The aim of this study is to develop an understanding of factors that enable innovation teams to conduct agile innovation work in an industrial context. The reason for this research is not only that innovation is necessary for companies that want to stay in business, but also that these companies need to increase their speed of innovation work to stay competitive.

Still, there is much knowledge to be gained regarding innovation teams. In cases where teams have been created with the purpose of conducting innovation work, i.e. innovation teams, problems related to e.g. performance and learning have occurred, and the innovation work has stopped shortly after conducted research projects due to the high level of complexity.

The research question (RQ) that this thesis intends to answer is the following: "Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?"

Qualitative data have been collected from five innovation teams in an industrial context, where three of them conducted real innovation projects. This research revealed five main findings: first, knowledge about important innovation enablers (Enablers) revealed from a literature study; second, the Innovation Team Model (ITM), demonstrating innovation teams before innovation work is begun in relation to the individuals and organization in a holistic way; third, the innovation team creation process (CIT-process), a stepwise process in how to create an innovation team; fourth, the innovation facilitator, who supports and facilitates the innovation team throughout the CIT-process and the innovation projects; and fifth, the Extended Innovation Process (EIP), an extension of the traditional innovation process by a preparation-phase to gather and prepare the innovation teams for forthcoming work. The findings regarding the importance of the CIT-process, the EIP, and the innovation facilitator for the innovation teams were unexpected.

The findings formed the Innovation Team Framework (ITF), which represents all of the findings in relation to each other. The EIP is used as the basis for which the other innovation enablers are provided to the innovation teams through an innovation facilitator's competence throughout the innovation project. The ITF is multidimensional: it could serve as a tool to describe both the simplicity and the complexity when creating an innovation team and forthcoming work and activities.

All findings within this thesis contribute to prior research in individual ways, however, the ITF is the main scientific contribution of this study to Innovation management.

Practitioners can use the ITF and its detailed models as a complement and tools to already established methodologies for product development or similar or when creating and supporting innovation team’s innovation work.

Further studies regarding the ITF and its detailed models and processes are suggested.
Innovation Enablers and Their Importance for Innovation Teams

Mikael Johnsson
Innovation Enablers and Their Importance for Innovation Teams

Mikael Johnsson

Doctoral Dissertation in Mechanical Engineering

Department of Mechanical Engineering
Blekinge Institute of Technology
SWEDEN
Acknowledgment

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Thank you all
This project has been a pleasure to conduct. I know it sounds like a cliché, but I have really enjoyed being part of a society where my nerdiness and passion for innovation are assets. As the innovator that I am, one of my personal conclusions is that research is very much like innovation work, i.e. to have an idea, study the problem, and develop insights useful for academics, the studied part and others interested. Great fun, and I am quite proud that I have developed new methodologies and tools during this research that have become useful and that create value for businesses.

Sometimes when I think of my superstar hero, Sten Ekman, who saw something in me from which academics could benefit, I am very grateful that he dragged me into this part of the reality at the very beginning. Thank you. It is a shame that you retired before I managed to complete this thesis. It would have been great to work together as researchers – but who knows? Time will tell. In any case, it would be nice to grab a coffee together sometime :)

It is so easy to forget someone to acknowledge, but spontaneously I think of my supervisors, professors Tobias Larsson (BTH) and Tomas Backström (assistant supervisor, MDH), who have supported me in my writing in their own original ways. Thank you for your patience. My PhD student colleagues have been supportive as well: Massimo Panarotto and André Benaim, thank you for sharing moments of frustration. And thank you to all colleagues at Mälardalen University: you have been very supportive. Especially Mona Tjernberg.

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Another one of my superheroes, Uncle Lars, with support of Dad and Bo with families, made sure that I was able to write this text. You guys deserve a special acknowledgement and tons of hugs. Uncle Lars probably thinks that it is nonsense and already known by everyone on the planet, but that is alright, everyone is entitled to his opinion. Mum & Ola, my siblings: Johanna, Eric and little brother Sepehr with families, and all my other relatives and friends who have seen my hair become grey during these years.

- Thank you, I love you all :D

- But what now? What should I do next? Can my next mission be as fun as this one? Is this my thing to do?
- Well, I think so. I have some ideas... why don't you stick around?
Tack Alla (Acknowledgement in Swedish)


Tack Alla


- Tack alla. Älskar er :D

- Men nu då? Vad ska jag göra? Kan fortsättningen bli lika rolig? Är det här min grej?
- Ja, jag tror faktiskt det. Jag har hunnit få en del idéer..., häng med på resan vettja!
Abstract

The aim of this research is to develop the understanding of factors that enable innovation teams to conduct agile innovation work in an industrial context. The background and reason for this research are not only that innovation is necessary for companies that want to stay in business, but also that these companies need to increase the speed of their innovation work to stay competitive. Research has demonstrated that cross-functional (X-functional) innovation teams are fast and agile, and are therefore assumed to be suitable for these activities. Still, there is much knowledge to be gained.

Prior research has identified factors that are seen as important from an organizational, team, and individual perspective to enable teams to work with potentially innovative outcomes. However, in cases where teams have been created with the purpose of conducting innovation work, i.e. innovation teams, problems related to e.g. performance and learning have occurred, and the innovation work has stopped shortly after conducted research projects due to the high level of complexity.

The research question (RQ) that this thesis explores is the following: “Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?” Based on the RQ, two sub-questions are formulated and operationalized to answer the RQ.

Qualitative data have been collected from five innovation teams in two phases. Two innovation teams in two small- and medium-sized enterprises (SMEs) were studied in the first phase to clarify the situation for innovation teams before innovation work is begun. In the second phase, which built on the first one, three innovation teams in a large industrial company were studied as they conducted three separate innovation projects.

This research revealed five main findings: first, knowledge about important innovation enablers (Enablers) revealed from a literature study; second, the Innovation Team Model (ITM), demonstrating innovation teams before innovation work is begun in relation to the individuals and organization in a holistic way; third, the innovation team creation process (CIT-process), a stepwise process in how to create an innovation team; fourth, the innovation facilitator, who supports and facilitates the innovation team throughout the CIT-process and the innovation projects; and fifth, the Extended Innovation Process (EIP), an extension of the traditional innovation process by a pre-phase, i.e. a Preparation-phase, to gather and prepare the innovation teams for forthcoming work. The findings regarding the importance of the CIT-process, the EIP, and the innovation facilitator were highly unexpected.

The findings formed the Innovation Team Framework (ITF), which represents all of the findings in relation to each other. The EIP is used as the basis for which the other innovation enablers are provided to the innovation teams through an innovation facilitator’s competence throughout the innovation project. The ITF is multidimensional: it could serve as a tool to describe both the simplicity and the complexity when creating an innovation team and forthcoming work and activities.

All separate findings within this research contribute to prior research in individual ways, however, the ITF is the main scientific contribution of this study to Innovation Management.

Practitioners can use the ITF as a complement to already established methodologies for product development or similar; however, one should be aware of the limited nature of the data set that served as the basis for analysis and development of the ITF.

Further studies regarding the ITF and its detailed models and processes are suggested.

Keywords: Innovation team; Innovation group; Cross-functional; Multi-functional; Innovation enabler; Innovation process; Group development; Facilitator; Competence.
Sammanfattning

(Abstract in Swedish)

Den här forskningen fokuserar på öka kunskapen om faktorer som möjliggör innovationsteams arbete i en industriell kontext.

Bakgrunden och anledningen till denna forskning är att innovationsarbete inte bara är en nödvändighet för företag som vill överleva på sikt, de måste dessutom öka takten i hur innovationsarbete genomförs för att vara fortsatt konkurrenskraftiga. Forskning visar att multifunktionella innovationsteam är snabboröliga och flexibla, och därför passar för detta arbete, men det finns fortfarande mycket att lära kring faktorer som påverkar dessa innovationsteams arbete. Forskningsfrågan som den här avhandlingen avser att besvara är: Vilka faktorer som möjliggör innovationsarbete är viktiga för innovationsteam som utför agilt innovationsarbete i en industriell kontext?

Tidigare forskning har klargjort faktorer som anses viktiga ur ett organisatoriskt-, team- och individuellt perspektiv för att team ska kunna arbeta med potentiellt innovativa resultat. Man har även identifierat utbildningsbehov av team för att de ska kunna utföra praktiskt innovationsarbete. I det fall som team skapats för att uttala princip som innovationsarbete, d.v.s. innovationsteam, så har bland annat problem med utförande och inlärning noterats med följer som att arbetet upphör kort efter att projektet avslutats. Till skillnad från många andra studier om innovationsmöjliggörande faktorer har den här forskningen sedermera innovationsteam i praktiskt innovationsarbete.

Kvalitativ data har samlats in från fem innovationsteam i två faser. I den första fasen studerades två innovationsteam i SMEs för att klargöra innovationsteams förutsättningar innan själva innovationsarbetet börjar. I den andra fasen, vilken bygger på resultat från den föregående fasen, skapades tre nya innovationsteam i ett stort företag som faciliterades och studerades i varsamt praktiskt innovationsprojekt.

Den här forskningen visade på fem viktiga resultat som alla kan anses vara innovationssmöjliggörare: Viktiga innovationsmöjliggörare identifierades genom en litteraturstudie; Innovation Team Model (ITM), som är en holistisk modell som beskriver innovationsteamet innan innovationsarbete inlets i relation till individerna i innovationsteamet och den organisatoriska kontexten; en process för att skapa högpresterande innovationsteam (CIT-process); en utökad innovationsprocess (EIP), i vilket CIT-processen används för att skapa och förbereda innovationsteamet inför kommande arbete; slutligen, innovationsfacilitatorn som genom sitt arbete guidade och överförde relevant innovationsrelaterad kunskap till innovationsteamens löpande under arbetets gång.

Slutsatserna från forskningen har formulerats till en föreslagen modell som beskriver ett ramverk rörande innovationsteam, Innovation Team Framework (ITF), för de olika resultaten samt facilitators roll och involvering i ett innovationsteams arbete. ITF är multidimensionell och kan användas för att både påvisa enkelhet och komplexitet i ett innovationsteamet bildande och efterkommande arbete.

Samtliga resultat bidrar till tidigare forskning på olika sätt, men ITF bidrar särskilt till forskning relaterad till innovationsledning och agilt innovationsarbete och är därmed det huvudsakliga bidraget till tidigare forskning.

Ur ett praktiskt perspektiv kan ITF användas som complement till t.ex. ständiga förbättringar och annat succesivt utvecklingsarbete, men tänk på att den här forskningen även visar att facilitatorn har en viktig funktion som behöver ha vissa färdigheter, kompetens och erfarenhet.

Fortsättningsvis föreslås fortsatta studier om ITF och dess ingående modeller och processer, men också specifikt att utveckla nya verktyg för att engagera medarbetare till innovationsarbete samt studier om innovationsteams effektivitet.
**Appended papers**

**Paper A**
Karlsson, H., Johnsson, M. and Backström, T. (2010), Interview Supported Innovation Audit: how does a complementary interview affect the understanding of an innovation audits results when the interview is based on the audit statements. In: The 3rd ISPIM Symposium, Quebec, Canada, December 2010.

**Paper B**

**Paper C**

**Paper D**

**Paper E**

**Paper F**
Johnsson, M. Innovation enablers for innovation teams – A review. Conditionally accepted with minor revisions in: Journal of Innovation Management.

**Paper G**

**Paper H**

**Paper I**
Other publications, not included in this thesis


¹The book’s title is a twist of the Swedish saying “Don't sell the skin before the bear is shot”.

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<tr>
<td>AR</td>
<td>Action research</td>
</tr>
<tr>
<td>CIT</td>
<td>Creating high-performing Innovation Teams: A process to create innovation teams to avoid group development problems.</td>
</tr>
<tr>
<td>DRM</td>
<td>Design Research Methodology: A research approach for research design.</td>
</tr>
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<td>DS-I</td>
<td>Descriptive Study I: The second stage in DRM.</td>
</tr>
<tr>
<td>DS-II</td>
<td>Descriptive Study II: The fourth stage in DRM.</td>
</tr>
<tr>
<td>EIP</td>
<td>Extended Innovation Process: An extension of innovation processes with a pre-phase.</td>
</tr>
<tr>
<td>ITF</td>
<td>Innovation Team Framework: A framework where the findings within this research are demonstrated in relation to each other.</td>
</tr>
<tr>
<td>ITM</td>
<td>Innovation Team Model: A holistic model of innovation teams before innovation work is begun.</td>
</tr>
<tr>
<td>NPD</td>
<td>New Product Development.</td>
</tr>
<tr>
<td>PAR</td>
<td>Participatory Action Research.</td>
</tr>
<tr>
<td>PS</td>
<td>Prescriptive study: Third stage in DRM.</td>
</tr>
<tr>
<td>RC</td>
<td>Research Clarification: The first stage in DRM.</td>
</tr>
<tr>
<td>RQ</td>
<td>Research question within this thesis.</td>
</tr>
<tr>
<td>SME</td>
<td>Small- and medium-sized enterprises: 10-250 employees².</td>
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1 INTRODUCTION

The aim of this introduction is to demonstrate the content of this thesis, the research area, and the research question that this thesis will explore.

1.1 Reading instructions and research outlines

This thesis is a collection of nine papers. It comprises seven chapters, nine appended papers, and one appendix. The chapters demonstrate the research as a whole while the papers present detailed information on the conducted studies and their results. In addition, the papers demonstrate how ideas and concepts have evolved and matured over time. The seven chapters have the following structure.

Chapter 1 presents an introduction to the research area and defines the terms central to this thesis. It explains “why” this research is of relevance and “what” the research focus is by clarifying the research area and research question to be explored within this thesis.

Chapter 2 demonstrates the research design and research approach; it describes the operationalization of the research question, the research objects, and the industrial context, and explains “how” this research has been conducted.

Chapter 3 presents the theoretical framework related to the research area. It serves as a theoretical basis to understand the research area and the results of the studies conducted within this research.

Chapter 4 provides a summary of the appended papers, their relation to the thesis, and the researcher’s contribution to the research conducted.

Chapter 5 demonstrates the results of the conducted studies, and relevant sections from the appended papers are highlighted and discussed.

Chapter 6 is a discussion of the results in relation to the overall Research Question. It also demonstrates the main contribution of this study to previous research.

Chapter 7 discusses the overall conclusion and theoretical and practical applications, and suggests further research.

The reference list presents the references used throughout this kappa.

The appended papers are presented in order from Paper A to Paper I; these are also the names with which they are referred to within this thesis.

The appendix includes data collection tools, such as e.g. interview guides and questionnaires used within this research.

1.2 Definitions used in this research

Innovation
Innovation is defined in this thesis to be the successful implementation of something new, e.g. products, services, or processes (OECD, 2005), that adds value to its internal or external market (e.g. Andersson, 1996; Lans, 1997; West et al, 2004).

Innovation work
Innovation work is defined in this thesis to include all necessary work required to deliberately develop an idea and successfully implement it on the market where it adds value. In practice this means that e.g. purchasing, package design, economic calculations, production planning, and marketing are included in innovation work if they are related to a specific innovation project. This definition is based on innovation processes that demonstrate stages and phases in which activities are to be performed in order to develop an idea towards an innovation (e.g. Baxter, 2002; Ottonsson, 2012; Tidd and Bessant, 2009; West et al, 2004).
Agile innovation work
Agile innovation work is defined in this thesis not only to include iterative and evolving work tasks, but also to specify that the order in which they are conducted might change rapidly depending on circumstances. Agile innovation work implies that innovation work in an innovation project is conducted as several tracks where multiple plausible solutions are developed simultaneously, and it does not stop when faced with challenges: instead it finds new ways and solutions are created as the project emerges (Johnsson, 2009; Ottosson, 2012).

Innovation team
An innovation team within this thesis is based on the combination of the definitions of innovation and team, where team is defined as a group of individuals who want to work together towards a common goal (Hoegl, 2005; Wheelan 2013). Therefore, innovation team is defined in this thesis as a team with the purpose of conducting innovation work within an organization. Even though there are distinct differences between teams and groups, such as e.g. structure, setting, and goals (Wheelan, 2013; Backström and Olson, 2010), this thesis will use the word team regardless of its status except for the cases in which the group dynamic process is demonstrated in the theoretical framework (Chapter 3).

Innovation enablers
Innovation enablers in this thesis are factors that enable an innovation team to conduct agile innovation work within an organization. Hindrances or barriers for innovation fall outside of the scope of this research based on the mind-set needed for agile innovation work, where hindrances need to be processed and overcome to reach the final goal (Adkins, 2010; Ottosson, 2012).

Innovation enabler versus Enabler
Innovation enabler, as stated above, is the general term used in this thesis for factors that enable innovation work, while Enabler is the term used when addressing one or several specific factors identified in the literature review presented in Paper F.

1.3 Problem description and problem clarification
The overall purpose of this research is to gain knowledge regarding factors that enable innovation teams to conduct agile innovation work within an industrial context, and the aim is to demonstrate the knowledge created in such a way that it contributes to the literature and enables implementation in the industry to create value. The goal is that practitioners and industry may benefit from this research by using the knowledge created when e.g. planning for and creating new innovation teams, and when advising new or already existing innovation teams.

The background of this research is that innovation is not only the key to economic and social growth (Dooley et al, 2000; Pattersson, 2009) or competitive advantage (Clark, 2012) anymore. Innovation is required for companies to stay alive and for that reason they have to re-organize as well as develop new products (Bessant et al, 2010; Dobni, 2006; Kask, 2011). At the same time, innovation work has to be conducted in an ever-increasing speed to meet the market changes and requirements since product life cycles have become shorter over time (Barczak et al, 2009; Chen et al, 2010; Menon et al, 2002), and there is an increased interest in optimizing the management of innovation processes (Eschenbaecher and Graser, 2011). The longer it takes for a company to launch new innovative activities, the lower its innovation performance will be. It will simply not be successful, and this is why “fast
1. INTRODUCTION

companies” win over “slow companies” (Narasimhalu, 2005; Kuckertz et al, 2010) and companies die (Jagersma, 2003).

