be identified for the overall Demola ES innovation intermediary project process?

The general Demola ES project process consists of a number of mandatory events, provided both by Demola ES and the university. These are following listed in chronological order:

- Project idea submission, screening, refinement, and contracts
- Launch of project briefs, solver applications and admissions
- Formation of project groups
- Kick-off, and contracts
- Project plans, valuation workshops, and ethics seminars
- Preparatory pitches, and pitches
- Reflection papers
- Public graduation event
- Decisions on further ownership of results, and further approach with it

The first three events take place before the actual project process starts, and the last one takes place after the results have been presented. Each event is considered important, and serves their specific purpose. Both Ulrich & Eppinger (2008) and Tidd & Bessant (2009) argue that each organization needs to employ their own project process strategy, adapted to their own specific means, and even from project to project. For Demola ES this means that the mandatory events serve much as decision points for the projects, where the actual project work in-between is individual to each project case. Tidd & Bessant (2009) identifies this as a common conduct in innovation processes.

Ulrich & Eppinger (2008) sees several advantages of a well-defined development process, but the solvers of Demola ES do, however, express concerns on the extensive number of these events. Even if the solvers do have good use of the events in several aspects, they also take up a lot of time to prepare for and execute. This is valuable time taken from the actual project work. The problem identifies much from the lack of synchronization between Demola ES and the university. Both contribute with events, which they also both on their own consider important for the process, but the good intentions instead seem to more create an unnecessarily heavy workload for the solvers. The solvers go in to the projects with the anticipation of working with the actual project idea, and this expectation need to be a key aspect for Demola ES to consider. This is in concurrence with Chesbrough's (2006) earlier mentioned aspects on the importance of clarity of the innovation intermediary service offering. The majority of the mandatory events between Demola ES and the university is very similar in conduct, and could probably benefit from being merged. This refers to the valuation workshops with the ethics seminars, and the pre-pitches with the "main" pitches. This is also an opinion expressed among the solvers. To them it is important to produce results they are proud of, showing that they have put effort and thought into it. This includes both the material for the mandatory events, and for the actual final results. This is also important in order of letting the solvers actually show the seekers what they can do, which serves both purposes for the solvers and the seekers. A common reason for both parties to join the collaboration is to get in contact with each other in aspects of potential employment, which makes it even more valuable to allow the solvers to actually produce final results they are proud to present.

The conduct of the project process itself is a learning experience for the solvers, and the mandatory events perhaps do not need to focus as heavily on this as it currently does. Clegg, Kornberger, & Pitsis (2007) argue that innovation challenges the more traditional management practices and theories, especially from the planning and steering point of view. The balance between innovation politics, and freedom and responsibility is the key to reach autonomous and disciplined creativity. For Demola ES this would come from a well considered balance between the mandatory events and the solver independent work.

11. What purpose does these phases, decision points, and other milestones serve, i.e. how is quality assured by them and what effects of dysfunction can be identified?

Project idea submission, screening, refinement, and contracts

The screening and refinement of the project ideas is a particularly important decision point in the project process, even if the actual developmental part has not started yet. By rejecting project ideas that do not seem to match the Demola ES purpose this is an assurance on quality, both to the seekers and the solvers. The seekers are prevented from going into the collaboration with misguided anticipations. This refers to the risk of the project idea not being neither valuable as an experience for the solvers, nor generate results that would be useful for the seekers. This connects with Ulrich & Eppinger's (2008) recommendation on wisely choosing decision points for assuring quality throughout the process, which in a case like this would mean even before the process started. This is also argued by Cooper (2008), who stresses the importance of using these critical decision points as they are intended. This means to make sure the project is viable, and to detect trouble before too much resources and effort are put into something not leading anywhere. Most important is to actually have the courage to terminate these kinds of projects, i.e. without allowing e.g. personal, speculating, or political agendas influence the decision (Cooper, 2008).

Launch of project briefs, solver applications and admissions

The screening and admission of solver applicants much serve a similar purpose as the screening and refinement of project idea submissions. The solvers that are chosen to partake in the projects will be meeting the requirements necessary for the Demola ES concept. This does not only refer to the requirements set up for academic achievements, but also for the solvers to be participating for the right reasons. This refers to reasons that will gain the greater good of each project, not only individual means. This is argued by Ulrich & Eppinger (2008) for avoiding dysfunction within a project group, and by extension to assure quality to the project. There have been issues on differing views of ambition and motivation among the solvers in the studied project cases. This does not mean that solvers with lacking ambition should be rejected. It is more about that the solvers need to be clearly informed in connection with admissions, or at least early on in the projects, on what the expectations will be on their performance. This is both from Demola ES and the seeker, but maybe mostly from the other solvers in the project group. This is an issue that Ulrich & Eppinger (2008) identifies as a potential cause of dysfunction in a project group. The risk is that the uneven views of ambition influence the final results negatively. In the case of Demola ES there is an example of this where the solvers of a project group had two different goals for the projects. They never seemed to be able to agree on one common goal, and the results became a compromise between both. Neither the solvers nor the seekers had much use of the results, and the lesson learned was that they instead should have chosen one goal or the other.

Formation of project groups

Demola ES forms the project groups based on the preferences of projects expressed by the solvers, and on mixing as many types programs in each group as possible. This is both something the seekers and solvers seem to appreciate, since it creates a mix of competences and is good practice for real work life. Ulrich & Eppinger (2008) argues that a mismatch of skills and lack of staff can lead to inability to complete certain developmental tasks completely, and this is a risk for the Demola ES projects. Especially since the formation of project groups highly depends on which solvers actually have applied to them. If not enough solvers have applied to a certain project, Demola ES choose to not initiate it in the upcoming project round. Those solvers who have applied to it, if there are any, are instead distributed to other projects. This show that Demola ES is aware of the issue and through this also assures quality to the projects.

Kick-off, and contracts

The purpose of the kick-off event is basically for informational purposes of the upcoming project process, and for the respective seekers and solvers to meet. This concurs with Ulrich & Eppinger's (2008) claims on clearly articulated development process plans being important for successful projects. The seekers and the solvers this way are made aware of what and when their contributions are needed, making the individual planning in each group easier.

Project plans, valuation workshops, and ethics seminars

The valuation workshops and ethics seminars are held by Demola ES and the university respectively, for the solvers. These events both fill a relevant purpose of promoting coordination and planning within each project group, which advantages Ulrich & Eppinger (2008) argues for. Cooper (2008) points out that development projects with members of lesser experience from this kind of project processes benefit much from a clearly defined and structured process. In the Demola ES projects there are a mix of solvers from different programs, all with different amount of experiences of development projects. Through the valuation workshops and ethics seminars, the solvers will be made aware on these issues to help them more quickly find good synchronization within the project groups. In more problematic Demola ES project cases this has been a main issue, where the solvers could not agree on what they wanted to achieve with the project. This indicates that the projects benefit from quite early on discussing these issues, to avoid losing valuable project work time.

Preparatory pitches, and pitches

The preparatory pitches provided by the university are followed by main pitches provided by Demola ES. The purpose of these is both for the solvers to practice their presentation skills, and to attain feedback on their projects. Also, in those pitch events where the seekers are present, the purpose is to provide the seekers with updates on the project process, and for the seekers and the solvers to maintain interchange on the project work. Especially the solvers express a good use of these pitch events, since it provides them with crucial feedback for the continued project work. Basically, the pitch events are used as critical decision points on go/no go decisions for the solvers, which is an approach promoted both by Tidd & Bessant (2009) and Cooper (2008). It also anchors the schedule of the project process, making sure that the projects are delivered on time. This is an advantage effect pointed out by Ulrich & Eppinger (2008), to a well-defined development process.

Reflection papers

The reflection papers event is provided by the university, where the solvers submit their thoughts on their individual project experiences. The value of this is mainly a factor of personal improvement to the solvers. Ulrich & Eppinger (2008) promotes this as way to identify opportunities for future improvement. However, Demola ES could probably also make use of insight from these reflection documents, as it is feedback reflecting back on their performance as well.

Public graduation event

The public graduation event is not so much part of the project process, as it is a repetition of the final pitch event where the solvers present their final project results. The difference basically is that the pitches at the graduation event are open for anyone to come listen to. The purpose it serves is probably mostly to Demola ES, as it is a way to promote their innovation intermediary service offering. In concurrence with Chesbrough (2006), it is important to clearly present what the offering is and to somehow show the value of it. This graduation event is an important opportunity to show what the value and outcome of collaboration with Demola ES can be. By working even more consciously and strategically on inviting both potential seekers as solvers, the graduation event could be very beneficial for Demola ES in this aspect.

Decisions on further ownership of results, and further approach with it

The final part of the Demola ES project process is the decisions on what to do with the results. The seekers have had some time to think since the final presentations, and to go through the material. Most seekers appreciate the effort the solvers have put in to creating the project results, but the results are not always of any use for the seeker. In those cases Demola ES promote the seeker not to buy the results, but instead to let it remain with the solvers. This is to make sure that participation with a Demola ES project is not about being guaranteed money at the end of it, regardless results. Demola ES wants to attract solvers who participate for the other reasons. A promise of guaranteed payment risks attracting solvers with lesser ambition and motivation to contribute towards the greater good of the project. Personal political biases are risks a failed development process, as pointed out by Ulrich & Eppinger (2008). It is also a good way to attract seekers that perhaps do not have the financial possibilities to buy the results in the end. By not being required to buy the results, the focus instead can be for Demola ES to attract interesting projects that benefits both the seeker and the solvers. The added value to the seekers and the solvers would not focus on money, but on an unlimited framework for innovation. This is not only appealing to seekers with low budgets, but has also been expressed as an advantage from the seeker of bigger organizations.

12. What approach can be identified on detecting problem areas?

The main aspect of identifying problem areas lies within the work of the project facilitators of each project. Of course, each project group maintains their own responsibilities to make sure their project processes is conducted as planned, and to seek help when needed. Still, the project facilitators maintain the overall view of the projects, and they have the experience of previous projects for recognizing when one starts going of track. Either as a project group or with the direction of the project work. The Demola ES approach for identifying when this starts to happen is done both thorough the mandatory events, and through the continuous project facilitator checkups with each project group. The solvers express that they rely much on these aspects in their project work, since it helps them to not stagnate in limiting ideas, to make decisions, and in general how to move forward. This is crucial for successful innovation according to Pascale (1999). Ulrich & Eppinger (2008) recommend comparing the planned development process to the actual conduct for identifying possible problem areas. The Demola ES approach meets this aspect, but it also makes it crucial for the project facilitators to be well instated with their project groups in order to do so. Still, it is also important that they do not interfere too much, since this would risk creating a lack of empowerment within the team, which is pointed out as factor of dysfunction by Ulrich & Eppinger (2008).

7.2.2 Managing development project teams

13. What general coordination within and around the project groups can be identified, i.e. what are the definitions of roles and contributions, management and leadership?

Pascale (1999) argues that a co-operational pattern emerges spontaneously in complex adaptive systems, which in the case of Demola can be referred to the project groups and the fact that they are put together without much influence from neither the seekers nor the solvers. Each project group has to find their own definition of roles that fit to them. The role distribution often is based on what each solver in the group want and can contribute with, and the direction of the project is then formed around this, i.e. on what competences there is to obtain within the group. There is basically no need for a project leader, since the mandatory events provide a general project structure to follow, and the project facilitators are there for each project to help them move forward. Basically the project facilitators can be considered to maintain a role of management to their project groups. This role is not about detail decisions, but more on supporting the project groups and their processes. The solvers are aware of and rely on this support, which makes it important for Demola ES to maintain, as poor organizational leadership tend to cause failed projects according to Cooper (2008). The role of the seeker is more secondary in the project process, but should be included as valuable input. Especially since both seekers and solvers often hope for potentially useful results to the seeker. Though, it is important to not let the seeker steer too much, causing lack of empowerment to the project group, as it is a risk of dysfunction to the project according to Ulrich & Eppinger (2008). The balance should be kept to allow continuous updates and input from the seeker during the process, but still leave the final decisions on progress to the solvers.

7.3 The practical implementation of innovation

This section covers the more hands-on conducts of the Demola ES product development and innovation processes, which mainly are executed by the solvers.

7.3.1 Planning

14. What does the initial mission statement from the seeker and Demola ES include, and what other guidelines are given for the project process?

The initial mission statement to each project is first submitted to Demola ES as a project idea from the solver. Often the definition of this idea is refined a bit by consultation with Demola ES, before it is launched as project brief for the solvers to read and apply for. The brief consist of information on the seeker, background information to the problem, and what kind of solution the seeker hopes the project will generate. This approach consist well with Ulrich & Eppinger's (2008) guidelines on what a mission statement should include to properly guide a project group in development process. The refinement of the project idea is also a good way for Demola ES to make sure each project is viable to the Demola ES concept. The project can then instead be rejected or adapted, before the seeker and the solvers invest time and effort in a project that might turn out to be difficult to gain anything from. The earlier this problem is detected, the easier it will be to fix, or for the project to be terminated without bigger costs or repercussions. This is promoted by Cooper (2008) as part of the importance of not hesitating on making though decisions.

15. What approach can be identified for how the solvers interpret and adopt the given mission statement to fit their own purposes?

The project brief is basically the only information or main steering the solvers get for their projects from the seeker and Demola ES. This approach concurs much with the process of innovation that Tidd & Bessant (2009) identifies, where the process moves from a wide span of uncertainty towards a more defined final solution through the project process. However, Tidd & Bessant (2009) claims that it is also important that this initial contextual information is defined enough for the solvers to make valid assessments on what is possible for them to create, what the needs for the innovation is, and what the basic conditions are. The Demola ES project briefs do include these aspects, and they go through the screening and refining process before they are even launched to the solvers. At the kick-off event the solvers also get the opportunity to ask their seeker more about contextual issues and information.

Still, the briefs are also very broadly written, and much promotes the solvers to add their own context to it. This makes it more important to make sure that the projects are possible for the solvers to carry out, i.e. that the solvers do not get too ambitious. Misjudging of the actual capacity is a risk of inefficiency pointed out by Ulrich & Eppinger (2008). This is basically the first issue the solvers start to discuss among themselves in their projects. This mainly is about deciding on how far the project will be taken, i.e. what kind of results it will produce, like e.g. a working prototype or a concept solution. The limitation is often the time aspect, and the project groups often adapt the directions of their projects to the competences they have within the group, and on personal interests. Even if this certainly might promote motivation within the project groups, it is also a risk identified by Cooper (2008). Reassured decisions should not be based e.g. personal or political agendas. Or at least they need to be made on robust and transparent criteria. For the Demola ES solvers it is an important factor that their projects are inspiring on an individual level, and to make sure this concept works, the decisions on direction need to be made through an open discussion.