From a historical point of view, one can see a dramatic change in how innovation work has been conducted, with major changes in innovation processes throughout the decades. The 1950s and 60s were dominated by a technology push, in which the progress in technology was the driver of what was developed and launched on the market. The market pull became more important in the 1970s, when development of products and services was driven by market need, and thus a stepwise incremental development methodology was created. From a holistic perspective, innovation processes between the 1950s and 70s were all linear in nature. During the 1980s, the interactive process of the 1980s and 90s was born by means of coupling processes and combinations of technology push and market pull approaches. These interactive processes were simultaneously managed with a technology, marketing, and manufacturing focus in the innovation process, where there was no explicit starting point for innovation; thereby, information flow became important for innovation work. During the 1990s the network process was developed with a focus on the accumulation of knowledge and external linkages, and this way of working was developed even further to become classified as Open innovation in the 2000s. The cyclic innovation process that is still in use today was developed in the 2010s; it builds on previous processes, but these are demonstrated in a cyclic and agile way of working. This way of conducting innovation work gives the innovation managers a new role in which cross-functional tasks must be handled through an extensive network of relationships; this requires new knowledge relative to previous innovation processes (Trott, 2012).

As a result of the development of innovation processes over time towards circular innovation processes, innovation work has also developed. It has been proven that multi-functional- or cross-functional (X-functional) teams in general perform better than a single individual, because the wide range of knowledge within the team stimulates new ideas (Backström and Olson, 2010; Smart et al, 2007) and avoids internal rivalry, as each individual is an expert in his/her own particular area. It has also been proven that teams have positive effects on innovation output (Frostenson, 1997) and several terms for these teams have emerged over time, e.g. multi-functional innovation team, X-functional innovation team, and new product development teams (NPD-teams). All of these teams have many positive effects based on their performance; e.g. cost reduction, risk sharing, improved capacity for learning, and knowledge transfer have all been observed (Arranz and Arroyabe, 2009); other observed effects include decreased time to market (Highsmith, 2009), increased job satisfaction, less job stress, less time pressure (Cordero et al, 1998; McGreevy, 2006b), contribution to improved quality and productivity (McGreevy, 2006a), higher quality in a shorter time (Edmondson and Nemhhard, 2009), knowledge sharing, trust development, and the overcoming of organizational barriers (Horth and Vehar, 2012; Love and Roper, 2008).

The disadvantage of X-functional work is that it is complex to establish a working set-up to successfully deal with the process of reaching a joint understanding of the customer’s needs and expectations, the scope of the work to be done, the design process itself, and the roles and commitments of team members (Larsson, 2003). These problems partly refer to the group dynamic process, which many as many as 80-90% of all teams struggle to come through (Wheelan, 2013), which results in poor performance and mistrust of management (Kristiansen and Bloch-Poulsen, 2010). X-functional innovation teams with inexperienced members do not perform well either due to decision-making problems (Kesting and Ulhøj, 2010), and they suffer from learning problems as well. Innovation drivers and innovation champions have shown positive results related to innovation team performance as they support the members when conducting innovation-related tasks; however, they do not
manage to conduct innovation work by themselves when the support leaves the innovation team (Hallgren, 2009, Gamatese and Hallowell, 2011).

Previous research suggests a high involvement of employees in innovation work (Bessant, 2003; Xu et al, 2006), with X-functional teams representing a way to achieve this involvement (Hallgren, 2006, Johnsson, 2010). However, as discussed above, studies on X-functional innovation teams demonstrate various problems, and it is therefore of interest to study factors that enable innovation teams to conduct innovation work. Prior studies on factors that stimulate innovation in general are numerous, investigating factors such as e.g. innovative culture (Aiman-Smith et al, 2005), innovative climate (Ekvall, 1996), willingness to change (López-Fernández et al, 2011), and ways to plan for and conduct innovation work (West and Sacramento, 2012). Studies on innovation enablers for innovation teams specifically reveal that factors on the managerial, project, and individual levels matter (Gamatese and Hallowell; 2011), such as e.g. empowerment and tolerance of failure (Aagard and Gertsen, 2011), having access to mutual resources, and removing communication barriers (Im et al, 2013).

However, even though there is a great deal of knowledge regarding teams’ difficulties in e.g. developing in an appropriate way and performing effectively, the research focus is primarily directed to management and how to manage teams to work; at the same time, it is suggested that the focus be on the team members who conduct the practical work (Wheelan, 2013).

Problem clarification
Two assumptions are made from this background: first, X-functional innovation teams have a positive effect on innovation performance and high involvement of employees in innovation work within an organization; and second, factors that enable innovation work (innovation enablers) are identified as important for innovation work, and thereby assumed in this thesis to be important for innovation teams when conducting innovation work as well.

Three areas of interest appear to be related to innovation teams and factors that enable their innovation work, about which this research aims to provide new knowledge. First, previous research explicitly demonstrates that innovation teams have different kinds of problems such as e.g. performance problems, learning problems, and team conflicts; second, there is a need for research focused on the individuals in innovation teams to gain knowledge regarding innovation teams as a form of teamwork; and third, recent research claims that only 10-20% of all groups manage to develop into performing teams (Wheelan, 2013).

For these reasons, the present research focuses on innovation enablers for innovation teams that conduct on-going innovation projects in accordance with a modern innovation process. This is done to provide a holistic picture of innovation enablers needed to conduct innovation work and to learn the handcraft.

1.4 Research question
Based on the knowledge of innovation enablers and innovation teams presented above, one overall research question (RQ) is formulated, to which this thesis provides an answer.

RQ: Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?

To answer the RQ, two sub-questions are proposed.

RQ1: Which innovation enablers are important for innovation teams?
RQ2: When are the important innovation enablers important for innovation teams when conducting agile innovation work in an industrial context?
RESEARCH DESIGN
2 RESEARCH DESIGN

This chapter presents the research design, the research process, and the data collection methods used; the aim is to provide an understanding of how this research was planned and conducted.

2.1 Design Research Methodology as methodological approach

The research approach used in this study was inspired by Design Research Methodology (DRM) by Blessing and Chakrabarti (2009). The purpose of the DRM is to stress that the research is conducted in a systematic way, and to highlight that all work in one stage needs to be covered before entering a new stage. Even though the illustration of the DRM framework seems to be a linear process in four stages, the practical work is cyclic or sometimes conducted as parallel tracks to enable further steps in the iterative learning process (illustrated by the arrows in vertical directions, Figure 1).

![Diagram of DRM framework](image)

**Figure 1:** The DRM framework. The figure demonstrates the DRM framework and its four stages, where the arrows show directions in the process and expected outcomes from each stage.

The DRM framework comprises four stages (Blessing and Chakrabarti, 2009). The first is the Research Clarification (RC) stage. The main focus of this stage is for the researcher to identify evidence or at least indication that supports an assumption that can serve as the grounds on which to formulate a research goal and a suitable research plan. Second, the Descriptive Study-I (DS-I) is the stage in which the researcher develops and demonstrates factors that are detailed enough to describe the current situation and to be used in the coming stage. This knowledge is based on literature reviews, observations, and interviews in an iterative process, and one can use a research question instead of a hypothesis if more suited to the research. Third, in the Prescriptive Study (PS) stage the researcher uses his or her increased understanding from DS-I to describe key factors to be addressed and to develop research support tools. Fourth, the Descriptive Study-II (DS-II) is the final stage. In this stage, the previously developed support tools from the PS-stage are evaluated. As stated
above, the stages of the DRM represent an iterative process in which increased knowledge might lead to another loop in the DRM, further empirical studies, or literature reviews; one can return from one stage to another for adjustments if needed.

The DRM was used to organize the research and plan relevant activities. The first part of the research was related to RC (Paper A; Paper B; Paper C) and DS-I (Paper D) by conducting research on innovation teams to understand the complex situation inexperienced innovation teams are in before innovation work is begun, where the outcome of DS-I was the ITM that demonstrates the knowledge created as a model. The second part of the research was related to PS (Paper E; Paper F) and DS-II (Paper G; Paper H; Paper I). The CIT-process (Paper E) and the identified Enablers (Paper F) are PS outcomes by explicitly demonstrating how to create innovation teams and which factors previous research highlight to be important for innovation work. The knowledge created from PS was evaluated in Paper G and Paper H by creating innovation teams accordantly to the CIT-process and studying the Enablers from an innovation team perspective, and even further developed and evaluated in Paper I by conducting studies on the innovation facilitator and revealing the EIP. All in all, the overall outcome of the DRM framework is the Innovation Team Framework (ITF) where all findings are related to each other.

\[\text{Table 1: The table demonstrates the papers' outcomes in relation to the DRM framework and their major contributions to the thesis.}\]

<table>
<thead>
<tr>
<th>PAPER</th>
<th>RC</th>
<th>DS-I</th>
<th>PS</th>
<th>DS-II</th>
<th>MAJOR CONTRIBUTION TO THE THESIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Understanding of innovation-related knowledge before innovation work is begun.</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Understanding of innovation-related knowledge gaps before innovation work is begun.</td>
</tr>
<tr>
<td>C</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Understanding of innovation-related innovation information flow and awareness before innovation work is begun.</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>A theoretical model demonstrating an innovation team before innovation work is begun (ITM).</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>A theoretical process of how to create innovation teams (CIT-process), used as research tool in Paper G – Paper I.</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Literature review of innovation enablers that affect innovation teams in general (Enablers), used as research tool in Paper G – Paper H</td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Evaluation whether the identified Enablers from the literature review are important to innovation teams.</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Evaluation whether which of the identified Enablers that are most important in innovation projects, and when.</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Understanding and evaluation regarding which characteristics an innovation facilitator should possess and when an innovation facilitator is most important in innovation projects. Understanding of the need for an EIP.</td>
</tr>
</tbody>
</table>
2.2 Case study approach
In a case study approach, it is possible to use different cases from the same organization or company, or to investigate the same question in a variety of contexts. It is a systematic approach to studying events, and to analyzing and reporting findings, in which multiple sources are used to strengthen the research finding (Yin, 2013). At the same time, qualitative research, as this research is claimed to be due to its relatively small number of cases and respondents, should be flexible enough to allow adjustments throughout the research (Maxwell, 2013).

The case study design within this research included multiple cases and embedded case studies to enable theory building (Yin, 2013), however the practical work within this entire research has been interactive and flexible as suggested by Maxwell (2013). Case study design based on qualitative data was suitable for this research as the aim was to study innovation enablers and their importance for innovation teams. The research as such was designed as a longitudinal study, which enables observations of phenomena over time. However, it is important to be specific about the phenomenon being studied, and to ensure that the data are collected from respondents who are suitable for the case study (Åhlström and Karlsson, 2009). In the first part of the research, the case studies were conducted in separate companies, and in the second part the case studies were conducted in the same company.

The benefit of using cases studies is that new theories may be generated as the research can reconcile empirical evidence with literature and prior research. The disadvantage of case studies is that the researcher can easily generate theories that are too complex, as he or she may try to cover all findings (Yin, 2013); conversely, the results may become too narrow or idiosyncratic (Eisenhart 1989). Another problem with longitudinal case studies, which this study used, is that they are time-consuming and the final result is unknown at the beginning (Åhlström and Karlsson, 2009). Still, the benefits of case studies override the known problems of this type of research for the present study, especially as the research objects and events could not be taken out of their context and be controlled (Yin, 2013).

2.3 Research perspective – Participatory Action Research
The research demonstrated in this thesis is inspired by Action Research (AR) (Gummesson, 2000; Reason and Bradbury, 2000) and Participatory Action Research (PAR) (Walter, 2009; Whyte et al, 1989) in combination, as they share many principles and are therefore difficult to distinguish. In these forms of research, the researcher is involved by means of implementing methodologies, advising, and facilitating the on-going innovation projects.

The key elements in AR are to bring methods, tools, and inspiration to initiate a process and to help to sustain it for a certain amount of time. The researcher should also reflect upon what happens in the project and use these reflections to further improve the process, whereby new knowledge is created in the interaction between the researcher and the participants (Gummesson, 2000; Reason and Bradbury, 2000).

The key elements in PAR are actions and change (Walter, 2009); generating theoretical knowledge (Whyte et al, 1989); and the researcher focusing on reflection, question, fieldwork, analysis, and new actions in continuous circles (Wadsworth, 1998). In PAR, the researcher can be seen as a facilitator for change (Walter, 2009).

In this study, the researcher implemented both methodologies and advised the participants on how to use them. He was able to follow and participate within the company for three years. The participants acted as experts in the innovation teams, where the researcher and participants worked and learned together, in accordance with Eikeland (2006) and Westlander (2006), based on the insight that today’s processes and organizations are so complex that they can only be understood by shared effort. The participants shared their
expertise from their context, and the researcher contributed theoretical and practical experience. However, in accordance with Gummesson (2000), the researcher separated the complexity of participation and science in order not to neglect the interests of science and the participating company’s interest.

### 2.4 Research context

This thesis is the result of two research projects spanning over seven years.

The first research project was named Wings of Innovation\(^3\) (2009-2012) and was initiated by Mälardalen University, which observed that small- and medium-sized enterprises (SMEs) and large companies suffered from the financial crisis in 2008. The identified problem was that companies lacked knowledge regarding how to develop new products (and services etc.) to meet the market’s new demands. This was not because of undereducated personnel in terms of e.g. engineering or quality, but rather because of a lack of knowledge regarding how to detect new opportunities to develop new products, services, etc. The overall research aim was to increase the knowledge concerning how to increase competitiveness through innovation. The project was financed by Mälardalen University, Sparbankstiftelsen Rekarne, and Munktell Science Park. Two companies participated in the research: Calix AB (Calix) and Eskilstuna ElektronikPartner AB (EEPAB).

The second research project is named iGroups and iCoaches, and is one out of eight Use Cases within the research profile Model Driven Development and Decision Support (MD3S)\(^4\) at Blekinge Institute of Technology. MD3S is financed by the Swedish Knowledge and Competence Development Foundation (KK-stiftelsen or Stiftelsen för kunskaps- och kompetensutveckling in Swedish), Blekinge Institute of Technology, and the associated companies: Aura Light International, Avalon Innovation, Dynapac Compaction Equipment AB, GKN Aerospace Engine Systems, Holje International Group, Tetra Pak Packaging Solutions AB, and Volvo Construction Equipment. All research within MD3S has been conducted in close cooperation with the associated companies, where new knowledge is spread and discussed at annual seminars and workshops to provide a bigger and more holistic understanding of the applicability of the research results.

Three companies within this group of companies participated in the present research, all with an industrial setting and context, hereinafter named Company A, Company B, and Company C. All participating companies develop technology-based products sold globally.

### 2.5 Research process

This research was conducted in two parts (Figure 2), where the innovation process demonstrated by Tidd and Bessant (2009) was chosen as a visual tool and served as a guideline to navigate the research actions and innovation work. The first part of the research was limited to the initial phase before innovation work began. The second part started in a new initial phase of the innovation process and spanned over the first three phases of the innovation process, illustrated in Figure 2.

The first part of the research was conducted by studying two innovation teams within two industrial SMEs, Company A and Company B. The innovation Teams A and B were created in accordance with Hallgren (2009), i.e. one voluntary individual from each department except for management participated in the innovation teams. There was also an inter-organizational group, in which two managers from each company participated. This part of the research resulted in four papers: Papers A – D, with Paper D concluding the previous papers in a holistic model of innovation teams before innovation begins.

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\(^3\) http://www.ipr.mdh.se/projects/169-Wings_of_Innovation__Innovationskraft_, retrieved 2016-09-23

\(^4\) http://www.productdevelopment.se/?p=68, retrieved 2016-09-23
The second part of the research was conducted by studying three innovation teams in a large global company, Company C, where the innovation Teams C – E were created in accordance with the CIT-process demonstrated in Paper E. The latter part of the research resulted in five papers, Papers E – I, all of which the nine appended papers contributed to answering the RQ and to forming the Innovation Team Framework (ITF).

Figure 2: The figure demonstrates the different parts’ scopes in this research, and where in the research process the appended papers were published at conferences or submitted to journals, indicated by paper id A-I.

2.6 Data collection methods
The RQ was answered thorough a series of case and literature studies. The research object was innovation teams in an industrial context, and both SMEs and large companies participated in the project. The overall study was divided into five phases.

First, case studies were conducted on two innovation teams in SMEs in order to understand their situation before innovation work begins. This understanding provided knowledge of the problems discussed above by means of demonstrating a holistic picture of innovation teams’ relation to the organizational, team, and individual contexts.

Second, a theoretically based framework regarding the creation of innovation teams was developed and used to create innovation teams in a large industrial company in the second part of this research. The framework served as a protocol to ensure that the innovation teams were created according to the same methodology before studies on innovation enablers were conducted.

Third, a literature review was conducted regarding innovation enablers that affect innovation teams to identify important innovation enablers (Enablers) for innovation teams. This literature review served as a guideline for the following studies.

Fourth, case studies were conducted on three innovation teams in a large company to determine which Enablers that were important in on-going innovation projects. These studies focused on the effect that the identified Enablers had on innovation teams, and provided knowledge regarding which innovation enablers that were important to innovation teams, and when.

Fifth, a case study was conducted on the same innovation teams as in the prior phase to determine which characteristics an innovation facilitator should possess and when in the
innovation project an innovation facilitator is important. This study provided knowledge regarding whether an innovation facilitator could be seen as an innovation enabler and when the innovation facilitator was the most supportive for an innovation team.

2.7 Data collection, operationalization of RQs, and data analysis
The data collection methodologies used within this research varied depending on focus and purpose, and observations, documentation, interviews, questionnaires, and statement-based questionnaires were frequently used at the same time to examine the research question from several perspectives simultaneously in order to gather rich data.

Data collection

Observation
To participate in a contextual situation is one of the best ways to understand it (Van Manen, 1990). This is further explained by Maxwell (2013), who suggests that one should use one’s eyes and ears, as everything is data. Observations are particularly important to gaining a tacit understanding (Yin, 2013) or to interpret an interview session when one cannot rely on the interview data alone (Maxwell, 2005).

Observations in this research were mainly made during company visits, workshops, team meetings, and telephone/online conversations. These were audio-recorded with permission from the respondents, and selected sections from these recordings where transcribed, in cases when audio-recordings could not be implemented, the researcher took notes and sent them to the respondents for approval.