Demola ES much promotes this through their valuation workshops and through the university ethics seminars. Through these, the goals of the project are assured to be discussed and identified, both on an individual level and as a group. In a Demola ES example where the solvers of a project group had difficulty to decide on what goals they wanted for the project, this initial planning phase ended up being the most time consuming phase of the project. The solvers had different aspirations for the project goal, and when they finally had decided on one, there was not enough time left to reach it. The lesson learned is that the planning process needs to be efficient, and the project facilitator plays a crucial supportive role to recognize when a project group needs a push to decide.

7.3.2 Development project process

16. What search and concept development phase of the project process can be identified, i.e. what is done to probe for information and inspiration for ideas, how is the concept ideas generated and selected, what factors affect these decisions?

When the planning phase is conducted and the solvers have decided on what the goals of the project are, the next step is basically to start generating ideas. Often it is about mapping the possibilities and what area the project is going to focus on. The whole project group is usually present, and there is an open discussion where ideas are written down on e.g. post-its and put up on a whiteboard, or written in a shared document. A common structure to choose concepts identifies as an iterative approach, where the solvers generate ideas, choose a concept, test it on the project facilitator, the seeker, or even on potential users, and then decide on how to go forward. This conduct is very similar to the Stage-Gate approach presented by Cooper (2008). There does not seem to be any difference regarding type of project, i.e. technology focused projects as well as projects in the area of social sciences use the same basic conduct. This is also identified by Cooper (2008), i.e. the Stage-Gate approach is more a way of thinking, and adapts to basically any type of project or organization. For the Demola ES projects this iterative process is much an unofficial approach promoted by the project facilitators to the solvers. It has been expressed as a very useful tip for the solvers, since the iterative thinking helps them to not get stuck on trying to make the all the right decisions on the first try.

The decision on what concept to move forward with, benefits from being viewed from an external perspective of the project group as well. Ulrich & Eppinger (2008) recommends this to make sure not to miss any potential possibilities on inspiration or useful input from e.g. already existing solutions. The solvers works actively for this by themselves, as well as they attain help from the project facilitators. The research they do by themselves often include e.g. searching the Internet, attaining feedback from the seeker, using personal contacts for help with certain tasks, as well as gathering information from potential users. The help they get from Demola ES is much about mediation of contacts with companies and to set up study visits, all to help the solvers to potentially attain inspiration or information specifically useful to their projects. Ulrich & Eppinger (2008) recommends the external search to be active throughout the whole project process, which the Demola ES projects do. Most obvious is the feedback the solvers get from the pitch events. The feedback from these has been expressed as crucial for the solvers to continue with their project, and to choose concepts. The value of it also comes from the solvers having to concretize their work in order of presenting it properly. Ulrich & Eppinger (2008) strongly promotes graphical tools to demonstrate concepts and ideas. The thought behind the ideas are better promoted this way than through words. All Demola ES pitches allow digital visual aids, except the first one-minute pitch. The purpose is for the solvers to train their ability to promote their ideas without visual tools.

The intentions are valid, but there might be a point to make the feedback more useful by allowing the solvers to show sketches, digital or handmade, or at least promote mock-ups of the concept they present. Even acted sketches would fill the purpose of helping the audience to understand, and thereby attain more meaningful feedback.

17. What issues affect the detail design development of the chosen concept, and what approach on testing and refinement can be identified?

The detail design on physical product concepts are usually worked out by an iterative sketching process. Sketches of the concept are produced, discussed within the group, and then further refined. For e.g. service products this process is instead about gathering input from potential users or experts. Either way, at this point input is often also obtained from e.g. the seeker or the project facilitators. However, neither of them is meant to provide much steering on details, since the projects are up to the solvers to direct. Ulrich & Eppinger (2008) suggests much attention to detail in this stage of the process. Mainly to make sure the results are thought through enough to avoid negligent and costly mistakes, delaying the ongoing development process. However, in the case of Demola ES the projects rarely reach further than a first prototype. Often the goal can even be to only develop a concept solution. Most importantly, the solvers conduct the projects mainly for themselves, i.e. the results are not prioritized for direct implementation with the seekers. The question then is how much focus the solvers should put into what happens to their results after it potentially is delivered to the seeker. Ulrich & Eppinger (2008) recommend awareness on more general factors like e.g. costs, quality, production, manufacturing, and sustainability for the finished product. These issues are of course valid for any development process, but if these issues are not interesting enough for the solvers of Demola ES to focus on, they risk not being included. To the Demola ES concept it is important for the solvers to be able to choose the approach they are most inspired by. Still, the aspect of these critical issues should be promoted to be aware of at least. Ulrich & Eppinger (2008) stress them as important factors of measurement, mainly to test if the concept works and meets user needs. This does not only apply to physical products, it is important for any type of product, i.e. software based products as well as services.

18. What approach on implementation and launching the concepts into finished products can be identified, and what factors of success or failure are there for the projects, i.e. do they reach production and market, or are there other definitions of successful innovation?

As mentioned the projects rarely reaches beyond the prototype stage. This is most of all a decision based on resources of time. The solvers basically would not have enough to get any further. Still, Ulrich & Eppinger (2008) as well as Tidd & Bessant (2009), stress that the entire process needs to be fulfilled to reach a successful product or innovation. For Demola ES this in some ways can be confirmed. The project results tend to not get any further than the stage of the final presentation, regardless if they were bought by the seeker or not. The issue seems to be that the results mainly are not developed enough to be worth continuing with. This can either be in regard of costs, time, or the fact that there would be an extensive decision process necessary before that. However, the main purpose for seekers and solvers to collaborate with Demola ES is not so much about the actual results being produced. Often the success is instead measured in regards of the general experience the seekers and solvers attain from the process. Still, to once again connect with Chesbrough's (2006) argument of importance to a clear service offering, Demola ES need to make sure both seekers and solvers are well aware that the projects rarely reach farther than to a first prototype. Also, that realization or continuance of the projects is quite unusual. Otherwise, Demola ES need to take measure on how to meet those aspects closer.

7.3.3 Capturing the effects

19. What kind of capturing approach can be identified, and how are the results of it used afterwards, i.e. does it add any intended value?

During the project process the solvers produces sketches, note documents, and other similar material. In some case they deliver this material unedited as it is to the seeker, along with the finished results they present at the final pitch, while in other cases it is edited into more thought thorough material, meant to be easier for the seeker to make sense and have use of. Tidd & Bessant (2009) stresses the final phase of an innovation process to be about capturing the values from it. This is to learn and adapt from the process, with ambition of constantly upgrading to do it better the next time. The material that the solvers produce is in this way mainly important for the seekers. It is the physical evidence produced from the collaboration. For the seeker it is valuable to go through for potential ideas to continue with, or for deciding to not to buy it. Demola ES recommend the solvers to edit and structure this material before delivering it to the seeker. The more attainable it is the bigger chance the seeker will recognize potential values to it. The solvers gain reflection on their contribution and experience from the reflection document they submit to the university at the end of the project.

8. CONCLUSIONS AND DISCUSSION

This chapter covers the final conclusions of the study, and a discussion on relevant issues that was not brought up in the analysis. The conclusions answers the three research questions presented in section 1.4 Research questions.

8.1 Conclusions

This thesis was conducted as a case study on the innovation intermediation project process of Demola ES. The complete process was examined on how it is managed and structured, starting from when the innovation seekers submit their project ideas, all the way through the project processes, to the final presentations and exchange of results. This was done to enhance insight and understanding of the user experience, with the goal to identify factors of success and of potential improvement to the Demola ES innovation intermediation service offering.

8.1.1 What does the overall Demola East Sweden innovation intermediary project process include in the experience of the seekers and solvers?

The seeker and solver experience of the Demola ES collaboration can basically be divided into three main phases, i.e. before, during, and after the project process. Before the project process can start the seekers submit project ideas. Demola ES screens them and usually refines them together with the seekers. Contracts are also negotiated. When this is done the projects are launched to the solvers to apply for. Together with the university Demola ES then also screens these applications, and forms solver project groups. The analysis show that these screening processes are necessary for assuring quality to the projects, basically to make sure the expectations of the seekers and the solvers are in agreement to the actual experience as much as possible. This is important for Demola ES to assuring a good reputation based on trust and confidence between all parties involved.

The actual project process revolves around a series of mandatory events. These are conducted in parallel with the independent project work of the solvers. The mandatory events mainly focus on the contributions of the solvers. They include a kick-off, valuation workshops, ethics seminars, three pitch events with corresponding preparatory pitches, individual reflection papers, and a final graduation event. The analysis concludes that these in many ways are useful and valuable to both the seekers and the solvers. For the solvers it is critical decision points to the project process, where the feedback from the events is crucial for determining the continued work. It is also to detect potential problem areas in each project, where the project facilitators play a crucial role for recognizing if the projects start going off track. The seekers are also invited to some events. For many seekers it is the solvers work during the project process that is the most important part of the results, and the Demola ES participation in itself is often more about attaining contact with students. The occasional extent of insights to the project process meets these seeker aspirations, and in addition it provides the solvers with potentially valuable project input.

In parallel to the mandatory events, the solvers also conduct the actual project work. The details of these conducts differ from project case to project case, but a general pattern can still be recognized. The analysis show that the solvers start with planning and deciding the goals and the direction for the projects, followed by idea and concept generation and selection, and then testing. The testing is done on e.g. the seekers, the project facilitators, or potential users. This process follows a very iterative approach, where these steps are repeated throughout the process until the final results have been reached and are presented to the seekers.

When the final results have been presented to the seekers, the phase after the project process begins. This is basically only about deciding on continued ownership and conduct of the results. Either the seeker buys it, or it remains with the solvers. The results are often only developed as far as a concept solution or a first prototype. The results of the Demola ES projects in general do not get developed any further after the final presentations either, i.e. they are not realized or used in any other ways. The analysis shows that successful product development or innovation requires the entire development process to be completed. However, the analysis also identifies that this is not a definition of failed results for Demola ES. Instead, it is the experience of the participation that measures the success rate, i.e. an inspiring and worthwhile project experience for the seekers and the solvers, is what actually is measured as successful results.

8.1.2 What expectations for added value do the seekers and solvers have on participation?

A common aspect of expectation is the mutual aspiration for seekers to meet students, and for solvers to meet companies, all in the purpose of potential recruitment. This is often the main expected value to the seeker, where potentially interesting solutions to their project ideas is more of a bonus. Still, the contributions of the solvers as students are valuable in the aspect of attaining new ideas for innovation from a new perspective. Another expected value to the seeker is the low risk business investment in exploring an idea, before initiating it as a real project and investing resources into it. For the solvers the expected values additionally is about attaining real project experience, working with a real problem, with real companies. The bonus is the gained course credits, and a change of environment to the regular university studies. The analysis concludes that both the seekers and the solvers expectations much correlate to the service offering that Demola ES wants to promote. Still, especially among the solvers, there is also often an aspiration of creating something that the seeker will have use of and will be able to realize. The Demola ES concept as it is structured today makes this difficult to achieve, mainly because the seekers are very consciously excluded from the most part of the project processes. This lowers the possibilities for the results to actually be realized by the seeker, much due to practical factors where it is too costly or requires too much time investment to do so. Either Demola ES need to integrate the seeker more to the process, at least on these practical issues, or the presented service offering to the solvers need to clarify that results probably will not be possible to implement and realize for the seeker. The balance to keep in mind, however, is to not let the seeker steer the results too much. The ability to interpret and choose direction of the project is the main value for the solver. If this diminishes to the wishes of the seeker, then the balance of the innovation intermediary interchange becomes uneven. The interchange from project collaborations would then benefit the seeker more than the solver. Off course this balance is mutual, i.e. the seeker also needs to gain as much value from the experience as the solver.

8.1.3 What added values do the seekers and the solvers actually experience, and what can Demola East Sweden do to improve it even more?

The actual experience of the seekers and the solvers can by the analysis in general, be concluded as satisfactory. The expectations on potential future recruitment have so far in no extent led to solvers to seekers employments. However, career wise the collaboration with Demola ES has led solvers to jobs and degree project work with other companies. Demola ES has a wide span of contacts in the regional industry, and with mediation of these added value can be provided to seekers as well as solvers. This even provides the seekers and the solvers with added value accumulated over time. Solvers express this as an aspect they would like to see enhanced even more. A suggestion was mingling events hosted by Demola ES, where the solvers could meet companies and people useful to their projects, as well as possible career connections. Aspects like this would be interesting for Demola ES to seriously consider, since it adds value to both solvers and seekers, and could possibly also be used to recruit new ones. A related aspect to keep in though, would be that the solvers also express the extensive amount of mandatory events to be very time consuming as it is. Adding new events to the list need to be done cautiously to make sure they serve a worthwhile purpose. In fact, the current mandatory events also need to be more thought through. At this point they do add value to the seekers and the solvers, but their conducts need to be improved. This very much correlates to the Demola ES collaboration with the university, and it has been a main issue among the solvers of the study. This collaboration is quite unsynchronized in the current operation, and it mostly affects the solvers. Demola ES and the university need to collaborate closer to provide a more conform experience to the solvers, where the purpose of the mandatory events actually provide value rather than stress.

The importance of the project facilitators is very big. They provide assurance that the projects keep on track, and that the solvers attain valuable experiences from their participations. The analysis show that the contributions of the project facilitators are much appreciated by the solvers, and in general create the effect needed. The project facilitators provide and maintain the important structure to the project process, crucial for the projects to actually achieve valid results. However, the project facilitators do not have much contact with the seekers during the project processes, and this is something Demola ES need to work on more. While the insight and comprehension of the solver experience is very well identified, the insight on the seeker experience is basically only attained in the initial part of the process, when the seekers submit their project ideas. By a closer and more continuous collaboration with the seeker as well, Demola ES would attain valuable insight to their complete innovation intermediary service offerings.