Workshops
Workshops were used for data collection in both parts of this research. The workshops in the first part were planned and executed in accordance with the innovation process demonstrated by Tidd and Bessant (2009). As the workshops in the second part of the research took a more practical approach, they were planned and executed in accordance with the innovation process demonstrated by Johnsson (2009). The final data collection was executed as a combined episodic interview, like time travel in accordance with Maxwell (2013), and a workshop.

Questionnaires and statement-based questionnaires
Questionnaires and statement-based questionnaires are easier to use than real-time methods and enable large volumes of data to be collected (Blessing and Chakrabarti 2009).

In this research, questionnaires were conducted to allow the respondents to assess the importance of pre-defined terms, whereas statement-based questionnaires were used to assess the outcome of specific scenarios, or to assess the respondents’ or others’ own behavior in certain scenarios. In the second part of this research, the same set of questionnaires and statement-based questionnaires was used repeatedly, which enabled observations of progress and deviations over time.
Semi-structured interviews

Interviews are one of the most important sources of information in case studies as they make it possible to explore divergences in respondents’ opinions and descriptions of experiences (Yin, 2013). They are recommended as a way to obtain information that cannot be observed in surveys (Blessing and Chakrabarti, 2009). Furthermore, interviews are a valid way to understand someone’s perspective, and observation can enable the researcher to draw inferences about this perspective that one could not obtain by relying exclusively on interview data (Maxwell, 2005).

Semi-structured interviews can be seen as a mix of structured and unstructured interviews (Fellows and Liu 2002). Structured interviews have a defined set of questions that are provided to all interviewees. The unstructured interviews, on the other hand, refer to the in-depth problem identification and exploration of a subject, and are usually needed at the beginning of the research. Semi-structured interviews consist of a set of questions that are designed to reflect the respondent’s role in the company, and questions are often modified or added as the dialogue proceeds.

The interviews conducted during this research were of both the open-ended character, to enable identification of progress and deviation over time, and the open-ended semi-structured character, in which guidelines were designed and follow-up questions were prepared and ready to use specifically for each interview occasion. The first set of interviews was structured in order to obtain a current state of the respondents’ understanding and pre-knowledge about the area of concern. Later, episodic interviews were used to go back in time to reflect (Maxwell, 2013). On average, an interview session lasted about 20 minutes if conducted at the same time as a set of questionnaires. When interviews were conducted as a separate data collection method, the average time was about one hour. All interviews were audio-recorded, and selected sections were transcribed.

Documentation

Documentation of various kinds is as relevant as other data in case studies, according to Yin (2013).

During this research, notes, minutes from team meetings, e-mail conversations, and notes from telephone conversations with respondents were collected in addition to the data collection methods described above.

Literature review

Systematic literature reviews were repeatedly conducted during the research. In the first part of the research, the search engine Discovery5 was used; this is a database search engine provided by Mälardalen University. In the latter part of the research, the search engine Summon@BTH6,7 was used; this is a database search engine provided by Blekinge Institute of Technology. To follow the on-going progress in the field over the years, searches for relevant articles were repeatedly conducted with a focus on innovation enablers for innovation teams. Because innovation management is a multi-disciplinary research field, both Discovery and Summon@BTH were suitable tools for literature reviews as they cut through multiple disciplines relevant for this research.

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5 http://www.mdh.se/polopoly_fs/1.27667!/Menu/general/column-content/attachment/Databaser_forlag_via_Discovery.pdf, retrieved 2016-09-23
6 https://bth.summon.serialssolutions.com/?q=#!/search?ho=t&l=en&q=, retrieved 2016-09-23
7 http://researchguides.uic.edu/summon, retrieved 2016-09-23
Operationalization of the RQ

The overall RQ was divided into two sub-questions and operationalized for data collection, as demonstrated below.

Operationalization of RQ1: *Which* innovation enablers are important for innovation teams? This RQ was first operationalized through statement-based questionnaires (Appendices A and B) and verbal open-structured interviews (Appendix C) to understand the current state of innovation-related knowledge within Companies A and B. This was followed by workshops (Appendix D), open-ended written interviews (Appendix E), and open-ended semi-structured interviews (Appendix F) to understand innovation-related knowledge gaps, performance problems, and learning outcomes from the workshops. The knowledge generated from these studies emerged into the ITM (Figure 6) and further developed into a process to create innovation teams (CIT-process) (Paper E). A statement questionnaire regarding team emergence (Appendix G) was repeatedly conducted to determine the effects of the CIT-process.

As the next step of the operationalization to gain knowledge about important enablers, a systematic literature review was conducted (Paper F, Table 1; Table 2; Table 3; Table 4). This resulted in 20 important innovation enablers (Enablers) for innovation teams (Paper F, Table 7). This was then followed by interviews (Appendix H) and statement-based questionnaires (Appendix I) to understand the respondents’ current top-of-mind enablers. The identified Enablers’ importance was assessed using two questionnaires, first by importance and fulfillment (Appendix K), and then by ranking the Enablers’ relative importance (Appendix L). The data collection regarding the innovation facilitator’s importance through interviews (Appendix M), the following questionnaires (Appendices O and P), and the time chart (Appendix Q) revealed that not only the identified Enablers were important innovation enablers, but also the ITM, the CIT-process, the innovation facilitator himself, and the Extended Innovation Process (EIP) (Paper I, Figure 8) were also important innovation enablers. This is further explained below.

Operationalization of RQ2: *When* are the important innovation enablers important for innovation teams when conducting agile innovation work in an industrial context? This RQ was operationalized through studies on Company C, where the identified Enablers’ importance was assessed, questionnaires were answered (Appendix K), the Enablers were ranked by importance (Appendix L). These studies made it possible to determine when certain Enablers were most important during on-going innovation projects and relative to the innovation process. Likewise, a statement-based questionnaire (Appendix J) was repeatedly conducted to determine the changes in a top-of-mind enabler; this made it possible to follow the learning progress and performance stated in the previous questionnaire (Appendix I). In the final data collection (Appendix N), in which the respondents indicated when the innovation facilitator was most important using a time chart (Appendix Q), it was revealed that the innovation facilitator’s function within the innovation teams varied throughout the innovation project.

Data analysis

In qualitative research the researcher can study respondents to understand the reality for which the respondents act in, not only specific events and actions (Maxwell, 2013). The data collected from this qualitative study were analyzed in accordance with thematic analysis, which is a process of encoding qualitative information to themes and codes by pattern recognition (Boyatzi, 1998). A theme can span from describing information at a minimum and interpreting aspects of the phenomenon at a maximum. A theme might be identified from direct observations (manifest level) or categorized from issues underlying the
phenomenon (latent level). A code is e.g. a number of themes, a complex model, indicators, or qualifications that are causally related.

In this research, the thematic analysis methodology was applied to all collected data to some degree: relevant sections of audio-recordings were transcribed, answers from questionnaires and statement-based questionnaires were charted, and the document data and results from the literature reviews were coded by highlighting e.g. keywords, events, or statements from which patterns emerged. In the process of detecting patterns, the identified themes were adjusted, modified, and reviewed in loops to reach a consensus.

The data analysis regarding which innovation enablers that were important for the innovation teams began with the identified Enablers being assessed as important by the respondents (Paper H, Table 2; Paper G, Table 1); subsequently, the analysis investigated which of these caused negative effects if unfulfilled (Paper H, Table 3; Table 4; Table 5), and which generated positive effects when the innovation teams struggled for some reason (Paper G, Table 2; Table 3; Table 4). The interviews regarding the innovation facilitator’s importance (Paper I, p. 6-8) revealed that this individual should possess numerous characteristics (Paper I, Figure 1; Figure 2); these were categorized by importance, themed (Paper I, Table 1), and rated (Paper I, Table 2). In addition, the data collection regarding the innovation facilitator’s importance, as noted above, revealed that the innovation facilitator himself (Paper I, p. 6-8) was an important innovation enabler, together with the ITM, the CIT-process, and the EIP, as they were the tools used when the innovation teams and the sponsor were supported (Paper I, Figure 4; Figure 5) throughout the innovation projects.

The data analysis regarding when innovation enablers were important for innovation teams was executed by analyzing field notes in which problems (Paper H, Table 3; Table 4; Table 5) and actions for solutions were documented (Paper G, Table 2; Table 3, Table 4). Regarding when the innovation facilitator was seen as an innovation enabler, data were analyzed from the conducted workshop (Paper I, Figure 4; Figure 5; Table 3) and converted into schematic illustration (Paper I, Figure 6). The CIT-process and ITM were most important in the pre-phase, i.e. the Preparation-phase, of the EIP, as this is when the innovation team is created and in need of support to gather the team members (Paper I, Table 3, no. 34; no 38). The EIP was important throughout the entire innovation projects as it served as a road map for the innovation facilitator to use when preparing and advising the convener and sponsor.

2.8 Quality of conducted research
As overall guidance, the DRM framework (Blessing and Chakrabarti, 2009) supported the researcher in conducting the research according to plan. The RQ was used to search for relevant published research, forming a theoretical framework, analyzing and discussing results, and developing the suggested model.

One concern with qualitative data and thematic analysis is that the researcher has to “read between the lines”, i.e. it requires a researcher that is knowledgeable about and has experience with the object being studied (Boyatzis, 1998). The researcher meets the required criteria as since 2002 he has had experience as an innovation practitioner, consultant, and advisor. Another concern with qualitative research is researcher bias, i.e. the researcher’s influence on the conclusions, and reactivity, i.e. the researcher’s influence on the respondents, for which the researcher has to be aware of (Maxwell, 2013). To handle these issues to improve the research quality, the researcher carefully designed the data collection tools and used multiple sources and research methods (Blessing and Chakrabarti, 2009) depending on current situation for data collection as suggested by Maxwell (2013). Further,
in accordance with Maxwell (2013), interview guides were discussed with colleagues and piloted on two separate innovation teams, one in each part of the research. Furthermore, the interview guides were designed to avoid leading and dual questions, and the respondents were free to talk for as long as they wanted to. In addition, each interview ended with a question regarding how difficult the respondent found the questions to understand, if there was something that he or she wanted to add, or if there was a question that he or she wanted to answer but had not been asked about. The questionnaires and statement-based questionnaires included a final question regarding the degree to which the respondents found the questions and statements easy to understand. The data were collected in the respondents’ environment, i.e. their own offices or meeting rooms at their workplace. Other factors that increase the quality of this research, in accordance with Maxwell (2013) is: that it has been long term studies with multiple observations and interviews with the same respondents; respondents were chosen with relevant knowledge and insights of the matter of research; rich data were collected, i.e. relevant parts from e.g. interviews were transcribed and notes from observations were transcribed and sent to the respondents for approval; conclusions were discussed with respondents and colleagues well informed about the cases to identify plausible flaws; multiple data collection tools were used within the same study to better understand what was studied; findings from one innovation team has been compared to other innovation teams within this research. Additionally, the researcher has explicitly studied his influence on the innovation teams in the latter part of this research (Paper I).

The results of this research are drawn from a small number of cases, which requires attention when making generalizations (Blessing and Chakrabarti, 2009; Maxwell, 2013). On the other hand, even though the case studies were in separate business areas, even those within the same organizational context, one can observe similar problems and opportunities between them; this increases the level of generalization (Merriam, 1994). Additionally, Maxwell (2013) claims that there’s no reason to not believe that results of qualitative research could be applied more generally. To improve the possibility for another research to be conducted in the same way as this one, which is applicable for qualitative research (Yin, 2013), the data results as full text papers (Appended Paper A – Paper I) as well as the data collection tools, i.e. interview guides, questionnaires, and statement-based questionnaires, are appended (Appendix A – Appendix Q).
3
THEORETICAL FRAMEWORK
3 THEORETICAL FRAMEWORK

This chapter’s aim is to describe a theoretical framework to which this thesis’s RQ relates, by guiding through knowledge related to innovative organizations, innovation teams, how innovation work is conducted, and factors that enable such work. This framework is used in the discussion of this research’s result in Chapter 5.

The context in which this research is conducted is that of innovation teams in an industrial setting. To understand innovation teams, a theoretical framework was created based on innovation-related theories at the intersection of the research fields of System Theory, Knowledge Management, and Innovation Management. From System Theory, theories of the organizational setting that encourage innovation were used. Theories related to Innovation Management include factors that enable innovation work (innovation enablers), innovation processes, which are seen as a tool for innovation teams to navigate with, and innovation teams, including the creation and staffing of such teams. Finally, innovation-related theories of Knowledge Management provide knowledge regarding how to conduct innovation work, i.e. innovation competence and knowledge regarding how to use knowledge of Innovation Management and System Theories in an innovation-related context (Figure 3). The scope of this research is limited to the first three phases of the innovation process demonstrated by Tidd and Bessant (2009) and an initial step before innovation work begins. This is reflected in the choice of knowledge base below.

Figure 3: The figure demonstrates the theoretical framework related to this thesis.
3.1 Innovative organizations

According to Ahmed (1998), organizations that support innovation can be separated from non-innovative organization by studying its top management in four ways. First, top management in highly innovative organizations promotes innovation by securing both financial support and personal resources; second, it ensures that accurate valuations of the market for planned innovations are made close to the end users to assess potential demands; third, the management ensures that innovation projects are provided with essential support from all levels in the organization; and fourth, it ensures that structured methodology is implemented so that every possible innovation goes through a careful screening process before being implemented. Another, more recent way to identify whether an organization is innovative or not is to use System Theory, in which an organization can be understood from its work system (Backström et al, 2011). This can be understood by studying the industrial work systems, i.e. stable and non-innovative systems are at one end of the spectrum. In this type of organization, innovation activities are conducted in parallel sub-organizations, such as e.g. research and development (R&D) departments and innovation projects. A typical industrial work system is characterized by specialization, standardization, centralization, and mechanization, all of which support stability and discourage changes and deviations. At the other end of the spectrum is the post-industrial work system. It is innovative in itself and supports change. A typical post-industrial work system is characterized by decentralization, diversity, and generalization, with no specific structure between departments and between the organization and its environment, unlike in the industrial work system (Backström and Olson, 2010; Backström et al, 2011). Recently, Hazy and Backström (2013) developed the Human Interaction Dynamics (HID) model. In this model, humans are seen as actors that act according to tasks that they believe they have based on their earlier experiences and how they recognize the current situation. At the same time, they are influenced by organizing structures that emerge in the social interaction with other actors. Human interactions can be studied and enabled from the individual and the collective perspective, which could be described as two sides of the same coin. Another way is to describe it as dualities between the individual details, plurality and apparent chaos; and the collective structure, unity, and apparent order. The HID model is divided between three levels of structures with the individual and collective perspectives on each level, which adds up to six different aspects of importance for the dynamics of a social system. In the relation level, the focus is on autonomy and integration, where the individual may do as he or she wishes but also follows organizing structures as an integrated individual. In the information flow level, the focus is on divergence and convergence, where the individuals are different by nature and have different knowledge that also changes over time. From the collective perspective, the focus is on how the individuals’ diversity aligns and contributes in interaction, thereby strengthening structures. In the action level, the focus is on exploring and exploiting, which means that one makes use of the autonomy and diversity to explore and act in new ways. From the collective perspective, the focus is to create value, to make use of collective resources, and to act as a well-organized team. When all of these aspects and perspectives are balanced the organization or team becomes self-organized, which means that the organization adapts and adjusts when needed to sustain itself as a system (Hazy and Backström, 2013).

Key factors to become an innovative organization are to involve as many people as possible in the innovation work (Xu et al, 2006), as this is proven to have positive effects on the performance of an organization (Vandenbarg, 1999); change management (Kihlbom, 2005); and the re-organization of organizations (O’Reily and Pfeffer, 2000). Furthermore, research suggests that employees’ participation in innovation work should be based on free will (Bessant, 2003; Dobni, 2006; Hallgren, 2009; Pearson, 2002), which according to Kihlbom (2005) is achievable when information is available to all concerned and the feeling
of being involved is created. If employees feel that they are involved, they can hardly escape responsibility. On the other hand, being required to perform work for which one has not volunteered requires a significant broadening of competence. Pressure and high demands may then cause stress and burnout syndrome (Backström et al, 2011). However, from a more holistic perspective, even more factors are seen as success factors to become an innovative organization. Van der Panne (2003) identifies leadership, people management, knowledge management, and creativity management as key elements in transforming an organization into an innovative organization. These key factors are stimuli for firm-, project-, product-, and market-related factors that are argued to be critical for innovation success (Trott, 2012), together with success factors related to strategy, organization, processes, linkages, and learning, as identified by Tidd and Bessant (2013).

As an organization starts to emerge into a post-industrial work system, natural conflict develops because of the difference between management concepts (Kihlbom, 2005). One solution is to build special departments in which employees are encouraged to be creative and innovative while the rest of the organization “does what they are told to do” (Backström et al, 2011). If this is done, however, problems such as the “not invented here” issue might appear if R&D leaders adopt new technology invented elsewhere. Another solution is to avoid change problems by involving the employees in the process, which is done by letting the employees have time to develop their own understanding of the aims and vision of the change. The practical work can be conducted in steps. First, process: a clear working process should be used in which all employees are involved. Second, supervisors: middle management staff are supervisors during the change project. Third, tools: a “learning-by-doing” approach should be applied. Fourth, forum: channels must be developed where communication can flow in both directions. Fifth, talk the talk and walk the walk: true commitment is achieved through honesty about limitations, no hidden agendas, the acknowledgment of all ideas, and communication without filters between management and employees (Kihlbom, 2005).

3.2 Innovation enablers
A review was conducted of the literature that investigates innovation enablers on a holistic level, clusters of innovation enablers emerged from three perspectives: the organizational, team, and individual perspectives (Table 2). In general, the most research attention was found to be given to the organizational perspective, and the least to the individual perspective; this is in line with the statement by Wheelan (2013). To improve the readability of the following section, the discussed authors are listed in Table 2.

The organizational perspective includes eight factors: climate, e.g. factors that stimulate creativity in the workplace; collaboration, e.g. how the organization is set up to ease collaboration between departments and external parties; culture, e.g. how innovation work is supported by informal norms; education, e.g. how employees receive explicit education in innovation management techniques; knowledge, e.g. innovation-related knowledge regarding how to execute innovation; management, e.g. the leadership and support for innovation work; strategy, e.g. strategies for short- and long-term innovation plans; and structure, e.g. the organizational set-up and processes for innovation work.