For the seekers, the most valuable part of the participation is the aspect of time. The analysis shows that regardless the type of seeker, it is the modest extent of time investment that is most appreciated. Demola ES handles most administration around the projects, and provide the solvers with the main project support. These are crucial aspects for the seekers to be able to partake. If more time and effort would need to be put in, the seekers would also want more of a say to the results. This is not a recommended approach for Demola ES, since it would mean less influence for the solvers on the projects. Both seekers and solvers are in general content with the extent of seeker-solver interchange as it is, but this balance needs to be continuously and carefully maintained. If the conditions for one party changes, the conditions for the other are automatically also affected. Both seekers and solvers need to be provided with mutually added value from the collaboration, making the conditions for their participations worthwhile. It is this balance that is the main foundation for the Demola ES innovation intermediary service offering, and it needs to be kept up to date as the operations grow and evolve.

8.2 Discussion

First of all, among the seekers and solvers, Demola ES in general is considered a very appealing concept, with a lot of future potential. This shows that the current state of the Demola ES service offering seems to serve its purpose, and do contribute with value to the seekers and the solvers. However, there are also a few issues that need to be addressed to it. The main issue, and the most commonly recurring one during conduct of the study, is the collaboration with the university. In the main extent this affects the solvers, and basically, the coordination between Demola ES and the university needs to be a priority to improve. This is crucial in regard of the value to the general solver experience of the Demola ES service offering. An expressed wish among the solvers has been for the valuation workshops to merge with the ethics seminars, and the preparatory pitches to merge with the main pitches. This is also connected to a general opinion among the solvers that the mandatory events are too many as it is. They take too much time from the actual project work, which is what the solvers mainly want to focus on. In some extent this has also been recognized by the seekers, where they would rather see that the solvers had opportunity to make more invested efforts to solving the project problem. It would gain both the seekers and the solvers, since the results would be of a higher probability to reach far enough worth for the seeker to keep developing. This is often the ambition among the solvers, but it is rarely possible to achieve. The time put into the mandatory events probably is a main affecting factor to this. Of course, the mandatory events do serve important purposes and are in several ways useful. There are also academic requirement held by the university that limits the flexibility on this, and those are crucial for the solvers to be able to attain course credits from participation. The point is more about the mandatory events needing to be more carefully calibrated in content, extent, and in coordination between Demola ES and the university. Most of all, they need to be designed as valuable complements to the project processes, rather than unavoidable drains of valuable project work time. The solvers express that they do not want the university to dominate the project process too much. The most valuable part of the project process is for the solvers to work with the project ideas in an undemanding and free conduct. If the Demola ES project experience becomes too much familiar to a regular university course, then there is a risk that the appeal to it might fade. It would probably also affect the motivation and ambition among the solvers. This since the free project structure that Demola ES promotes will be harder to practice for the solvers if it is overshadowed by too many mandatory events. This is regardless if they are provided by the university or Demola ES.

Another aspect Demola ES need to consider is the diversity among seekers and solvers. This is something that Demola ES already strive for, but it is an important factor to the continued development of the Demola ES service offering. There need to be a mix of types of seekers, project ideas, and solvers from different programs at the university. Today Demola ES mainly attract solvers from technology focused programs, and this is probably because the projects provided also are fairly technology oriented. The types of seekers however attend to a broader span, and this is a good start. By attracting a broad diversity of seekers and solvers the Demola ES operations can expand, and through this attain an even wider network of contacts.

9. RECOMMENDATIONS AND FUTURE WORK

This chapter covers three main areas of recommendations to Demola ES, i.e. maintaining the good reputation, calibration of the mandatory events, further insight on the seeker experience, and opportunities of the Demola ES contact network. This is followed by suggestions on future works that could be useful to Demola ES and in the theory of innovation intermediation. These include the aspects of the Demola network, the collaboration with other industry promoting organizations, the definition of successful projects, a sustainable continued conduct of operations, project follow-ups, and different types of seekers, solvers, and projects.

9.1 Recommendations

This section covers three main areas of recommendations identified in the conduct of the study.

9.1.1 Maintaining the good reputation

The general opinion on Demola ES among their seekers and solvers includes a very positive view on the concept. This mainly refers to the concept of connecting students and companies through real projects. The recommendation towards this is basically for Demola ES to maintain this positive reputation created this far. This means mainly to keep enhancing these effects, with focus on sustaining the seeker and the solver expectations.

9.1.2 Calibration of the mandatory events

The number of mandatory events in the general Demola ES project process is currently quite extensive, and in addition, the collaboration on these with the university is lacking. This very much affects the solvers. It is highly recommended that Demola ES work more on carefully calibrating the content, extent, and coordination between Demola ES and the university in these mandatory events. Most importantly they need to be valuable complements to the project processes, where both seekers and solvers see obvious purposes and values to them. Basically Demola ES should much consider the suggestion by the solvers of the study, i.e. to merge the valuation workshop with the ethics seminar, and the preparatory pitches with the main pitches. This might be difficult in practicality, but it is also provide a valid suggestion that would improve to the solver experience of Demola ES.

9.1.3 Further insight on the seeker experience

The project facilitators are very important to the projects, and to the value created to the seekers and the solvers. The project facilitators keep the projects on track and very much affect the expectations that the seekers and the solvers will have on their project participation. The project facilitators also affect the user experience of the actual project conduct. Today, the project facilitators have very close collaboration to the solvers, while the contact with the seekers basically only includes the initial contact when the seekers submit their project ideas. A recommendation for Demola ES is to extend the collaboration with the seekers, since it would provide important input on what adds value to the seekers, and what needs to be done to further evolve the seeker experience. In addition, another recommendation is for the project facilitators to continue maintaining the good contact and collaboration with the solvers.

9.1.4 Opportunities of the Demola East Sweden contact network

Demola ES has a wide span of contacts, and this is valuable to the seekers as well as the solvers. For instance, during the projects external sources of project specific useful information can be mediated to the solvers. Also, on a level outside of the projects the Demola ES contact network could come to good use. This covers mediation in the purpose of e.g. career aspects for the solvers, or continued development of project results for the seekers. The Demola ES contact network is a valuable asset to the good reputation of the Demola ES operations, and should definitely be considered to explore more. A recommendation would be for Demola ES to work more on exploring what opportunities this could lead to. An example indentified in the conduct of this study is e.g. for Demola ES to host contact mediating events. Events like this could e.g. be an opportunity to not only add value to the seekers and the solvers, but also to promote the Demola ES concept.

9.2 Future work

This section covers areas for suggested continued studies of Demola ES and in the theory of innovation intermediation.

9.2.1 The Demola network

Demola ES is a part of the bigger Demola network. Solvers have expressed an interest in a closer collaboration to other Demola centers, and the possibilities to this could be interesting for Demola ES to explore more. The factor of innovation through interchange that the Demola ES concept is so much about, could possibly be enhanced through collaboration with other Demola centers.

Another interesting aspect to this is that each Demola centre has its own specific conduct to their innovation intermediation processes. They all connect student solvers to all kinds of seekers, but they are different on a detail level of conduct. By examining and comparing the different approaches between the Demola centers, more general conclusions can be drawn. This would add to the aspect of generalization for innovation intermediation, both to Demola ES, but also for the conduct of the other centers. It would also add to innovation intermediation in the aspect of general theory. This is a lacking aspect to this study since it only included the one case of Demola ES.