The team perspective includes four factors: climate, e.g. how the members in a team embrace and support innovation as a “let’s do mentality”; collaboration, e.g. creating networks with other knowledgeable persons or suppliers; diversity, e.g. divergences in knowledge and competences that complement the individuals in the team; and management, e.g. team leadership or project management.
On the individual perspective, the identified factors refer to how the individual perceives demands and is self-disciplined, takes personal initiative, and is self-efficient and possesses innovation competence.

Table 2: The table demonstrates clusters of innovation enablers identified from the literature review in the areas of organizational, team, and individual perspectives.

| INNOVATION ENABLERS FROM THE ORGANISATIONAL, TEAM AND INDIVIDUAL PERSPECTIVES |
|-------------------------------------------------|------------------|
| **ORGANIZATIONAL PERSPECTIVE**                  |                  |
| Innovation enabler                              | Author(s)        |
| (In alphabetical order)                         |                  |
| Climate, i.e. factors that stimulate creativity  | Balsamo et al. (2008) |
| in the workplace.                               | Ekvall (1996)    |
|                                               | Crespell and Hansen (2008) |
| Collaboration, i.e. how the organization is set | Aagard and Gertsen (2011) |
| up to ease collaboration between departments    | López-Fernández et al. (2011) |
| and external parties.                          | Ross et al. (2012) |
|                                               | West et al. (2004) |
| Culture, i.e. how innovation work is supported | Aagard and Gertsen (2011) |
| by informal norms.                             | Balsamo et al. (2008) |
|                                               | Denti and Hemlin (2012) |
|                                               | Smith et al. (2008) |
| Education, i.e. how employees receive explicit | Aagard and Gertsen (2011) |
| education in innovation management techniques. | West et al. (2004) |
| Knowledge, i.e. innovation-related knowledge    | Aagard and Gertsen (2011) |
| regarding how to execute innovation work.      | López-Fernández et al. (2011) |
| Management, i.e. the leadership and support for | Aagard and Gertsen (2011) |
| innovation work.                               | Denti and Hemlin (2012) |
|                                               | Gambatese and Hallowell (2011) |
|                                               | López-Fernández et al. (2011) |
|                                               | McGreevey (2006b) |
|                                               | Smith et al. (2008) |
| Strategy, i.e. strategies for short- and long-  | Aagard and Gertsen (2011) |
| term innovation plans.                        | Manley (2006)    |
|                                               | Smith et al. (2008) |
| Structure, i.e. the organizational set-up and   | Denti and Hemlin (2012) |
| processes for innovation work.                 | Gambatese and Hallowell (2011) |
|                                               | López-Fernández et al. (2011) |
|                                               | Smith et al. (2008) |
| **TEAM PERSPECTIVE**                           |                  |
| Innovation enabler                              | Author(s)        |
| (in alphabetical order)                         |                  |
| Climate, e.g. how the members in a team        | Balsamo et al. (2008) |
| embrace and support innovation as a “let’s     | Denti and Hemlin (2012) |
| do mentality”                                   | Kianto (2011)    |
| Collaboration, e.g. creating networks with      | Gambatese and Hallowell (2011) |
| other knowledgeable persons or suppliers       | Kianto (2011)    |
In addition, specific studies on factors that enable innovation teams to conduct innovation work were identified in several dimensions and perspectives.

Hülshgeger et al. (2009) claim team input and process variables, methodological moderator variables, as two distinctive perspectives. The most important factor for innovation is identified to be goal interdependence, and leadership is significantly important when organizing the potential for job-relevant diversity, i.e. to organize team members by their different kinds of knowledge, skills, and capabilities, and to help them to value and use their different perspectives and integrate opposing standpoints. Furthermore, Hülshgeger et al. claim that team processes, external communication, support for innovation, task orientation, and internal communication are strongly correlated with innovation. This means that managers and team leaders should strive to support these by showing commitment and engagement, which in turn means that internal and external communication is especially important when fostering innovation in the workplace.

Similarly to Hülshgeger et al. (2009), resent research suggests that innovative leadership is the key to successful teamwork: the team leader has to handle the sequences of divergent and convergent thinking, deal with the different iterations and loops in the innovation process, work with metaphors and analogies in the search for new ideas, encourage wild ideas, and stimulate out-of-the box thinking. Leadership also requires evaluating, judging new ideas during the convergent stages, and creating an environment for social cohesion and work with limited resources (Akbar and Tzokas, 2013; Buijs, 2007; Büschgens et al, 2013).

Another approach to leadership is taken by innovation champions, who are identified as enablers for innovation within organizations (Radnor and Robinson, 2000; Tidd and Bessant, 2009). Innovation champions have been proven to be successful in managing and executing innovation projects when the innovation outcomes are more important than the processes that are used or followed (Dulaimi et al, 2004; Gamatese and Hallowell, 2011). A similar approach to managing innovation, external innovation drivers, was developed to teach organizations to manage innovation with a learning-by-doing approach: Hallgren (2009) created innovation steering groups and supported them by acting as an innovation driver in their innovation projects. He found that the innovation driver should be knowledgeable and know how to handle group dynamic processes. In about the same timeframe as Hallgren, Johnsson et al. (2010) found that an external innovation driver should preferably be a person who has an understanding on practical innovation work in accordance with the uncertain innovation process; furthermore, this person should be socially competent, opportunity-driven, flexible, and have the ability to establish trust. Furthermore, the innovation driver needs a holistic overview of the company’s situation;

<table>
<thead>
<tr>
<th>Table 2, continuing</th>
<th>Diversity, e.g. divergences in knowledge and competences that complement the individuals in the team.</th>
<th>Kianto (2011) McGreevy (2006b) West et al. (2004)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management e.g. team leadership or project management</td>
<td>Denning (2011) West et al. (2004)</td>
<td></td>
</tr>
</tbody>
</table>

**INDIVIDUAL PERSPECTIVE**

<table>
<thead>
<tr>
<th>Innovation enabler (in alphabetical order)</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence, i.e. skills and experience</td>
<td>Illeris (2013) West et al. (2004)</td>
</tr>
<tr>
<td>Innovation competence, i.e. skills and experience explicitly related to innovation.</td>
<td>Bozic (2016) Räsänen et al. (2015)</td>
</tr>
</tbody>
</table>
should be familiar with innovation strategies, intellectual property rights (IPR), product portfolios, and change management; and should be open for project change. However, in the post-industrial work system, as demonstrated by Backström et al. (2011), the role of management is to provide conditions that match a changing environment; this role cannot be performed by one single person as it is too complex for one single person to plan, manage, and control (Backström et al, 2011; Trott, 2012).

López-Fernández et al. (2011) conducted a study of factors that encourage innovation in an internal company perspective. They identified four internal factors: firm size; membership in a business group, e.g. franchise, management contract, or membership association; willingness to change; and a sufficiently strong bureaucratic framework to manage and institutionalize any innovation. Aiman-Smith et al. (2005) conducted research on innovative culture as innovation enabler in an organizational context. Based on eight areas discovered from empirical and theoretical data, pilots, and validation, they developed an innovation potential assessment tool. West and Sacramento (2012) conducted a review on team climate and its effects on output of creativity and innovation work. They conclude that individual creativity is separate from team and organizational climate for creativity and innovation, as the setting in teams and the organizational environment affect the individual within it. An organization needs a bottom-up approach to engage employees in the change of climate; however, a top-down approach is needed to enable the decision to implement new ways of working. To some extent, these findings are in line with Denning’s (2011) suggestions. He identified five transformations of management as enablers for innovation work: that the company goals engage customers; that the managers’ role changes from controlling employees to enabling employees to do a good job; that work changes from bureaucratic to agile and dynamic; that the company’s focus on value changes from focus on shareholders to focus on all stakeholders; and that the internal communication changes from information or commands to conversation.

Furthermore, knowledge as such is considered to be important to innovation teams. Du Chantenier et al. (2009) studied the creation of knowledge in open innovation teams to increase the success rates of open innovation, and Kianto (2011) found that social factors had a great impact on the innovation outcomes in knowledge worker teams.

Recent research by Im et al. (2013) concludes that antecedents to X-functional product innovation teams are social cohesion of both internal and external dynamics, as X-functional teams have a positive impact on new products and marketing programs. They define the internal dynamics to be emotional factors, i.e. to know one another, to be aware of the same kind of opportunities, to have access to the same kind of resources, and to share the same kind of perceptions. The external dynamics are the organizational design and structure. In line with previous research, Im et al. state that top management should support and encourage teams to build meaningfulness dimensions and take risks. However, one of the key management tasks is to remove barriers to communication to avoid conflicts, and a kick-off is suggested to build team identity and team development.

A few studies were identified in this review that focus on innovation enablers and also rate them by importance. Gamatese and Hallowell (2011) studied factors that enabled innovation in construction projects by conducting questionnaires and interviews with personnel of construction projects. The five most important factors for innovation on a project level were owner/client influence, presence of an innovation champion, presence of lessons learned/a knowledge management system, upper management support for innovation, and the extent to which R&D was supported. Aagard and Gertsen (2011) studied key factors that enabled front-end innovation in the pharmaceutical industry. They conducted four interviews with a mix of respondents from the strategic management level to newly employed personnel with little experience, and found the following factors: first, the empowerment of employees to
learn and explore; second, an explorative team culture tolerant of failure; third, targeted knowledge sharing and collaboration with external partners; fourth, efficient cross-functional knowledge sharing and collaboration; fifth, front-end innovation as a flexible learning process; and sixth, an innovation strategy and goals guiding but not dictating innovation.

**Innovation processes**

To some degree, one can see that innovation processes are a schematic picture of the enablers demonstrated above, involving not only the organizational aspects but also the skills in how to execute the practical work, requiring both skills and experience to be executed (Dobni, 2006; Hallgren, 2009).

Innovation processes are generally based on steps or phases differentiated by certain embedded actions to develop an idea towards the market, where the number of steps or phases varies from one researcher/author to another. In general, the steps involve nuances of work targeting ideation, development, and launch to reach the market. For example, Baxter (2002) suggests four stages that an innovative company should take when developing new products: Feasibility and Specialization; Design and Development; Production Engineering; and Manufacture and Sales. Adair (2004) suggests three steps: generation of ideas; harvesting ideas; and developing and implementing the ideas. Milton and Rogers (2013) suggest that seven steps must be passed before the idea can be launched on the market: screening and idea generation; concept development; system design; detail design; building the system; testing and validation; and market launch and delivery.

One innovation process demonstrated by Tidd and Bessant (2009) is a process consisting of four phases, each with its specific challenges. Even though the innovation process is illustrated as a linear one (Figure 4), the practical work is stated to be cyclical and iterative. In the first phase (Search) the focus is on searching for innovation opportunities in accordance with the overall innovation strategy; this requires knowledge regarding how to detect signals in the environment and well-developed systems for recognizing, handling, and selecting information from the environment. However, ethnographical studies are shown to be most effective and external idea contests the least effective with regard to problem identification and new ideas. The second phase is dedicated to selecting (Select) innovation opportunities on which to work. Innovation work is risky, and it is therefore important that the choices be based on the company’s overall business and innovation strategies. The third phase is dedicated to implementation (Implement). This means that the necessary information is gathered to enable the assembling of a product (or service, process, etc.). The work is first characterized by many “best guesses” but, as the Implementation phase progresses, uncertainty is replaced by knowledge, and at the end of this phase the early concepts have been developed into new products, and the market (internal or external) is prepared for launch. Finally, the fourth phase captures (Capture) the value created from all work conducted, where value can be monetary, such as e.g. increased market share or cost reduction, or non-monetary, such as e.g. improving a working environment or reducing pollution (Tidd and Bessant, 2009).
Figure 4: Innovation process by Tidd and Bessant (2009)

Johnsson (2009) demonstrates another innovation process with similar functions as the innovation process by Tidd and Bessant (2009). The Raft model (Figure 5) is triangle-shaped to demonstrate the non-linear work. The model consists of four areas, and is aimed at agile hands-on practitioners searching for and developing ideas for the market; it is suitable for innovation teams within an organization as well as for individuals and entrepreneurs. First, the idea owner (I), i.e. the individual or innovation team, is the central area. It is connected to the other three areas, and is responsible for managing the forthcoming innovation work in the surrounding areas and for the innovation project as a whole. The Idea owner should not conduct all of the work alone, but should search for support and cooperation in the surrounding areas. The first task is to search for ideas to develop in accordance with an overall innovation strategy or direction for innovation areas, which could be widely spread within an organization where “all employees” can search for innovative opportunities. Second, the area of end-user/end-customer (U/C) is where the innovation will be used, operated, and bought when developed and launched. The end-user and end-customer might be the same or two different persons, depending on the product (service, process, etc.) that is developed. The challenge in this phase is for the idea owner to leave the office to conduct ethnographical studies to detect behavioral, user, and customer criteria to be used as a specification of the problem to solve and functions to develop. Third, the area of suppliers (S) is where the practical development of the product is conducted. The challenge is to identify and involve internal and external resources with relevant knowledge and/or equipment required to create a product. The Idea owner needs to reach the level of knowledge at which he knows that the product can be developed and how to proceed. Each part in the specification can be solved in an innovative way, as any function can be solved in many ways, which means that the communication with the End-user and End-customer must flow through this process to understand when the level of “good enough” is reached. Fourth, the distribution (D) area represents the distribution and sales system to the customer, which could be e.g. business-to-business or business-to-end-customer depending on the overall strategy. The challenge is to choose where in the value chain the product should be sold, as there may be an opportunity to take a new position in the market or develop new platforms to sell the product (Johnsson, 2009).
In many industries today, the innovation process is regulated by standards and protocols that explicitly demonstrate each step to take when developing a new product. The most common way of working is Concurrent Engineering (CE), which is a developed methodology with its roots in the “waterfall”, parallel, and semi-parallel product development processes. CE uses a product development philosophy based on integrated teams and product development, i.e. dedicated product development teams that work on a project basis but according to specific product plans. The practical work is characterized by its strong focus on Computer Aided Engineering (CAE), i.e. software such as e.g., Computer Aided Design (CAD), simulation, databases, process planning, and product planning. The benefit of CE is its high level of control, with gates that ensure that every task is fulfilled before the next step is taken, including dedicated resources and a budget; this makes it suitable for product development of already existing products. The disadvantage of CE is that it does not encourage new thinking or entrepreneurial actions to create radical new products. Large companies use CE to increase or decrease the production of products, where already known data can be utilized to improve products stepwise as well (Ottosson, 2012).

### 3.3 Innovation teams

Innovation teams as a term is not often used in research; nevertheless, teams that conduct innovation work and innovative results from teamwork are well known. Farris (1972) found that the setting of team members in a science team affected the innovation performance when he noticed that a group of people separated their work in three stages when conducting innovation projects. These stages were as follows: first, a suggestion stage; second, a proposal stage; and third, a stage in which a final solution was developed. Farris’s main finding was that highly innovative groups did not use supervisors for input for original
ideas, but for evolution of original ideas. Another important finding was that the supervisor did not have to be innovative himself, as this in fact decreased the group’s innovative performance. Instead, the supervisor should be supportive and should encourage the group to think broadly in technical solutions, and to seek original ideas outside of the group to save energy on information collection.

Self-Directed Work Groups (SDWG) emerged from the empowerment movement of the 1980s and had various names, e.g. self-managed teams, high-performing teams, super-teams, and cross-functional teams (Zuidema and Kleiner, 1994). The teams were based on 3-30 employees, but most often the group comprised about 6-10 employees. The main idea was that the groups were created to manage themselves to work on a specific task. For example, product development teams concentrated on innovation and development of cycles for new products, and cost-cutting teams focused on reducing production costs. They were intended to have more flexible structures, to be cost effective, to overcome the build in bureaucracy, to speed up product innovation, to cut through hierarchical decision-making procedures, and to quickly respond to changes in working conditions. They were multifunctional, bringing employees together from different departments to work together to solve problems. According to the employees, the benefits of this way of working were that it improved team involvement, morale, and the sense of ownership regarding the team’s goal. However, mistrust of managers, conflicts between team members, and stress syndromes caused by being unfamiliar with new situations were not unusual. Management thought that improved productivity, quality, and morale were the best outcomes, and the suggestions for successful SWDGs were in two main parts: first, the top management needed to believe in the way of working; and second, the manager of the team should act like a coach or facilitator to develop consensus in the team. However, to achieve this, there was a need for a change in attitude, in overall and appropriate preparation for employees and management, and in new tools to overcome fear factors and build trust. In addition, research also demonstrates that self-managed teams are interpreted differently by each employee, where contextual factors determine whether self-managed teams are to be seen as desirable grants of autonomy, simply something to do until it passes, or a way of working that complicates tasks that can be better handled individually or delegated by management as prioritized work (Chadwick and Dabu, 2009).

According to Neuman et al. (1999), high-performing work teams consist of four members that are selected based on the Big Five methodology, which was developed by Barrick and Mount (1991). The success factors for effectiveness are the personal diversity, the fact that each member is trained in all functions within the department, and the personality traits of agreeableness, conscientiousness, openness to experience, and creativity. Furthermore, the team members should be extraverted and emotionally stable to secure the prediction of performance. In addition, an academic course in teaching technological entrepreneurs how to conduct agile teamwork (Marion et al., 2012) suggests that technical engineers should work together with industrial design students. In this course, teams of five to seven students are created in accordance with Meyer Briggs’s personality trait classification, where type of engineer, background, and experience determine in which team students belong. The student teams are supported by a project manager who provides them with a scope on which to work. The teams have weekly meetings to review project deliverables, team progress, course work, and progress of assignments. The two main success factors are that the engineering and visualization students cooperate, and that the students use a highly experimentally based approach in their work. Moreover, according to Tidd and Bessant (2013), high-performing teams are based on competent members who are result-driven and committed to the project goal that they set together. They create norms together but they need encouragement from management, a good team spirit, and a collaborative climate to perform.
In a study, Hallgren (2009) created multi-functionally based innovation teams, and he developed a concept called Innovation Steering groups (IS-groups). The teams were organized with employees from “all levels” and representatives from “all” departments except for management. The main purpose was to educate the team in innovation work using a “learning-by-doing” approach; Hallgren himself was the action researcher and driver of the innovation projects. The set-up was that top management ensured its commitment to the IS-group and encouraged the rest of the company to be involved in the innovation project. Hallgren could demonstrate positive results overall, the main reasons being the external innovation driver and that he stimulated high involvement among the employees by having the group itself choose an incremental idea to develop. However, the IS-groups lacked performance due to a lack of innovation-related knowledge. Moreover, in a longitudinal innovation project from 2006 to 2010, an external innovation driver was involved to drive the participating companies’ ideas towards the market (Johnsson et al, 2010). The teams of approximately three to four members were created on a multi-functional basis, and the focus was on participants who had relations to the market, suppliers, and sales. The results of the innovation projects were overall positive, with new products on the market and increased learning regarding innovation management and the execution of innovation work. However, the activities slowly decreased and completely stopped shortly after the innovation driver left the organization, due to the lack of innovation-related knowledge regarding how to manage innovation.

Involving employees in innovation work is overall beneficial for the organization (Robinson and Schroeder, 2006; Xu et al, 2006). The works of Hallgren and Johnsson et al. (above) provide two examples of this. Another result of research on employee involvement is Kesting and Ulhøj’s (2010) Employee Driven Innovation (EDI), which was based on the insight that human capital within a company has become increasingly important. EDI was based on the hypothesis that employees at all levels have unrevealed capabilities for innovation, and that these underutilized resources could be recognized and exploited to benefit both the organization and the employee. The major positive effects of EDI were that the employees in the study felt more motivated to work, and that innovations could emerge in any department within the company. However, the team members’ inexperience with decision-making and bias hindered them from taking action in the project and to think outside of their ordinary routines. A concept similar to EDI is Employee Driven Innovation in Team (EDIT), which was developed by Kristiansen and Bloch-Poulsen (2010). EDIT was a result of the hypothesis that the team members in an innovation project could be anyone in the organization, regardless of educational background or current employment. This was in fact confirmed by Kleinknecht (1987), who discovered that innovation work might be going on even though one is not aware of it. One significant difference from EDI is that EDIT study the researcher assisted the teams and their members in the on-going innovation work. Instead of cooperating, the team members actively looked for shortcomings and pitfalls, questioned project agendas, complained about long meetings and work overload, and expressed skepticism. The researchers tried to solve these problems with meetings separate from the ordinary team meetings to conduct project planning.

Creating innovation teams
Groups and teams are often confused as one generic term, but they are not in fact the same. A group is defined as a complex social system of two or more people embedded in an organization (Hoegl, 2005) striving towards common goals and a structure to fulfill the goal (Wheelan, 2013). The members in a group may not yet have “found each other” (Backström and Olson, 2010) and have not yet developed efficient ways of working together (Wheelan, 2013), and according to Hoegl (2005) they may not perceive themselves or other members as part of a team. A team, on the other hand, is a social system of people embedded in an
organization, whose members perceive themselves as such and are perceived as members by others (Hoegl, 2005; Wheelan, 2013).

To become a team, a group has to go through a number of stages, where one of the main tasks is to have a common goal to reach (Tuckmann and Jensen, 1977; Wheelan, 2013). As soon as a group is created, it starts its maturation and emergence process, i.e. the group members start to form rules and organizational structures on a conscious or unconscious basis (Backström et al, 2011). There are generally a few phases to pass before a group becomes a team (Buijs, 2007; Tuckmann and Jensen, 1977; Wheelan, 2013). Tuckmann and Jensen (1977) demonstrate this process in four stages. The members in a group in the first stage are engaged in their work; the second stage is characterized by conflicts and resistance; in the third stage, the group’s work is normalized; and finally, the fourth stage is where the group’s energy is focused on the group’s task and its performance. Tuckmann and Jensen (1977; 2010; 2013) presents a fifth stage in which the group is terminated. Wheelan (2010; 2013) subsequently added a fifth stage in which the group is terminated. Wheelan’s approach to team development. The first is team rules: the teams should have ground rules, such as commitment to set a project goal and remaining focused on the job, openness to each other, and respecting each other. The second is communication and information: to keep the communication and feedback flowing as simply and concretely as possible, and to have the courage to change project directions late in the project. The third is organization: being self-organized, making own decisions, believing that any problem can be solved, being committed to team success, and trusting the other team members.

When creating innovation teams, there are some processes to highlight. One way to create innovation teams is suggested by McDonough (2000): he proposes four factors that increase success for cross-functional teams. The first is cooperation; McDonough points out the importance of setting a common goal that every member understands. The second is commitment, and relates to the members’ duty to achieve the goal and the fact that the members’ skills, confidence, and willingness to commit themselves all contribute to making the project successful. The third factor, ownership, relates to the desire to make change; it goes beyond commitment. To foster ownership there is a need for empowerment, climate, and setting goals early in project. Fourthly, respect is built on the feeling of trust, with which the members can interact honestly with each other, thereby making cooperation possible. West et al. (2004) suggest another approach, which is to develop innovative teams within an organization in 12 steps, starting from the task and building the innovation work from that point. The first step is to identify the task, followed by identifying external demands, selecting the team members with a focus on skills and diversity, securing organizational rewards, creating a learning and development climate, developing a climate for innovation in the organization, establishing norms for innovation, encouraging the team to stop working and reflect of the current and forthcoming situation (reflexivity), ensuring that the team
leader style is appropriate for innovation, managing conflict constructively, and aiming for bridging and collaboration between competencies. Finally, a third, more practical approach to creating teams is suggested by McGreevy (2006a). He claims that in a practitioner’s approach the first task is to gather information on what teamwork is and how it affects the organization. This is then followed by the importance of ensuring that the top management is committed to the teamwork approach, and that middle management is on the same track. The next steps are to plan for change of the culture and management structure, to select team members based on applicability and willingness, and to develop the team. Furthermore, the team members should have the management’s approval and support to participate in the team, and they should be selected on a X-functional basis, such as sales, marketing, purchasing personnel, and finance, to avoid a competitive approach and instead foster a collaborative climate.

Table 3: The table demonstrates the main characteristics of innovation teams and teams created to encourage innovation output, as well as characteristics when creating innovation teams identified in the literature review.

<table>
<thead>
<tr>
<th>Author and type of team (ordered by publication year)</th>
<th>The team’s characteristics and effects</th>
<th>Team creation process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farris (1972) “Science teams”</td>
<td>Characteristics:</td>
<td>Methodology:</td>
</tr>
<tr>
<td></td>
<td>- Work divided into a suggestion, proposal, and solution phase to evaluate progress of work.</td>
<td>- Not explicitly demonstrated.</td>
</tr>
<tr>
<td></td>
<td>- Group size between 2 and 17 members.</td>
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<td></td>
<td>- Evaluation from manager on originality of ideas, not using managers for input of original ideas.</td>
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<tr>
<td></td>
<td>- Supervisor does not have to be innovative, but instead has to encourage innovative behavior.</td>
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<tr>
<td></td>
<td>- Supervisor should have an interpersonal and cognitive style, which allows him or her to help others by constructive evaluation.</td>
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<tr>
<td></td>
<td><strong>Positive effects:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Teamwork generates team innovation.</td>
<td></td>
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<tr>
<td></td>
<td>- Supervisor who is engaged in the process by seeking original ideas outside encourages the innovation output.</td>
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<tr>
<td></td>
<td><strong>Negative effects:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- When a supervisor imposes the team with his or her own ideas, the innovation output is low.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- If team members do not help each other, the innovation output is low.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Created for specific purpose, e.g. NPD, quality issues, or cost-cutting.</td>
<td>- Not explicitly demonstrated, but training programs for team members are suggested.</td>
</tr>
<tr>
<td></td>
<td>- Team size of 3-20 members, but typically a team consists of 6-10 people.</td>
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</tr>
<tr>
<td></td>
<td>- Multi-functional setting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Manager acts as coach or facilitator.</td>
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</tr>
<tr>
<td></td>
<td>- Decisions made in consensus.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Positive effects:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Solving problems together.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Understanding the holistic picture.</td>
<td></td>
</tr>
</tbody>
</table>
Table 3, continuing

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Positive effects</th>
<th>Negative effects</th>
</tr>
</thead>
</table>
| Neuman et al. (1999) | High-performing work team | - Educating both management and team members.  
- Boosting trust by delegating tasks.  
- Supporting mistakes.  
- Guiding and coaching the teams instead of supervising.  
- Encouraging communication and reflection.  
- Steering work towards company goals. |  
**Negative effects:**  
- Mistrusting management.  
- Conflicts between team members.  
- Stress caused by uncertainty in new situations. |

**Methodology:**  
- Not explicitly demonstrated.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Positive effects</th>
<th>Negative effects</th>
</tr>
</thead>
</table>
- Specific tasks to work on.  
- Based on personality test similar to Big Five (Barrick & Mount, 1991).  
- The team members receive training in all of the department’s activities and attend meetings on how to work as a team. |  
**Positive effects:**  
- Encouraging setting for innovative output.  
- Teams with the traits of conscientiousness, agreeableness, and openness to experience are positively related to team performance.  
- Teams that are heterogeneous with regard to extraversion and emotional stability perform better than homogenous teams. |  
**Negative effects:**  
- Not explicitly demonstrated |

**Methodology:**  
- Not explicitly demonstrated, however important areas to address to achieve success are cooperation, commitment, ownership, empowerment, and respect.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Positive effects</th>
<th>Negative effects</th>
</tr>
</thead>
</table>
**Positive effects:**  
- Encouraging setting for innovative output. |  
**Negative effects:**  
- Not explicitly demonstrated. |

**Methodology:**  
- Step-by-step-process in 12 steps: team task is motivating; high level of external demands; selecting innovative people; selecting people based on diversity skills and backgrounds; providing organizational rewards for innovation; creating a learning and development climate; developing climate for innovation; establishing team norms for innovation;
### 3. THEORETICAL FRAMEWORK

<table>
<thead>
<tr>
<th>Characteristics:</th>
<th>Methodology:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effective teams</strong></td>
<td><strong>McGreevy (2006a: 2006b)</strong></td>
</tr>
<tr>
<td>- Teams based on X-functional basis, e.g. sales, marketing, purchasing, and finance.</td>
<td>- Step-by-step process in five steps: gathering information regarding teamwork, making sure the mid- and top management are committed; planning for change of culture and management structure; selecting team members based on applicability and willingness; and developing the team.</td>
</tr>
<tr>
<td>- Carefully planned for and educated.</td>
<td></td>
</tr>
<tr>
<td><strong>Positive effects:</strong></td>
<td></td>
</tr>
<tr>
<td>- Increased competitiveness, productivity, quality, use of new technology, and motivation.</td>
<td></td>
</tr>
<tr>
<td>- Encouraging setting for innovative output.</td>
<td></td>
</tr>
<tr>
<td><strong>Negative effects:</strong></td>
<td></td>
</tr>
<tr>
<td>- If teams are not correctly created, there is a risk of low levels of trust, members defending themselves, conflicts, lack of communication, and overlooking people’s views.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics:</th>
<th>Methodology:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovation steering group (IS-group)</strong></td>
<td><strong>Hallgren (2009)</strong></td>
</tr>
<tr>
<td>- Based on one member from each department.</td>
<td>- Not explicitly demonstrated, but the members participate voluntarily, and are educated and trained in innovation management.</td>
</tr>
<tr>
<td>- Based on members from all levels in the organization except for managers.</td>
<td></td>
</tr>
<tr>
<td>- The groups choose topics to work on by themselves.</td>
<td></td>
</tr>
<tr>
<td>- Managed by an external innovation driver.</td>
<td></td>
</tr>
<tr>
<td>- Responsible for the process, implementation, milestones, planning, etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Positive effects:</strong></td>
<td></td>
</tr>
<tr>
<td>- Increased learning concerning innovation management.</td>
<td></td>
</tr>
<tr>
<td>- The members start to change the organization by spreading knowledge by themselves.</td>
<td></td>
</tr>
<tr>
<td>- High involvement from the organization.</td>
<td></td>
</tr>
<tr>
<td>- Increased energy, motivation, enthusiasm, and communication.</td>
<td></td>
</tr>
<tr>
<td>- Changing ways of working and routines in organization.</td>
<td></td>
</tr>
<tr>
<td>- Encouraging setting for innovative output.</td>
<td></td>
</tr>
<tr>
<td><strong>Negative effects:</strong></td>
<td></td>
</tr>
<tr>
<td>- Team members need fundamental knowledge regarding innovation.</td>
<td></td>
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<tr>
<td>- Negative comments among employees.</td>
<td></td>
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<tr>
<td>- Need for facilitator that can educate and drive project.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics:</th>
<th>Methodology:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employee driven innovation (EDI)</strong></td>
<td><strong>Kesting and Ulhøj (2010)</strong></td>
</tr>
<tr>
<td>- Based on inexperienced members from “shop floor” (ordinary employees) to management.</td>
<td>- Not explicitly demonstrated.</td>
</tr>
<tr>
<td>- Human capital is seen as innovation capital.</td>
<td></td>
</tr>
<tr>
<td><strong>Positive effects:</strong></td>
<td></td>
</tr>
<tr>
<td>- Ordinary employees can see things that management cannot and thereby contribute new ideas.</td>
<td></td>
</tr>
<tr>
<td>- Ordinary employees have a broad network within the organization.</td>
<td></td>
</tr>
</tbody>
</table>

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**Table 3, continuing**
<table>
<thead>
<tr>
<th>Kristiansen and Bloch-Poulsen (2010)</th>
<th>Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Driven Innovation in Team (EDIT)</td>
<td>- Based on members from anywhere in the organization, regardless of education.</td>
</tr>
<tr>
<td></td>
<td>- Facilitated through meetings close to everyday work but separated in time and space.</td>
</tr>
<tr>
<td></td>
<td>- Besides the meetings separated from everyday work, it is required that team members, managers, and action researchers develop dissensus sensibility to open up to more voices, indirect criticism, and democracy in the decision-making process.</td>
</tr>
<tr>
<td>Positive effects:</td>
<td>- The meetings make space for silent voices, conflicting interests, and unspoken criticism to be heard, seen, and listened to.</td>
</tr>
<tr>
<td>Negative effects:</td>
<td>- Damaging criticism instead of collaboration.</td>
</tr>
<tr>
<td></td>
<td>- Conflicts concerning project agendas.</td>
</tr>
<tr>
<td></td>
<td>- Objections regarding extended meetings and work overload.</td>
</tr>
<tr>
<td></td>
<td>- Expressions of doubt.</td>
</tr>
<tr>
<td>Methodology:</td>
<td>- Not explicitly demonstrated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marion et al. (2012)</th>
<th>Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-functional teams</td>
<td>- Entrepreneurial team education.</td>
</tr>
<tr>
<td></td>
<td>- Team is supported by manager.</td>
</tr>
<tr>
<td>Positive effects:</td>
<td>- Highly explorative teams.</td>
</tr>
<tr>
<td></td>
<td>- Multi-disciplinary collaboration.</td>
</tr>
<tr>
<td>Negative effects:</td>
<td>- Not explicitly demonstrated</td>
</tr>
<tr>
<td>Methodology:</td>
<td>- Five to seven members based on Meyer Briggs’s personality trait classification.</td>
</tr>
<tr>
<td></td>
<td>- Combine technical engineers with industrial designers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tidd and Bessant (2013)</th>
<th>Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-performing teams</td>
<td>- Clear common goal.</td>
</tr>
<tr>
<td></td>
<td>- Result-driven structure, e.g. open communication, clear roles, and accountability.</td>
</tr>
<tr>
<td></td>
<td>- Unified commitment, i.e. the members share the same commitment to reach goals.</td>
</tr>
<tr>
<td></td>
<td>- Collaborative climate, i.e. a climate based on mutual trust and open discussions.</td>
</tr>
<tr>
<td></td>
<td>- Standards of excellence, e.g. embracing individual commitment, self-esteem, and individual performance.</td>
</tr>
<tr>
<td></td>
<td>- External support and recognition, e.g. being supported with needed recourses and being recognized for successful work.</td>
</tr>
<tr>
<td></td>
<td>- Principled leadership, e.g. dedicated leader who keeps the team together and moving forward.</td>
</tr>
<tr>
<td></td>
<td>- Appropriate use of the team, i.e. only use the team when it is necessary. The team is not overused.</td>
</tr>
<tr>
<td></td>
<td>- Participating in decision-making, e.g. encouraging involvement in problem</td>
</tr>
<tr>
<td>Methodology:</td>
<td>- Not explicitly demonstrated, however the members should be competent and possess essential skills and abilities, have a strong commitment to contributing, be able to collaborate, and have accurate knowledge in the task domain.</td>
</tr>
</tbody>
</table>
identification and problem solving.
- Team spirit, i.e. developing a climate in which the members can work together without personal conflicts.
- Embracing appropriate change, i.e. learning how to make necessary changes in ways of working.

**Positive effects:**
- Encouraging setting for innovative output.
- Greater availability of knowledge and information.
- More opportunities for X-fertilization.
- Wider range of experiences and perspectives.
- More opportunities for group development.

**Negative effects:**
- Social pressure limits contributions.
- Groupthink may cause poor quality.
- Dominant individuals influence output negatively.
- Individuals become less accountable in a group setting.
- Conflicting individuals may cause internal competition.

### Wheelan (2009; 2013)

**High-performing teams**

<table>
<thead>
<tr>
<th>Characteristics:</th>
<th>Methodology:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferably three to four members, as small teams are far more productive than larger teams.</td>
<td>- Picking people who are knowledgeable about how groups operate and about the group’s tasks.</td>
</tr>
<tr>
<td>Members are clear about and agree with the team’s goal.</td>
<td></td>
</tr>
<tr>
<td>Tasks are appropriate for the team and individuals.</td>
<td></td>
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<tr>
<td>The leadership matches the team’s development level.</td>
<td></td>
</tr>
<tr>
<td>The team receives and gives feedback</td>
<td></td>
</tr>
<tr>
<td>The team uses effective decision-making tools, and evaluates solutions and decisions.</td>
<td></td>
</tr>
<tr>
<td>Subgroups are integrated into the team.</td>
<td></td>
</tr>
<tr>
<td>The team contains the smallest number of members necessary to reach the goal.</td>
<td></td>
</tr>
<tr>
<td>The team has enough time together to establish norms that encourage high performance, quality, success, and innovation.</td>
<td></td>
</tr>
<tr>
<td>Conflicts are frequent but brief, and solved by the group.</td>
<td></td>
</tr>
</tbody>
</table>

**Positive effects:**
Encouraging setting for innovative output.
Time flies and work is enjoyable.
People get involved and help each other.
More productive work.