9.2.2 The collaboration with other industry promoting organizations

Demola ES also operates in a network of regional industry promoting organizations. The innovation intermediary concept of Demola ES is a beneficial standpoint towards valuable contributions in this. The wide span of contacts that Demola ES have as a result can provide both seekers and solvers with valuable contact mediation. Either career wise or to help innovation ideas to be realized, which can be a valuable issue both for rejected Demola ES projects, and for projects to continue with after the Demola ES project process is finished. By exploring possibilities to expand the use of the wide span of contacts, Demola ES could possibly have new interesting perspectives to consider for their service offering.

9.2.3 The definition of successful projects

This study has mainly focused on the aspect of the expected and the actual user experiences of the Demola ES project process. A very relevant factor to this is the definition of what a successful project is. If the expectations on what the collaboration will lead to do not match what actually comes out of it, a great risk is that the users will be disappointed and unsatisfied. To Demola ES the collaboration is more about the experience of the project process in itself, and the interchange between the seekers and the solvers rather than the actual results produced. The seekers and the solvers in general seem to agree to this, but still, in some extent they also hope that the results will lead to something useful and applicable. These issues would be interesting for Demola ES to explore further, since it also connects strongly to the delicate balance of where the seekers cannot be too steering of results. If this happens then the solvers would possibly lose the most important aspect of their participation, i.e. the ability to choose the direction the projects that they feel inspired by. The issue to study further would be what factors are affecting this balance, i.e. what defines a successful project to the users, and what happens if these factors are changed.

9.2.4 A sustainable continued conduct of operations

Demola ES has grown quickly and successfully since the start in 2012, and the service offering of their project process is still in some extent under construction. The next step for Demola ES is to stabilize the operations into a more general routine conduct. While it is easy to generate ideas and to have great future ambitions for the operations, the bigger challenge is to make current situation sustainable, keeping up the positive effects of the successful start-up. This is very relevant for Demola ES. The organization only consists of four employees, where the increasing extent of the operations continuously adds to the existing work load. Since the project rounds also are conducted once every semester, the time for the employees to work on other things than the role as project facilitators decreases. The project facilitation tasks of course provide for the important continuous routine operations of Demola ES, but it is also important to still maintain the ideas and ambitions for the future. The balance of these issues would be useful for Demola ES to study further, to establish a routine to the general user experience, and at the same define a strategy allowing Demola ES to continue evolve and expand.

9.2.5 Project follow-ups

So far there have only been three project rounds conducted, all in a period of a year and a half. Even at this early point, Demola ES need to establish a strategy for project follow-ups, which they do not seem to currently have. This would be a very relevant issue for Demola ES to explore further since it directly correlates to the added value of the user experience. For instance, both seekers and solvers tend to consider a main reason for participation as a way to get in contact with each other as potential employers and employees. The question only is how often this aspiration actually is fulfilled, and what difference it makes to the user experience if it is not? Potential hiring probably will not happen during the Demola ES project process, but when the solvers have graduated or are looking for summer jobs. This means that Demola ES would need a strategy for maintaining contact even after the projects are finished. Another example where project follow-ups would be useful for Demola ES is for knowing what happens to the results, regardless if bought by the seeker or not. Both seekers and solvers in some extent hope for the results produced to be useful in some way. By finding out what happens to the results, better understanding of what is required for this would be attained. The issues for Demola ES to study further can both be actual follow-ups of the projects conducted so far, but also to define a strategy for a more continuous conduct of it.

9.2.6 Different types of seekers, solvers, and projects

The goals for Demola ES are to maintain a great span of diversity between types of seekers, solvers, and projects. Types of seekers refer to e.g. organizations or private persons. Types of solvers refer to students from e.g. different programs or faculties. Types of projects refer to e.g. technology or social sciences focused areas. The effects of what different combinations on this can have have not been examined so far by Demola ES, and would be useful for them to explore. Not only does it affect the directions of the projects and the results produced, it also correlates to the initial expectations the users might have. Since they themselves can not affect these combinations, Demola ES needs to be aware of what matches will work and possibly not work. Also, the project process conducts of different types of combinations might require different types of help and support. An exploration of this would provide Demola ES with a better capability to work anticipating to the user needs.

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APPENDIX 1 LIST OF OBSERVATIONS

In this appendix the dates and circumstance of each observation occasion of the study is listed. The observations were all conducted solely by the author of the study.

- *January 23, 2014:* The graduation event for project round 2, fall semester of 2013
 - A public event where the final results of the past semester's project round is presented one last time
- *January 28, 2014:* Meeting with Demola ES, the university DM-committee, and the university examiner of the academic course events of Demola ES
 - The DM-committee is responsible for the structure and conducts of the university programs in computer and media sciences. The meeting was held to hash out details and plan how students from programs under the DM-committee would e.g. gain course credits from Demola ES, what the requirements for it would be, and how the applications would be handled.
- *January 29, 2014:* Demola ES participation in E-Week 2014
 - E-week is an annual fair focusing on local organizations working in the environment related sector. Demola ES partook with a booth and held a promotional presentation, aiming on contact with new potential seekers.
- *January 30, 2014:* A Demola ES presentation hosted by the municipality of Katrineholm
 - An event to promote Demola ES to different potential seekers and other stakeholders in the region of Katrineholm
- *January 31, 2014:* Meeting with Demola ES and the university section for Mechanical Engineering
 - The meeting was held to promote and inform about the Demola ES operations
- *January 31-April 21, 2014:* Weekly internal meetings with Demola ES
 - The meeting was held as weekly updates of the operations between the Demola ES employees, and on joint planning of future ventures
- *February 3, 2014:* A workshop hosted by Demola ES in connection to a preparatory event of LARM 2014
 - LARM is an annual career fair for the students of the technological faculty of Linköping University. The workshop was conducted for promotional purposes for Demola ES, to promote the operations to students as new potential solvers.
- *February 5, 2014:* The kick-off event for project round 3, spring semester of 2014
 - The first mandatory event of the project process where the seekers and solvers get to meet for the first time, Demola ES also informs them of the project process
- *February 6, 2014:* Visitation from the Demola center in Riga, Lithuania
 - A study visit where Demola ES presented their operations and facilities

- *February 10, 2014:* Demola ES steering group meeting
 - The steering group is a committee with representatives from all stake holding parties of the Demola ES operations. It includes representatives from Demola ES, the faculties of Linköping University, the municipalities of Linköping and Norrköping, and the regional industry. The meeting has held to discuss the current and future operations of Demola ES.
- *February 11, 2014:* The Demola ES booth at LARM 2014
 - Demola ES hosted a promotional booth at LARM 2014 to get in contact with students as new potential solvers, and companies as new potential seekers
- *February 17, 2014:* A Demola ES evaluation meeting with Norrköping Science Park
 - Norrköping Science Park is the financial owner of Demola ES. The meeting was held to inform and evaluate the past year's operations of Demola ES to the CEO of Norrköping Science Park.
- *February 17 and 24, 2014:* Three valuation workshops, one at the 17th and two at the 24th
 - A mandatory event held by the project facilitators with the solvers of each project group, where issues are discussed on e.g. goals, ambitions, and practical conducts of the project
- *March 12, 2014:* Pitch event 1
 - Mandatory project group pitches, all groups communally present the current status of their projects in one-minute pitches, without any digital visual aids. Each group receives live feedback from the project facilitators. The seekers are not present.
- *April 9, 2014:* Pitch event 2
 - Mandatory project group pitches, all groups communally present the current status of their projects in five-minute pitches, with digital visual aids. Each group receives live feedback from the project facilitators and from the seekers, who are also present.

APPENDIX 2 LIST OF INTERVIEWS

In this appendix the dates, participants, and durations of each interview occasion of the study is listed. The interviews were all conducted solely by the author of the study. The names of all interviewees will remain anonymous and only be referred to by their roles within this study. The project cases are categorized by the capital letters of A, B, C, and D, and the project facilitators by the lower case letters a, b, and c.

- *April 4, 2014:* Interview with the university examiner
 - Participants: The university examiner of the course part of Demola ES
 - Time: 50 minutes
- *April 7, 2014:* Group interview with project facilitators
 - Participants: The head of Demola ES, and the three project facilitators of the four chosen project cases of the study
 - Project facilitator a of project case A and C
 - Project facilitator b of project case B
 - Project facilitator c of project case D
 - Time: 70 minutes
- *April 8, 2014:* Interview with seeker of project case A
 - Participants: The appointed seeker project mentor
 - The mentor works in the seeker organization with strategy development, and has been involved with several projects of external scanning and innovation within the organization
 - Time: 30 minutes
- *April 10, 2014:* Interview with solvers of project case D
 - Participants: Two of the four project group members
 - 5th year master of science student in Engineering, Media Technology
 - 3rd year bachelor degree student in Graphic Design and Communication
 - Time: 50 minutes
- *April 11, 2014:* Interview with seeker of project case C
 - Participants: The appointed seeker project mentor
 - The mentor works in the seeker organization part as a business developer, part as chairman of the board, and part as head of a department for development towards smaller businesses and organizations
 - Time: 20 minutes
- *April 11, 2014:* Interview with solvers of project case C
 - Participants: One of the five project group members
 - 5th year master of science student in Engineering, Media Technology
 - Time: 30 minutes

- *April 11, 2014:* Interview with solvers of project case B
 - Participants: Three of the four project group members
 - 3rd year bachelor of science student in Engineering, Computer Engineering
 - 2nd year student of single-subject courses towards a bachelor degree in Sociology
 - 5th year master of science student in Engineering, Information Technology
 - Time: 70 minutes
- *April 14, 2014:* Interview with seeker of project case D
 - Participants: The appointed seeker project mentor
 - The mentor works at the corporate research department of the seeker organization, with research on software architecture and user experiences of the seeker products
 - Time: 30 minutes
- *April 14, 2014:* Interview with solvers of project case A
 - Participants: All three project group members
 - 4th year master of science student in Engineering, Physics and Electrical Engineering
 - 5th year master of science student in Engineering, Product Design and Development
 - 4th year master of science student in Engineering, Electronic Design
 - Time: 50 minutes
- *April 14, 2014:* Interview with seeker of project case B
 - Participants: The seeker representing project mentor
 - The mentor is a private person otherwise known as a multi entrepreneur, who has started several businesses, either sold further or run in-house
 - Time: 30 minutes
- *April 23, 2014:* Interview with project facilitator of project case D
 - Participants: project facilitator c
 - Time: 90 minutes
- *April 24, 2014:* Interview with project facilitator of project case A and C
 - Participants: Project facilitator a
 - Time: 70 minutes
- *April 28, 2014:* Interview with project facilitator of project case B
 - Participants: Project facilitator b
 - Time: 80 minutes

APPENDIX 3 INTERVIEW WITH THE UNIVERSITY EXAMINER

This appendix contains the interview guide for the interview with university examiner.

Role as the examiner

- Who are you and what formal role do you have towards Demola ES?
- For how long have you been involved with Demola ES, and for how long have you been involved as the examiner?
- In what way do you collaborate with Demola ES before, during, and after the course execution, this referring to the extent of the collaboration and coordination, and what it consist of?
- Which type of students can at this point gain course credits from participation, and what are the criteria used to screened them as qualified or not?

The course

- What events are included in the course, and what are their purposes?
- Each student is graded by pass or fail, but how do you assess if each student reach the requirements for each course event and for the whole course?
- Which course events have been conducted so far, and how well do you consider them to have been carried out?
- Which differences have you noticed in the conduct of the course events regarding the different backgrounds of the students, referring to e.g. programs, faculties, year of grade, and project groups?
- What other factors differs the between the students conducts and responses to the course events?

The course and Demola ES

- In what way is the course events connected to the Demola ES events, e.g. the pitches and workshops?
- In what way do the projects and this course complete each other?

Strengths and weaknesses

- What are the main advantages and strengths of the course as it is structured today, this referring both as a complement to the projects, and as a course in itself?
- What are the corresponding deficiencies and weaknesses?

Further assessments and future visions

- In what way would you like develop the course further in the future?
- In what way would you want the future collaboration with Demola ES to progress, referring both to you as an examiner, but also between the course and the projects?

APPENDIX 4 GROUP INTERVIEW WITH THE PROJECT FACILITATORS

This appendix contains the interview guide for the group interview with the project facilitators.

The project rounds

- What general project events was conducted in the first project round, referring to the actions of the project facilitators, the seekers, and the solvers, all from the starting point where the projects was chosen, to the project conducts, and the results potentially being sold?
- What was the purpose of each event?
- What did the collaboration between Demola ES and the university include, referring to the students?
- What differences are there between the first, second, and third project rounds, referring to the effects on the seekers and the solvers, on what has changed between the rounds, and why?

Project case A-D, respectively

- What type of seeker was it, referring to type of organization, size, and area of operations?
- Briefly summarized, what did the project focus, what was the project idea?
- Who was the assigned project facilitator?
- How many, and what types of students was part of the project group, referring to programs, year of grade, as well as other potentially differing factors?
- Briefly summarized from the project facilitator perspective, how did the project do, referring to if it was considered successful or problematic, and why?
- What other factors from this project can be potentially interesting to keep in mind, referring to e.g. the project idea, the project group members and their efforts, the collaboration with the university, the general project events, or effects drawn directly from the project participation?

APPENDIX 5 INTERVIEWS WITH SEEKERS

This appendix contains the interview guide for the interviews with the seekers.

Introduction

- Who are you, and what role do you have in your organization and in the collaboration with Demola ES?
- Briefly summarized, what did your project idea include, and to what extent was it explored or developed before submitting as a Demola ES project?

Before the project

- What did you know about Demola ES and the purpose of their operations before this collaboration, and how did you get in contact?
- Why did you choose to participate, referring to what you initially hoped to get out of the collaboration, both regarding the project idea and other potential values like contact with students, or resources for problem solving?
- What results did you expect?
- What efforts did you expect to put into the collaboration, and what did value did you consider it would bring?
- In this introductory phase before the actual project started, what did the collaboration with Demola ES include?
- How well was this phase carried out in general, referring to what was good, less good, and factors missing or that should be changed, and then why and how?

During the project

- During the project process, what did the collaboration with Demola ES and the solvers include, referring to the extent and nature of contact and interchange?
- What values did you identify from the parts of the process where you were involved, and what did you get out of them?
- How well was this phase carried out in general, referring to what was good, less good, and factors missing or that should be changed, and then why and how?
- Would you have wanted to be more involved in this phase, and in that case, how and to what purpose?
- What is your opinion on your own contributions to the collaboration?