**Negative effects:**
Group thinking may occur if the team becomes too homogenous.
Social loafing starts to appear in teams with seven members or more.
The practical innovation work within an innovation team is conducted by its members, and research demonstrates that both the number of members and their personalities matter for the team’s performance (Hülsheger et al; 2009). A team should preferably be no bigger than six to seven members, as social loafing becomes a problem at that size (Dew and Hearn, 2009; Hoegl, 2005). Teams that are too big are a common problem for inexperienced managers: as they strive for control, they create teams with members that represent every stakeholder, which results in ineffective teams. Another problem related to big teams is that the information can hardly flow freely to all members when the amount of members reaches six people. In a team of four people there are six links between all members, but a team of 10 members has 45 links, which makes communication difficult (Hoegl, 2005). The links, or connections, also affect a team’s stability: fewer connections make a team more stable than a larger team with many connections (Solé and Goodwin, 2000). In her study, Wheelan (2009) identified the optimal size to be three to four members, as they were more productive and more developmentally advanced than teams with five to six members. Dew and Hearn (2009) also suggest that the team size should be a maximum of about six people. Furthermore, they suggest that the members should be able to form couples to solve sub-tasks, as their research shows that three pairs of two people perform better than a team of six people. Small teams are also proven to be more agile and better at radical innovation work because of fewer disturbances and less influence from outsiders (Hemphälä and Magnusson, 2012). One way to keep teams small is to create a core team and sub-teams when needed, e.g. for temporary work tasks (Hoegl, 2005).

A multi-functional innovation team is built on the belief that divergences in competences prevent groupthink (Backström and Olsson, 2010; Olsson et al, 2010; Isaksen and Ekvall, 2010) and strengthen the team by avoiding internal competition (Hallgren, 2009). At the same time, however, members should be drawn to each other by their wish to contribute to the team’s work and build on each other’s ideas and knowledge, i.e. convergence (Backström et al, 2011). The processes of divergence and convergence follow a jigsaw proceeding, where norms are developed continuously. New knowledge is created by blending the members’ knowledge and mutual discovery, but to accomplish interdependence each member should have a piece of the entire knowledge and a specific task to solve related to his or her specialty (Lubaktin et al, 2001). The team as such should be capable of conducting the work it is selected to do, but the team members should also be able to conduct specific tasks that contribute to the team’s project, i.e. their specific expertise, knowledge, and experience are vital. It is also critical that the members can work within the team (Feng et al, 2009; McGreevy, 2006b), and at least one member should possess the skills to run team meetings and team activities (McGreevy, 2006b).

The team members should be dedicated, trusted, and positive in their role in the innovation team, as the personalities of the members are crucial to the survival of the team (Hallgren, 2009; Pearson, 2002; Tidd and Bessant, 2013; Xu et al, 2006). “By pulling together the right people with the right combination of skills and training and giving them time to build trust, companies can accomplish big things” (Edmondson, 2012), meaning that team members who are knowledgeable and self-confident, and who are self-disciplined and persistent with a high tolerance for ambiguity tend to be more innovative than others, as they can handle uncertainty and avoid getting stuck in mental barriers (West et al, 2004).

One way to gather a team is to focus on the team members’ roles (Belbin, 1993). In this method, eight acting terms are identified as important: coordinator, plant (i.e. those who have the ideas), monitor-evaluator, resource investigator, team worker, implementer, shaper, specialist, and finisher. Belbin points out that a team can be perfect even if its members are not, as they can complement each other. Another way to search for personalities is to use the
Big Five or the Five-Factor Model (Barrick and Mount, 1991); these consist of the following: conscientiousness, i.e. the degree of a person’s tendency to be dependable, organized, reliable, ambitious, hardworking, and preserving; agreeableness, i.e. a person’s ability to be helpful, friendly, warm, and cooperative; extraversion, i.e. the person’s ability to be sociable, enthusiastic, and optimistic; emotional stability, i.e. a person’s ability to be calm, secure, and steady; and openness to experience, i.e. a person’s ability to be curious, imaginative, broad-minded, and sophisticated. The relative importance of the Big Five aspects depends on the task that the team is intended to execute. When beginning the design of an innovation team, it is important to remember that one single person with a negative approach to cooperation or new influences can ruin the work of the entire team. A member with low levels of agreeableness, conscientiousness, or emotionally stability could potentially damage the performance of the entire team (LePine et al, 2011). Besides the team members’ personalities, research shows that the individuals’ social capabilities affect the innovation output (Vincenzo and Mascia, 2011), such as e.g. ability to cope with uncertain situations, brokering skills, social competence (Du Chantier, 2010; Han and Hovav, 2012), and building trust in the innovation project and between team members (Kadefors, 2003; Maurer, 2010; Smyth et al, 2010). However, in their study, Hülsheger et al (2009) found job-related diversity to be more important than personal diversity. Job-related diversity was slightly positively linked to innovation and had a greater impact on performance than personal background did; the latter in fact demonstrated a slight negative relationship with innovation. The key is to staff a team with individual levels of behaviors that are considering critical to the team’s overall performance. If the feeling within the team is that e.g. one member is underperforming, the natural action is to sack that person from the team. Instead, however, the other team members should help the person who is in trouble, as otherwise the team will create emotional conflict instead of increasing the team’s effectiveness (LePine et al, 2011).

Except for personalities and characteristics, competence is highlighted as a key to successful innovation work. The Competence flower by Illeris (2013) is a model that demonstrates 20 different factors in a holistic way that becomes competence. The model as such is based on a context to which all of the factors relate. One area refers to personal profile, where knowledge, skills, attitudes, judgments and decisions, holistic perspective, structural understanding, sociability and collaboration, and autonomy are important factors. Another area refers to the importance of abilities such as creativity, fantasy, combination ability, flexibility, empathy, intuition, critical perspective, and resistance potential. When all of these factors are considered, actions are generated depending on a given situation. However, competence involves emotional capacities as well as intellectual capacities, and together these are used in practice for immediate judgments and decision-making actions. The understanding of competence was developed even further by Bozic (2016), who has created a theoretical framework for innovation competence to provide a holistic picture of competence needed for individuals when conducting innovation-related activities within an organization. The framework is based on theories of innovative work behavior, innovators’ skills, innovative attitudes, and human interaction dynamics. The framework comprises four areas: intrapersonal competence, i.e. curiosity, autonomy, flexibility, ability to perceive, motivation, ambitiousness, creativity, self-confidence, entrepreneurship, and intuition; content, i.e. definitions of innovation, innovation models, good innovation practices, and innovation skills such as questioning, observing, networking, experimenting, and associating; interpersonal competence, i.e. listening, empathy, sharing, dialogue, improvisation, and feedback; and the innovation practice, which is the result of the other three areas in combination and enables individuals to work in practice. Innovation practice itself consists of four aspects: idea exploration, idea generation, idea championing, and idea implementation. In addition to the model of Bozic’s. To develop competence, a
transformative learning is required. This is the most complex level of learning, when knowledge becomes one’s own. For innovation competence, this implies reflection from uncertain and unknown situations, which are highly common in innovation work (Ellström and Nilsen, 2014).

Kairisto-Mertanen et al. (2011) define innovation competences as individual, interpersonal, and networking abilities; the authors identified these abilities in students in higher education. These innovation competences were then integrated by Räsänen et al. (2015) into the innovation process demonstrated by Milton and Rogers (2013). According to Kairisto-Mertanen, the individual dimension of innovation competences focuses on target-oriented actions, independent thinking and decision-making, creative problem solving and development of working methods, persistence, risk-taking, and personal viewpoint. The interpersonal dimension of innovation competences is based on communication, teamwork, and team leadership, where communication skills are needed to transmit the knowledge and information and at the same time to build networks between human beings and teams.

The network dimension of innovation competences covers the ability to create and maintain working connections, the ability to work in networks, the ability to cooperate in a multidisciplinary and multicultural environment, and the ability to communicate and interact in an international environment. Räsänen et al. developed the innovation competences even further by including five sub-dimensions: creative problem-solving skills; systems thinking; goal orientation; team working; and networking skills. The updated set of innovation competences were then integrated in Milton and Rogers’s innovation process, which is based on seven steps. The first step is idea screening and idea generation, including the competence to see new possibilities everywhere and holistic comprehension of the relations between subjects, and to spread new ideas widely in cooperation with other people. The second step is concept development. This step includes competences regarding thinking independently but at the same time being willing to listen to others and utilize their expertise for problem solving, and abilities to communicate in order to transmit and share knowledge and new ideas in the team. System design is the third step. This step includes abilities to analyze the relationships between the system's parts in order to understand a situation for better design, to work persistently to achieve the goals, and to interact and share knowledge with others. The fourth step is detail design. This step contains competences regarding concentrating on relevant points to achieve a goal, interacting with and sharing knowledge with others, and understanding details. The fifth step is building the system. This step includes competences regarding taking group members’ viewpoints into account and productive cooperation with people coming from different cultural backgrounds. The sixth step, i.e. testing and validation, includes competences regarding considering a product on a highly detailed level and concurrently understanding a product as a part of larger system. Finally, the seventh step is market launch and delivery. This step covers abilities to utilize external networks and productive cooperation with expertise from different fields.

3.4 Reflection on theoretical framework

Theories chosen for this thesis are related to innovation teams from three perspectives: the organizational, innovation team, and individual perspectives.

First, with regard to the organizational perspective, prior research has shown that organizations should have or strive towards a post-industrial setting to become innovative (Backström et al, 2011). This is done with a high degree of involvement or empowerment of the employees (Ahmed, 1998; O’Reily and Pfeffer, 2000; Vandenberg, 1999; Xu et al, 2006), which is enabled by the organization’s settings for innovation (Hazy and Backström, 2013) by means of creating a balance between individual and collective aspects of autonomy and integration, divergence and convergence and exploring and exploiting.
Second, the innovation team’s perspective involves not only the innovation team itself, but also the process of creating the innovation team, the process to use when conducting the practical innovation work, and other factors that enable innovation work. To date, prior research has identified factors from already conducted projects with a managerial approach with regard to its applicability in practical work. This is logical to some degree, as management and leadership are identified as one main key to a successful implementation of innovation teams in an organization. One reflection regarding the demonstrated innovation processes is that they are based on almost the same structure, i.e. starting in a creative phase with a focus on ideation, and ending in a phase in which the developed idea is launched on the market to create values. All of the participating innovation teams in this study worked in an industrial context, where established innovation processes were of a CE character. Even though prior research clearly demonstrates a transition from gates to cyclical work in innovation processes (Trott, 2012), this was not the reality for the participating innovation teams prior to this study. When generalizing the innovation processes presented, one can distinguish three areas: an ideation-phase where ideas are generated, an execution-phase where ideas are developed and launched on the market, and a value harvesting-phase. However, the innovation process by Tidd and Bessant (2009) was chosen to serve as a tool to visualize planning for actions, to demonstrate when certain actions have taken place, and to analyze collected data as it is a well-established innovation process. It was also chosen as a theory base to educate the innovation teams in innovation management in both parts of this research due to the same reason as above. Based on the industrial problem to increase speed of innovation work, the innovation process by Johnsson (2009) was chosen to serve as a practical and agile tool to educate the innovation teams and to be used to demonstrate conducted and forthcoming work in the innovation projects.

Third, with regard to the team members’ perspective, prior research agrees on the benefit of diversity (e.g. Backström and Olson, 2010; Isaksen and Ekvall, 2010), with personality being of major importance for team performance (e.g. Edmondson, 2012; Pearson, 2002). Conversely, research also suggests that the suitable number of team members should not be too high in order to avoid losing momentum in work (e.g. Dew and Hearn, 2009; Hoegl, 2005; Wheelan, 2009). Recent research highlights that competence, explained as a combination of personal traits, skills, and experience (e.g. Bozic, 2016; Illeris, 2013), may be critical for members in innovation teams to posses.

The theoretical framework frames the research areas of interest demonstrated in Chapter 1 in that it presented research related to the known problems for innovation teams, such as e.g. performance and learning problems, research related to factors that enable innovation work, research related to the individual perspective of innovation teams, and research related to processes when creating an innovation team.

The conclusion drawn from this theoretical framework is that research is increasingly focusing on the individuals who are conducting innovation work. In this regard, this thesis contributes with knowledge at the intersection of System Theory, Knowledge Management, and Innovation Management. The primary contribution to previous research is a framework that demonstrates knowledge in five areas or aspects (explicitly demonstrated in Chapter 5): first, how to understand an innovation team’s situation before innovation work begins; second, knowledge regarding how to create innovation teams; third, knowledge regarding innovation enablers that are important for innovation teams when conducting agile innovation work; fourth, knowledge regarding benefits of an extended innovation process; and finally, knowledge regarding the innovation facilitator as a key to educate innovation teams and to inspire innovation teams to conduct agile innovation work.
4

PAPER SUMMARIES
4 PAPER SUMMARIES
This chapter summarizes the appended papers, their relation to this thesis, and the contribution made by the present author in relation to co-authors.

4.1 Paper A
Karlsson, H., Johnsson, M. and Backström, T. (2010), Interview supported innovation audit: How does a complementary interview affect the understanding of an innovation audit’s results when the interview is based on the audit statements. In: The 3rd ISPIN Symposium, Quebec, Canada, December 2010.

Summary
The purpose of this study was to gain an understanding of the current state of the respondents’ innovation-related knowledge by conducting self-assessment innovation audits (audits) and complementing interviews. An additional aim was to learn how complementing interviews affect the understanding of the audit results.

The study was conducted at Company A and Company B, where two innovation teams and one inter-organizational management group were created, inspired by Hallgren (2009). In total, 21 respondents from both management and operational staff at both companies responded to 40 audit statements (Appendix A; Appendix B), e.g. “We work well in teams”, and an equal number of verbal, open-ended interview questions rephrased to reflect a “how perspective”, e.g. “How do you work in teams?” These were based on the Tidd and Bessant (2009) self-assessment audit, “How we manage innovation” (Appendix C).

A great variety was found in the respondents’ understanding: out of 840 audit statements, e.g. “We work well in teams”, four statements were left unanswered, and out of 840 interview questions, e.g. “How do you work in teams?”, 103 were answered with “I don't know” (Paper A, Table 3). There were mainly two reasons for not being able to answer the interview questions. First, the respondents did not know “how”, “what”, or sometimes even “if” the company worked with what was being asked about, e.g. working in teams. “I don't know” answers were often motivated by “It is not my area”. Second, the respondent did not fully understand the meaning of the area asked about, e.g. when asked “how do you work in teams?” the respondent did not know what was meant by “teams”.

Relation to this thesis
The deviations between individual answers revealed both a lack of innovation-related knowledge and innovation-related knowledge gaps. Divergences between what respondents believed that they knew and what they really knew became understandable and visible, and thereby also revealed negative innovation-related information gaps that might affect innovation work in a negative way.

This study contributes to the thesis with the knowledge that inexperienced innovation teams may easily fall off track if not supported and advised until they can show that they have achieved enough innovation-related knowledge to handle upcoming situations.

The author’s contribution
Helena Karlsson and the author conducted this study together, and we shared all the work equally. The author was co-writer of the paper and assisted in the analysis process, and Tomas Backström advised in the writing process.
4.2 Paper B


Summary
This study was conducted with the same innovation teams in Company A and Company B as examined in Paper A to obtain a deeper understanding of innovation-related gaps that could affect innovation work in a negative way. The study builds on the findings in Paper A.

The study was conducted at the two companies, where the respondents answered 80 open-ended written questions related to the innovation process, based on Johnsson (2009) (Appendix E), and participated in four workshops based on the innovation process demonstrated by Tidd and Bessant (2009) (Appendix D).

Organizational and individual innovation-related gaps were identified. The organizational gaps were characterized by differences caused by organization-related reasons, which are related to individuals and the positions they hold, organizational innovation structure, innovation management, and differences in organizational aims and actual actions, e.g. incentives that discourage open searches for innovation opportunities and conflicting incentives (Paper B, Table 2). The individual gaps were characterized by differences between individuals, regardless of the positions that these individuals held, the organizational innovation structure, and innovation management, e.g. lack of innovation culture and understanding of innovation definition (Paper B, Table 3). These gaps could probably be bridged if shortcomings in organizational factors were improved.

This study revealed the existence of a kind of incubation time regarding innovation-related knowledge. The managements of both companies increased their understanding of the importance of implementing innovation in their companies. Furthermore, they developed their understanding of needing not only tools for managing innovation, but also the development of an innovation-related mind-set within the organizations. The team members felt a high level of abstraction in the first workshops. Members from departments other than R&D felt excluded from all innovation work and had no understanding of the purpose of their presence in the innovation teams, but the innovation teams grew to understand the benefits of multi-functionality, and new innovation project ideas were born.

Relation to this thesis
The study demonstrates that resistance decreases and collaboration between departments emerges as innovation-related knowledge increased. Continuous gap-analysis could be used to set a holistic focus on factors that affect innovation performance in a negative way to determine what or if actions should be taken to reduce a specific innovation-related gap.

This study contributes to the thesis with the knowledge that negative innovation-related knowledge gaps at an organizational and individual level may hinder or have negative effects on innovation work.

The author’s contribution
Helena Karlsson and the author conducted the study together and shared the work equally. The author was the main writer and Helena supported in the analysis and writing process.
4.3 Paper C


Summary
The aim of this study was to gain knowledge of innovation-related information flow in the everyday work of respondents in the innovation team at Company B to determine whether they were able to detect innovation opportunities in this flow. This study complements the previous study and provides an even more holistic picture of the respondents’ innovation-related knowledge, thereby building on the findings in Paper A and Paper B.

The study was conducted at Company B, where four respondents, representing the production, purchase, technical, and R&D departments, were first interviewed using semi-structured interviews (Appendix F) and then observed while working and verbalizing their daily work. In total, 216 questions and sub-questions were asked and nearly eight hours of observations were recorded.

The interviews revealed that all participants were able to give descriptive answers to all questions asked, to define innovation, to describe how innovation work was executed, to describe the dependence on information from other departments, and to describe how they could contribute to innovation work from their workplace in the organization (Paper C, Table 1). The observation revealed that internal and external information exchange through communication (innovation-related information flow) was used in three perspectives: first, information input, i.e. being informed by another person; second, information output, i.e. taking initiative to inform another person; and third, between employees, i.e. spontaneous conversations during e.g. coffee breaks. Communication via e-mail, conversations, and phone calls was observed in 32% of the 267 documented work activities in the observation. Significant findings were that the production department interacted most with other departments and was the only department that had private conversations in the workplace, that the purchase department was the only department with external contacts but avoided telephone conversation as much as possible (Paper C, Table 4.4), and that none of the respondents reflected on their ordinary everyday work as part of innovation work despite their innovation-related awareness identified in the interviews (Paper C, Table 3).

Relation to this thesis
The study contributes to the thesis with the increased understanding that even though the respondents’ innovation-related knowledge had increased since the first study (Paper A), they were unable to utilize it in their everyday work. This indicates that the respondents needed support and guidance in innovation processes until they learned to manage them by themselves.

The author’s contribution
The author planned, executed the study, and wrote the paper.
4.4 Paper D


Summary
This paper is the conclusion of the previous three papers (Paper A to Paper C). The purpose is to better understand the emerging process for innovation teams. The Innovation Team Model (ITM) was developed to demonstrate how the team members related to the innovation team and the organization overall. The ITM demonstrates that the innovation team is dependent on the members’ participation and the convergence-divergence process as the team matures. As the members’ knowledge of innovation knowledge increases, they can gather and spread information in everyday work and elsewhere. In time, they can develop innovation readiness capabilities and observe affordances to be shared among the members (Figure 6).

Relation to this thesis
This paper contributes to the thesis by means of a holistic view of the complex situation that innovation teams will meet in on-going innovation work. In addition, it shows that innovation teams need to be created in a proper way to enable innovation work.

The author’s contribution
The author developed the ITM and wrote the paper.
4.5 Paper E


Summary
This paper builds on Paper D, which demonstrates the complex situation that an innovation team will meet when emerging as a team and in on-going innovation work. The purpose of this paper is to gain an understanding of how innovation teams could be created to ease their forthcoming innovation work, and thereby perform in accordance to expectations and goals. An additional aim is to meet today’s increased need for more agile innovation work in the industrial context and the need for hands-on advice, which is identified as a problem by both academia and industry.

Systematic literature studies were conducted related to innovation team performance, team constellations, group dynamics, management, and team leadership to enable the development of a theoretical framework of how to create innovation teams. The data were organized, analyzed, discussed, and concluded, and were finally demonstrated as a theoretical framework to be used by both practitioners and in further studies.

The process of creating high-performing innovation teams (CIT-process) is the result of the conducted studies. It is a five-step process to create high-performing innovation teams. The first step is to secure top management’s and management’s commitment to ensure that the innovation team receives needed support in the organization; the second step is to identify an innovation team convener (convener) whose role it is to gather the team, call for meetings, and keep the team project’s agenda updated, but not to lead the innovation team’s work. This is done by management and an innovation facilitator, a person who supports and advises the convener through the team creation process and forthcoming practical innovation work. In the third step, the innovation facilitator prepares the convener with instructions regarding innovation management and instructions on how to gather team members on a X-functional basis. In the fourth step, the convener gathers the innovation team members and obtains the team members’ manager’s approval to participate in the innovation project. Finally, the last step is to arrange a kick-off and launch the innovation project.

The CIT-process contributes to prior research related to team development processes by explicitly demonstrating how to create innovation teams, not just any work team with potential innovation output. There are two major differences compared to prior research: first, the CIT-process is developed with the purpose of conducting innovation work, i.e. to deliberately develop new ideas for a successful market launch; second, the team creation work is developed for a sustainable work setting to avoid group development problems.

Relation to this thesis
This paper contributes to the thesis by suggesting a systematic way in which innovation teams could be created to enable innovation work in an agile way. Furthermore, the CIT-process was used as methodology when creating the participating innovation teams in the second part of the research.

The author’s contribution
The author planned, executed the study, and wrote the paper.
4.6 Paper F

Johnsson, M. Innovation enablers for innovation teams – A review. Conditionally accepted with minor revisions in: Journal of Innovation Management.

Summary
This review consolidates research on innovation enablers for innovation teams to gain a holistic picture of factors that affect innovation teams.

A systematic stepwise review was conducted to address factors that enable innovation teams to conduct innovation work from an organizational, team, and individual perspective, as highlighted in Paper D. Keywords used in search strings were related to innovation teams, as well as synonyms of “enable” and team. The protocol used to identify innovation enablers was based on three steps. First, articles were selected based on their titles’ relevance to the topic; this step reduced 2,396 hits to 377 articles. Second, the selected articles’ abstracts were read to identify relevant articles to study, which reduced the number of articles to 208. Finally, the articles were studied to identify innovation enablers.

By using a thematic analysis methodology, 20 innovation enablers (Enablers) (Paper F, Table 7) were identified in the 208 relevant articles. These were awareness, e.g. ability to “see” invisible or unrevealed innovation-related opportunities; capabilities, e.g. skills related to managing or working in an innovation project; climate, e.g. an “OK to fail”, “let’s try”, “let’s do” mentality in the work environment; collaboration, e.g. X-functional teams and collaboration between departments, suppliers, and customers; culture, e.g. norms and invisible rules within the organization, a “this is how we do it here” mentality; dedication, e.g. factors making one feel dedicated or motivated to work in innovation projects; economy, e.g. budget, non-monetary resources; education, e.g. innovation-related training in theory and practice; empowerment, e.g. trust to make own decisions regarding resources to spend on tasks, autonomy; entre-/intrapreneurship, e.g. doers who make things happen; human resources, e.g. access to other colleagues who could contribute to innovation projects, sharing competence to reduce bottlenecks; incentives, e.g. monetary and non-monetary rewards; knowledge, e.g. knowledge regarding innovation and expertise in innovation project topics; knowledge management, e.g. knowledge regarding how to use knowledge or how to fill knowledge gaps related to the innovation project; management, e.g. project managers, leadership, management support related to the innovation project; mind-set, e.g. self-confidence, “I can”, contributing, “I share”, wanting to develop the company, pro-innovation bias, “I like”, free will, “I want to”; and need, e.g. explicit and clarified need to meet for the customer which explains “why” we should do this; processes, e.g. innovation process, models, and best practice guiding from idea to product on the market; strategy, e.g. directions in customer segment, geographical markets, level of novelty of new products to develop; Time, e.g. time dedicated or allocated to the innovation project.

Relation to this thesis
This paper contributes to the thesis by means of demonstrating explicit Enablers that affect innovation teams according to prior research, and thus represents the basis for further studies to be conducted to answer the RQ.

The author’s contribution
The author planned, executed the study, and wrote the paper.
4.7 Paper G


Summary
This paper builds on Paper F, with the purpose of determining whether the identified innovation enablers would be assessed as important by innovation teams in an on-going innovation project, and to identify which innovation enablers (Enablers) identified in Paper F affect innovation teams negatively if they are not fulfilled.

The study was conducted with three innovation teams and their sponsor in Company C, in total 16 respondents. The innovation teams were created in accordance with the CIT-process (Paper E). Respondents within one innovation team assessed the Enablers’ importance every three months with the use of questionnaires, statement-based questionnaires, and audio-recorded unstructured and semi-structured interviews (Appendix G – K). The data were collected on five occasions, starting at the innovation project kick-off and ending one year later. The questionnaire data were charted to determinanie if being assessed as important or not. Relevant sections from the audio-recorded interviews were transcribed, and quotes were taken to demonstrate similarities and divergences between respondents. The knowledge created were used to analyze rich field notes documented from all three innovation teams’ meetings, e-mail- and telephone conversations to identify Enablers causing the innovation projects negatively. The frequency of team meetings varied from once a week to once every third or fourth week: The data included reflections from the team members and the innovation facilitator at the beginning and end of the meetings, notes regarding the innovation projects’ status and progress, conducted and forthcoming activities, and the innovation facilitator’s advice for forthcoming work.

The study demonstrated that all Enablers were assessed to be important (Paper G, Table 2), and eight of these were identified to be critical to fulfill to avoid project problems: collaboration, dedication, entre/intrapreneurship, human resources, knowledge, knowledge management, mind-set, and time (Paper G, Table 2; Table 3; Table 4). The innovation enablers that had negative effects on the innovation projects were most frequently related to lack of knowledge management and time. The members of the innovation teams blamed all problems on lack of time, human resources, or work overload, which could easily have been solved if they were more knowledgeable. Furthermore, the study demonstrated that the team members themselves seemed to be a key factor for keeping the project going in difficult times. The importance of the process when creating innovation teams should not be underestimated, as the team members’ passion for and loyalty to the innovation project and company are key factors for not stopping projects. Additionally, the innovation facilitator was identified as important to keep the teams on track.

Relation to this thesis
This paper contributes to the thesis with the knowledge that the identified innovation enablers in Paper F were assessed to be important. The study also contributes with knowledge of which innovation enablers that cause problems for innovation teams if unfulfilled. This is of use for practitioners when implementing innovation teams in a company, and for practitioners when supporting and advising innovation teams.

The author’s contribution
The author planned, executed the study, and wrote the paper.
4.8 Paper H


Summary
This paper builds on Paper G. The purpose was to study which of the identified innovation enablers in Paper F would be assessed to be the most important by innovation teams in an on-going innovation project, and to identify which innovation enablers affect the innovation team positively if there is problems to be solved.

The study was conducted with the same three innovation teams and their sponsor in Company C as studied in Paper G. Data were collected from one innovation team with the use of questionnaires, statement-based questionnaires, and audio-recorded unstructured and semi-structured interviews on four occasions, starting at the innovation project kick-off and ending one year later (Appendix G – K). In the questionnaires, the respondents ranked the innovations enablers’ relative importance from 1-20, where 1 indicated the most important and 20 the least important (Appendix L). The statement-based questionnaires consisted of 45 statements in which the innovation enablers were put in context: e.g., “I would do a good job in the innovation project, even if the allocated time ‘on paper’ was not sufficient” and “The team has received helpful innovation-related advice from innovation management or affiliate persons”. Relevant sections from the audio-recorded interviews were transcribed, and quotes were taken to demonstrate similarities and differences between respondents. The knowledge created were used to analyze rich field notes documented from all three innovation teams’ meetings to identify Enablers affecting the innovation projects positively. The frequency of these meetings varied from once a week to once every third or fourth week. The data included reflections from the team members and the innovation facilitator at the beginning and end of the meetings, notes regarding the innovation projects’ progress, conducted and planned activities, and the innovation facilitator’s advice for forthcoming work. Additionnally, e-mail- and telephone conversations were part of the data set.

The importance of the different innovation enablers varied during innovation process, as demonstrated by Tidd and Bessant’ (2009). The two most important innovation enablers in the Search-phase were collaboration and dedication. The three most important innovation enablers in the Select-phase were collaboration, knowledge management, and mind-set. Finally, the two most important Enablers in the Implementation-phase were dedication and mind-set (Paper H, Table 1). Overall, the most important Enablers to overcome innovation-project-related problems within this study were: first, collaboration, dedication, and mind-set; second, knowledge management; and third, entre-/intrapreneurship and knowledge. In addition, the innovation facilitator’s advice was identified to play an important role in the innovation teams’ innovation work.

Relation to this thesis
This study contributes to the thesis with knowledge regarding which innovation enablers are assessed to be the most important in different phases of the innovation process. It also identifies the key innovation enablers that were used to solve problems in the on-going innovation projects. This is of use when implementing innovation teams in a company, and for practitioners when supporting and advising innovation teams.

Author’s contribution
The author planned, executed the study, and wrote the paper.
4. PAPER SUMMARIES

4.9 Paper I

Johnsson, M. The innovation facilitator, characteristics, and importance for innovation teams. Submitted for journal publication 2016, in review round 1.

Summary
The purpose of this study was to gain knowledge of the innovation facilitator, who was identified to be important for the innovation teams in Paper G and Paper H. The key questions regarded which characteristics are important for an innovation facilitator to possess, and when that individual is most important in an innovation project.

The study was conducted with the same three innovation teams and their sponsor in Company C as examined in Paper G and Paper H, created in accordance with the CIT-process (Paper E). The data were collected from semi-structured interviews and questionnaires in three steps (Appendix N): first an interview to identify important characteristics (Appendix M); second, the characteristics cited by the respondents were confirmed and rated by their importance; third, the characteristics’ importance were charted to demonstrate when the innovation facilitator was most needed in the innovation process.

The study revealed 40 characteristics that the respondents rated to be important to different degrees, from “important to some degree” to “crucial” (Paper I, Table 1), starting in the pre-phase to the early part of the Implementation-phase of the innovation process (Paper I, Table 2). Three clusters of characteristics emerged within the study: first, innovation-related knowledge, i.e. knowledge of innovation management; Second, knowledge management, i.e. knowledge regarding how to put the innovation knowledge into practice; third, the transfer of innovation knowledge and practical experience to innovation teams, i.e. skills in educating innovation teams in instantly new situations. In general, the sponsor rated the facilitators’ characteristics as being more important than the innovation teams did, which relates to the sponsor’s unique holistic picture of the innovation teams’ work and how the facilitator affected the progress of the innovation projects (Paper I, Figure 4; Figure 5). The study also revealed that the innovation facilitator had to handle a highly complex situation, as the requirements were to e.g. being able to steer the innovation team back on track if needed but at the same time not leading, championing, or disturbing the team. Finally, the study showed that the innovation facilitator’s practical work changed from being highly involved in the teams in the first phases, to becoming more of a back-office support for the innovation team (Paper I, Figure 6). Surprisingly, the pre-phase showed to be very important when creating the innovation teams. This finding emerged into the Extended Innovation Process (EIP) (Paper I, Figure 8; Figure 9), where the innovation process was extended with a Preparation-phase, enabling innovation teams to be created and established before innovation projects kick off.

Relation to this thesis
This study contributes to the thesis by providing the knowledge that the innovation facilitator not only plays an important role for innovation teams, but is also crucial in the Preparation-phase of the EIP to prepare the convener and support the innovation team in its first steps. It also demonstrates what characteristics an innovation facilitator should possess and which of these are most important in an innovation project’s different phases. The findings are useful for an organization when aiming to implement innovation teams, building a support system for the teams, and searching for suitable individuals to conduct the practical facilitation work.

Author’s contribution
The author planned, executed the study, and wrote the paper.
5

INNOVATION ENABLERS
AND THEIR IMPORTANCE FOR INNOVATION TEAMS
5 INNOVATION ENABLERs AND THEIR IMPORTANCE FOR INNOVATION TEAMS

This chapter discusses the results of the case and literature studies in relation to the RQ. This is done in three parts. First, the chapter demonstrates how the appended papers contribute to answering the RQ. This is then followed by the main results of the studies, which are discussed in relation to the theoretical framework. Finally, a suggested framework is demonstrated as the answer to the overall RQ; this is also discussed in relation to the theoretical framework.

5.1 The appended papers’ contribution to the RQ

As demonstrated in the introduction, the overall RQ of this research was the following: “Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?”

The RQ was operationalized to provide a plan of how to conduct the studies. The operationalization included not only literature studies to determine which innovation enablers to study and the development of a framework to accurately create innovation teams, but also case studies to provide empirical data. This is further discussed and answered within this chapter based on highlighted findings from the enclosed papers.

The first studies generated knowledge regarding innovation teams’ situation in their early formation (Paper A; Paper B; Paper C), which were conducted to provide a holistic picture and knowledge of innovation teams before innovation work begins (Paper D).

The second and third steps in the data collection were carried out with deeper literature studies on innovation teams and innovation enablers. This generated a theoretical framework for how to create innovation teams (Paper F), and identified important Enablers (Paper E) from previous research.

The final two steps of this research generated knowledge based on empirical data regarding the importance of the identified Enablers and the innovation facilitator (Paper G; Paper H; Paper I).

As noted in the introduction, the RQ was divided into two sub-questions and answered with the conducted studies (Table 4).

The first sub-question (RQ1) was the following: “Which innovation enablers are important for innovation teams?” This was answered by the literature study (Paper F), but the case studies also revealed that the ITM (Paper D), the process of creating innovation teams (CIT-process) (Paper E), the EIP (Paper I) and the innovation facilitator (Paper I) serve as innovation enablers as well. This will be explicitly demonstrated in the following sections.

The second sub-question (RQ2) was the following: “When are the innovation enablers important for innovation teams when conducting agile innovation work in an industrial context?” This was answered by the case studies, from which deeper knowledge was created regarding the identified Enablers (Paper G; Paper H) and the innovation facilitator (Paper I). This will also be explicitly demonstrated in the following sections.

At the end of this chapter (Section 5.2), all findings are put together into a framework which answers to the overall RQ.
Table 4: The table demonstrates the papers’ contribution to the two sub-questions related to the RQ. A bold capital X indicates a main contribution, and a lower case y demonstrates a minor contribution to answering the RQ.

<table>
<thead>
<tr>
<th>Paper</th>
<th>RQ1: Which innovation enablers are important for innovation teams?</th>
<th>RQ2: When are the innovation enablers important for innovation teams when conducting innovation work within an industrial context?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>X</td>
<td>y</td>
</tr>
<tr>
<td>E</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>F</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>H</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Innovation enablers from the literature review and their importance
A systematic literature review was conducted to identify innovation enablers that affect innovation teams. This revealed 20 innovation enablers (Enablers) by which innovation teams were considered to be affected (Table 5). The Enablers were identified from studies in which the author(s) explicitly or indirectly demonstrated factors that affect innovation teams.

Table 5: The table demonstrates the innovation enablers identified in the literature review that affect innovation teams (Paper F, Table 7).