After the project

- In what way have you used the project results, e.g. if you bought it, what have you done with it since, or if not, why, and have you used it in any other way?
- What other values have you gained from the project and from the collaboration, e.g. students for degree project work, employees, or new ideas for future projects?

- Do you still keep in touch with the solvers, and if so, in what way?

The whole process in general

- For the general whole process, from first contact with Demola ES, to the end of the project, what is the most valuable effect you have attained from the collaboration?
- What effect or part of the process do you consider as less good, and would rather have had changed or had been without?
- What would you have defined as a successful respectively a failed project, and what do you consider as the outcome in this case?
- What is your opinion on not being able to affect what kind of competences would be included in the project group, and by extension the type results generated?
- What values or problems do you identify to the fact that only students carry out the project, comparing to e.g. using another company, or a group of scientists?
- What other kind of further potential collaboration and interchange would you consider having with Demola ES?

APPENDIX 6 INTERVIEWS WITH SOLVERS

This appendix contains the interview guide for the interviews with the solvers.

Introduction

- Who are you, and what do you study, which year of grade did you have during the project, and what do you do know?
- Briefly summarized, what did your project include, referring to the project idea description from the seeker?

Before the project

- What did you know about Demola ES and the purpose of their operations before this collaboration, and how did you get in contact?
- Why did you choose to participate, referring to what you initially hoped to get out of the collaboration, both regarding the project and other potential values like contact with companies, or opportunity to explore a specific area of knowledge?
- What did you know about the seeker before this collaboration, and what was the reason for choosing this particular project?
- What efforts did you expect to put into the collaboration, and what did value did you consider it would bring to the project group and to the seeker?
- In this introductory phase before the actual project started, what did the collaboration with Demola ES include?
- How well was this phase carried out in general, referring to what was good, less good, and factors missing or that should be changed, and then why and how?

During the project and the course

- Summarized, what did your project process include, from the project start, to the final presentation, referring to actual conduct and what methods and tools you used during the different parts of the project process?
- Why did you choose to this work approach, what problems did you encounter, and how did you solve them?
- What types of roles and responsibilities did you have within the project group, and why?
- What values did you identify from the mandatory events outside of the project work, and what would you rather have changed, referring both to the events provided by the university and Demola ES?
- What other kind of help and support did you attain during the project process, e.g. from teachers, scientists, companies, access to equipment, or other project groups?
- What else would you have wanted more help or support with, that would have completed your work?

- In what extent have you worked with similar development projects before during your education, and in what way is this project similar or differing from these experiences?
- During the project process, what did the collaboration with the seeker include, referring to the extent and nature of contact and interchange?
- How well did the collaboration between Demola ES and the university work, referring to the effects it had on you, how they have completed each other, and what factors has been less compatible?
- How well was this phase carried out in general, referring to what was good, less good, and factors missing or that should be changed, and then why and how?
- What is your opinion on your own contributions to the collaboration?

After the project

- What have you delivered to the seeker, referring to e.g. documentation, or mock-ups?
- What has happened to the delivered results, referring to if it was bought by the seeker, if you have continued the work by yourselves, and then why and how?
- What other values have you gained from the project and from the collaboration, e.g. degree project work, employment, or new insight in certain knowledge areas?
- What have you gained from the experience in hindsight, and what did you learn from each other within the project group, e.g. like new problem solving techniques?

The whole process in general

- For the general whole process, from first contact with Demola ES, to the end of the project, what is the most valuable effect you have attained from the collaboration?
- What effect or part of the process do you consider as less good, and would rather have had changed or had been without?
- What would you have defined as a successful respectively a failed project, and what do you consider as the outcome in this case?
- What is your opinion on not being able to affect which people would be part of the project group, and by extension the type results generated, due to e.g. differing individual interests, knowledge, and goals?
- What values or problems do you identify to the fact that only students carry out the project, comparing to e.g. using another company, or a group of scientists?
- What other kind of further potential collaboration and interchange would you consider having with Demola ES?

APPENDIX 7 INTERVIEWS WITH PROJECT FACILITATORS

This appendix contains the interview guide for the interviews with the project facilitators.

Introduction

- Who are you, what role do you have in Demola ES, and which project of this study have you facilitated?
- Briefly summarized, what did this project include, referring to the project idea description from the seeker?

During the project and the course

- What did you know about the seekers and the solvers before this collaboration, and how did you get in contact?
- Why did you choose this particular seeker and project idea, referring to what you initially expected to get out from the collaboration, both regarding the project and other potential values like a stronger trade mark by association with big companies, or interesting projects to provide the solvers?
- Why did you choose these particular solvers to the project, referring to what factors contributed to the decision?
- In this introductory phase before the actual project started, what did the collaboration with the seeker and the solvers include?
- What do you think the seeker and the solvers expected attain from the collaboration, both referring to the results, and to the collaboration with Demola ES and each other?
- What results did you expect?
- What efforts did you expect to put into the collaboration, and what did you expect from the seeker and the solvers?
- What did your collaboration with the university include before the project start, referring to planning and structure of the project process, coordination towards the solvers, and what was the expectations on this?
- How well was this phase carried out in general, referring to what was good, less good, and what have you learned from this?

During the project and the course

- Summarized, what did the project process include, from the project start, to the final presentation, with all mandatory events and the general project process?
- What did the development process of the project look like, how well did work, and what factors do you think affected the choice of approach on project strategy, methods, and goals?
- What type of project strategy did you recommend to their development process, referring to project planning, methods, and what to achieve?

- What did the mandatory events contribute to the seeker and the solvers, referring to the events provided both by Demola ES and the university?
- In what extent did you collaborate with the solvers outside of the mandatory events, and to what purpose?
- When do you identify a need to steer the project groups in their development process or in other issues, and in what way did you need to steer this project group, referring to what problems they encountered and how these were solved?
- What other kind of help and support did the solvers attain beside Demola ES and the university, and who coordinated it, like e.g. the solvers themselves, or anyone else?
- What else would you consider the solvers have needed more help or support with, which would have completed their work?
- To what extent did you and the solvers have contact with the seeker, and to what purpose?
- How well did the collaboration between Demola ES and the university work, referring to how you have completed each other, what factors has been less compatible, and how it has affected the solvers?
- How well was this phase carried out in general, referring to what was good, less good, and what have you learned from this?
- What experience do you have on development projects of this kind?
- What is your opinion on your own contributions to the collaboration?

After the project

- What has happened to the delivered results, referring to if it has been bought by the seeker and implemented, or if the solvers have continued the work themselves?
- To what extent is Demola ES affecting what is being delivered from the solvers to the seeker, referring to recommendations on e.g. documentations, and mock-ups?
- What other values has the seeker and the solvers attained from the experience and the collaboration with each other, like e.g. degree project work, knowledge, or new ideas?

The whole process in general

- For the general whole process, from first contact with the seeker and the solvers, to the end of the project, what are the most valuable effects that Demola ES, the seeker, and respectively the solvers, have attained from the collaboration?
- What effect or part of the process do you consider as less good, and would rather have had changed or had been without, both for Demola ES, the seeker, and the solvers?
- What would you have defined as a successful respectively a failed project, and what do you consider as the outcome in this case?
- What values or problems do you identify to the fact that only students carry out the project, comparing to e.g. using another company, or a group of scientists?
- What other kind of further potential collaboration and interchange would you consider having with the seeker and the solvers?