<table>
<thead>
<tr>
<th>Innovation enabler (Enabler) (In alphabetical order)</th>
<th>Characteristics of innovation enablers (Enablers).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Ability to “see” invisible or unrevealed innovation-related opportunities.</td>
</tr>
<tr>
<td>Capabilities</td>
<td>Skills related to managing or working in an innovation project.</td>
</tr>
<tr>
<td>Climate</td>
<td>“OK to fail”, “let’s try”, “let’s do” mentality in work environment.</td>
</tr>
<tr>
<td>Collaboration</td>
<td>X-functional teams; collaboration between departments, suppliers, and customers; open innovation; networks.</td>
</tr>
<tr>
<td>Culture</td>
<td>Norms and invisible rules within the organization, “this is how we do it here” mentality.</td>
</tr>
<tr>
<td>Dedication</td>
<td>Factors making one feel dedicated, motivated, or stimulated to work in innovation projects.</td>
</tr>
<tr>
<td>Economy</td>
<td>Budget, non-monetary resources.</td>
</tr>
<tr>
<td>Education</td>
<td>Innovation-related training in theory and practice.</td>
</tr>
<tr>
<td>Empowerment</td>
<td>Trust to make own decisions regarding resources to spend on tasks; autonomy; interdependence.</td>
</tr>
<tr>
<td>Entre-/Intrapreneurship</td>
<td>Doers who make things happen.</td>
</tr>
<tr>
<td>Human resources</td>
<td>Access to other colleagues who could contribute to the innovation project, sharing competence, and contributing to reduce bottlenecks.</td>
</tr>
</tbody>
</table>
5. INNOVATION ENABLERS AND THEIR IMPORTANCE FOR INNOVATION TEAMS

Table 5, continuing

<table>
<thead>
<tr>
<th>Incentives</th>
<th>Monetary and non-monetary rewards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Knowledge regarding innovation and expertise in innovation project topics.</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>Knowledge regarding how to use knowledge or how to fill knowledge gaps related to the innovation project.</td>
</tr>
<tr>
<td>Management</td>
<td>Project managers, leadership, management support related to the innovation project.</td>
</tr>
<tr>
<td>Mind-set</td>
<td>Self-confidence, “I can”; contributing, “I share”; wanting to develop the company; pro-innovation bias; “I like”; free will, “I want to”.</td>
</tr>
<tr>
<td>Need</td>
<td>Explicit and clarified need to meet for the customer, organization. The “why” we should do this.</td>
</tr>
<tr>
<td>Processes</td>
<td>Innovation process, models, and best practice that guides from idea to product on the market.</td>
</tr>
<tr>
<td>Strategy</td>
<td>Directions in customer segment, areas, geographical markets, level of novelty of new products, and technology to use or develop.</td>
</tr>
<tr>
<td>Time</td>
<td>Time dedicated or allocated to the innovation project.</td>
</tr>
</tbody>
</table>

The results contribute to prior research by focusing on innovation enablers for innovation teams to conduct innovation work. The focus is on the innovation teams’ perspective, and the surrounding context of the organizational and individual perspectives has been included to provide a holistic understanding, which makes it suitable for the research conducted.

The study of the identified Enablers’ importance demonstrated that they were all considered to be important during the innovation project (Paper G). However, some of the Enablers played a more important role than others. Eight of the Enablers were related to negative effects on the innovation projects if they were not fulfilled; these were collaboration, dedication, entre-/intrapreneurship, human resources, knowledge, knowledge management, mind-set, and time (Paper G, Table 3; Table 4; Table 5). Conversely, three Enablers were related to positive effects on solving problems in the innovation projects (Paper H, Table 2; Table 3; Table 4), as illustrated in Figure 8 below. These were dedication, collaboration, and mind-set.

The questionnaires revealed that the Enablers’ importance varied in different phases of Tidd and Bessant’s (2009) innovation process. The top three most important Enablers from the team perspective were dedication, economy, and mind-set in the Search-phase. In the Select-phase, time, entre-/intrapreneurship, and dedication were the most important. Finally, in the Implement-phase, time, entre-/intrapreneurship, and dedication were the most important. The sponsor and team perspectives aligned in their assessment in highlighting dedication, entre-/intrapreneurship, and mind-set as significantly important. The major difference, however, was that the sponsor focused on the culture and climate in the first phases and more on the individuals in the later phases of the innovation project. Time was not significantly important as an Enabler at any time according to the sponsor, but was an issue from the team perspective, as the team focused on the individual and practical aspects at all times.

When identifying the top three most important Enablers from the rich team meeting notes, another picture emerged: some Enablers became equally important based on how frequently they appeared in the data. The most important Enablers in the Search-phase were collaboration and dedication, followed by entre-/intrapreneurship, knowledge, knowledge management, and mind-set. The most important Enablers in the Select-phase were collaboration, knowledge management, and mind-set, followed by entre-/intrapreneurship and knowledge. Finally, the most important Enablers in the Implementation-phase were dedication and mind-set. The second most important Enablers were collaboration, followed by entre-/intrapreneurship, knowledge, and knowledge management.
The most commonly discussed issues during the team meetings were related to dedication and time. Time was related to e.g. work overload, downsizings, and suppliers’ or colleagues’ lack of time to participate in the projects due to work overload or other projects that were more highly prioritized. Dedication was related to lack of commitment from team members. However, dedication was also the solution for lack of time, i.e. when the team members were dedicated enough, they somehow managed to find extra hours to keep the project going even though there were difficult times and work overload. Collaboration was the Enabler that energized the projects and sped up the working pace. Mind-set was the Enabler that kept the teams looking for new ways of working and focusing on the goal even though problems frequently occurred.

**Table 6:** The table demonstrates the most important Enablers in the different phases of the innovation process according to the innovation teams and their sponsor.

<table>
<thead>
<tr>
<th>Data collection</th>
<th>Phase in innovation process</th>
<th>The top three most important Enablers from the team perspective (questionnaires)</th>
<th>The top three most important Enablers from the sponsor perspective (questionnaires)</th>
<th>The most important Enablers from the team perspective (field notes***)</th>
</tr>
</thead>
</table>

* Interviews where the respondents were asked for “top-of-mind” innovation enablers.

** Questionnaires in which the respondents ranked the Enablers from most important to least important.

*** Rich team meeting notes including reflections from the respondents and the innovation facilitator.
As previously stated, the Enablers were identified from a literature review and confirmed to be important in all phases of the innovation process, as demonstrated by Tidd and Besant (2009). However, there were gaps in what was found to be missing in terms of Enablers and what was really needed. For instance, lack of time and human resources were claimed to be the source of all problems that occurred in the innovation projects, whereas other things were related to these factors as well. For example, a higher level of knowledge and knowledge management related to innovation work would surely decrease the focus on time and human resources, as there would be a clear focus on e.g. collaboration, which would probably solve both time and resource issues to some degree.

According to the field notes, collaboration, dedication, knowledge management, and mind-set were the most important Enablers. Their importance directly reflected the progress in the innovation work: when there was a lack of these Enablers, the projects slowed down. For example, lack of collaboration with other departments caused Team D months of delays until it increased its innovation-related knowledge and strengthened the team with competence. Team E was delayed several months because the members did not search for external suppliers when in-house resources were unavailable. However, they were also the factors that led to positive progress of the project (Figure 7). Thanks to dedication, collaboration and mind-set all teams survived difficult times, whereas e.g. work overload and downsizes easily could have killed the projects. A question that was asked during all of the interviews was the following.

(Researcher) “As you’ve got all these problems with delays, downsizes and problems with resources, why are you still working on the project?”

(Respondent 9) “Because I believe in the product and that it can be profitable for the company”.

It became clear that the members’ first comment on the Enabler regarding incentives in the interviews were true: they were all driven by intrinsic rewards. This strengthens the claim in the CIT-process to identify and involve key persons in an innovation team (Paper E).
The gap discussed in the previous section relates to the knowledge gaps found in Paper A and further discussed in Papers B and C, where the respondents did not know how to explain innovation-related work or how to relate to innovation work in their everyday work. To decrease the innovation-related knowledge gaps, the innovation facilitator played an unexpectedly important role, further discussed below in Section 5.1.4.

**The ITM as an innovation enabler**
The first part of this research demonstrated that innovation work is highly complex, especially when involving inexperienced employees (Kristiansen and Bloch-Poulsen, 2012; Hallgren 2009; Kesting and Ulhöj, 2010). The ITM developed in Paper D (Figure 6) concludes Papers A, B, and C, and shows that a newly formed innovation team has to understand the complexity of innovation-related knowledge, innovation-related knowledge gaps, innovation-related information flow, and awareness on an operational level. At the same time, there is a need to handle the convergence and divergence processes to mature as an innovation team. Finally, there is also a need for the innovation team members to increase their innovation-related knowledge to be ready to see affordances and to utilize them.

![Figure 6: The figure demonstrates the ITM, and illustrates the innovation team, its relation to the members, and the rest of the organization (Paper D, Figure 3).](image)

Even though the two innovation teams within Companies A and B showed progress in learning from the first studies (Paper A) through the conducted workshops (Paper B), none of them reached the point where they were mature and knowledgeable enough to detect innovation opportunities (Paper C). On the other hand, the three innovation teams in
Company C were created based on the knowledge from the first part of this research. Moreover, the ITM was used as a tool to demonstrate an innovation team and its context to the convener and the team members, in order to provide an understanding of expectations in the forthcoming work. All of the innovation teams in the latter part of this research emerged according to what could be expected, and none of the innovation teams showed any of the problems that the first two innovation teams did (Paper B, Table 2). Thus, the ITM served as an innovation enabler in the innovation team creation-phase. This will be further discussed in the following section.

**The innovation team creation process as an innovation enabler**

Based on the knowledge from Paper D and extended literature reviews on team creation processes, the CIT-process was developed to ease the creation of innovation teams, as demonstrated in Paper E. The process consists of five steps, and uses theories from System Theory with a main focus on post-industrial settings in a team context, as well as theories of group dynamic characters and Innovation Management. Altogether, the process stimulates team building and enables a flying start, as the usual group problems are already taken care of. The short version of the CIT-process takes just two sentences to explain, as follows. First, secure top management's support, identify a convener who is introduced and educated to innovation management, and gather an innovation team. When the innovation team members are gathered, introduce them in the same ways as the convener and kick the innovation team off.

The CIT-process is easy to explain, however the content and how to make it happen in the reality are more complex. This requires some time to understand and establish in an organization. This is because of the layers of the ITM and the complexity of the innovation process, which is what the managers have to approve and what the convener has to understand to make it his or her own knowledge. Until this part of the CIT-process is complete, one should remember the incubation time identified in Paper B. It is highly important to keep in mind that it takes time for new knowledge to sink in. Actions should not be pushed that will be abandoned a few moments later. One conclusion of the ITM is that innovation teams need time to be established before any successful innovation work can be conducted. This was experienced in the first part of the present research, when the innovation teams were not able to conduct innovation work (Paper C), and was then confirmed in the latter part of the research, when all three innovation teams were created in accordance using the CIT-process and did not demonstrate any of the problems that occurred in Paper B, Table 2. These activities are suggested to take place in the Preparation-phase of the EIP (Figure 8), further demonstrated in the following section.

**The Extended Innovation Process as an innovation enabler**

The Extended Innovation Process (EIP) (Figure 8), developed in Paper I, is suggested to be based on on four phases: first, the Preparation-phase, where the innovation team is created accordantly to the CIT-process to avoid group development problems; second, the Ideation-phase, this is the phase where the operational innovation work regarding the innovation project is begun and conducted. The work is based on high level of creativity and abstract work as ideas are generated and selected based on the overall business strategy; the Execution-phase, in this phase is the selected idea(s) developed through iterative loops of designing, prototyping, testing and evaluating the product or service. This phase also includes preparation for production and market launch; fourth, Harvesting-phase, in this phase values from the innovation project and market activities are harvested. Additionally, the EIP as such is an iterative process, values are to be harvested in each phase of the EIP while emerging towards market launch. Though, the first Preparation-phase is preferable not
iterative if not needed due to unexpected circumstances, illustrated by the fairly dense dashed line and the dashed arrow back from ideation-phase to the Preparation-phase.

Figure 8: The Extended Innovation Process (Paper I, figure 9)

However, the Preparation-phase requires some time and patience to be successful. Paper B revealed that the incubation time was nearly six months, which was useful knowledge in the preparation of the innovation teams in the latter part of this research. To avoid disturbing everyday work for all people involved, the time it took to achieve commitment from top management and buy-in from the teams’ sponsor was approximately two months, and the time it took to prepare the conveners and then gather the innovation teams to be invited to a kick-off was approximately two more months. The EIP, however, was finally highlighted in Paper I where the innovation facilitator’s importance for the innovation teams was studied. The EIP emerged from this research as a result of extending the innovation process demonstrated by Tidd and Bessant (2009) with a pre-phase and is therefore illustrated as an extension of their innovation process when demonstrating the findings as follow (Figure 9; Figure 10; Figure 11; Figure 13; Figure 14).

Figure 9: The figure demonstrates the pre-phase as the extension of the innovation process, illustrated as a work chart and inspired by the innovation process by Tidd and Bessant (2013). The pre-phase is illustrated with a transparent white color (Paper I, Figure 8).
The innovation facilitator as an innovation enabler
Throughout the second part of the research, the interviews indicated that the innovation facilitator was a person with much influence on the innovation teams’ emergence and performance. This resulted in a study where the innovation facilitator’s characteristics and importance were investigated to understand how and when, if ever, an innovation facilitator is important for an innovation team (Paper I). The study was divided into two parts: the characteristics were first identified and confirmed to be important by the respondents, and they were then being plotted in a time chart representing the innovation project. The findings demonstrate that the innovation facilitator was seen as not only important in the first two phases of Tidd and Bessant’s (2009) innovation process and in the pre-phase, but also as crucial from the sponsor’s perspective (Figure 10). This strengthens the finding regarding the extension of the innovation process in Paper I.

Table 7: The table demonstrates the importance of the facilitator’s characteristics according to the innovation teams and their sponsor (Paper I, Table 1; Table 2).

<table>
<thead>
<tr>
<th>No.</th>
<th>Characteristics (in alphabetical order)</th>
<th>Team members [average] (Grade of importance 1-7)</th>
<th>Sponsor (Grade of importance 1-7)</th>
<th>Unfulfilled characteristics of the innovation facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to give hands-on advice.</td>
<td>5.5 (Low: 1.0 - High: 6.5)</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ability to steer the team back on track when needed.</td>
<td>4.9 (Low: 3.0 - High: 7.0)</td>
<td>5.75</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Advises based on evaluation of current situation.</td>
<td>4.9 (Low: 3.0 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Allows the team to break rules.</td>
<td>6.5 (Low: 2.5 - High: 7.0)</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Assurance that this way of working is OK.</td>
<td>5.0 (Low: 3.0 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ensuring that the team is on the right track.</td>
<td>4.1 (Low: 2.0 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Being a support mechanism when needed.</td>
<td>5.3 (Low: 3.0 - High: 7.0)</td>
<td>6.25</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Bringing customer focus early in the project.</td>
<td>5.5 (Low: 3.5 - High: 7.0)</td>
<td>7.0</td>
<td>R10</td>
</tr>
<tr>
<td>9</td>
<td>Bringing entrepreneurial mind-set into the team.</td>
<td>4.9 (Low: 1.5 - High: 7.0)</td>
<td>4.75</td>
<td>R10</td>
</tr>
<tr>
<td>10</td>
<td>Bringing understanding that uncertainty is OK.</td>
<td>5.9 (Low: 5.5 - High: 6.5)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Building self-confidence to involve competence outside the company when needed.</td>
<td>4.9 (Low: 2.0 - High: 7.0)</td>
<td>7.0</td>
<td>R3, R10</td>
</tr>
<tr>
<td>12</td>
<td>Building self-confidence in the team to keep going according to the</td>
<td>4.6 (Low: 3.0 - High: 6.0)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Building self-confidence to do things we do not normally do.</td>
<td>5.3 (Low: 4.5 - High: 6.5)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Challenging the team when needed.</td>
<td>5.5 (Low: 3.5 - High: 7.0)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Coaching skills.</td>
<td>4.7 (Low: 2.0 - High: 7.0)</td>
<td>6.5</td>
<td>R10</td>
</tr>
<tr>
<td>16</td>
<td>Communication skills.</td>
<td>5.0 (Low: 3.0 - High: 7.0)</td>
<td>6.5</td>
<td>R3</td>
</tr>
<tr>
<td>17</td>
<td>Empowering the team members to do work by themselves.</td>
<td>5.1 (Low: 3.5 - High: 7.0)</td>
<td>6.0</td>
<td>R3</td>
</tr>
<tr>
<td>18</td>
<td>Encouraging the team to expand boundaries.</td>
<td>5.5 (Low: 4.0 - High: 6.5)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Encouraging the team.</td>
<td>5.8 (Low: 3.5 - High: 7.0)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Experience from similar work.</td>
<td>4.6 (Low: 1.0 - High: 6.0)</td>
<td>4.5</td>
<td>R10</td>
</tr>
<tr>
<td>21</td>
<td>Facilitating skills.</td>
<td>4.2 (Low: 2.5 - High: 7.0)</td>
<td>7.0</td>
<td>R10</td>
</tr>
<tr>
<td>22</td>
<td>Facilitating through the convener.</td>
<td>4.8 (Low: 2.0 - High: 6.0)</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Feedback on progress.</td>
<td>5.1 (Low: 4.0 - High: 6.0)</td>
<td>6.5</td>
<td>R2</td>
</tr>
<tr>
<td>24</td>
<td>Guiding in methodology.</td>
<td>5.8 (Low: 1.5 - High: 7.0)</td>
<td>6.75</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Highlighting when the team is off track.</td>
<td>5.5 (Low: 5.5 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Innovation knowledge.</td>
<td>5.3 (Low: 1.5 - High: 7.0)</td>
<td>4.25</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Keeping the team focused.</td>
<td>5.7 (Low: 3.0 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Knowledge of innovation process.</td>
<td>6.5 (Low: 2.0 - High: 7.0)</td>
<td>4.25</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Listening to the team.</td>
<td>5.9 (Low: 4.0 - High: 7.0)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Not championing the team.</td>
<td>4.3 (Low: 2.0 - High: 5.0)</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Not leading the team.</td>
<td>4.2 (Low: 1.5 - High: 7.0)</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Not taking credit of the team’s results.</td>
<td>4.1 (Low: 2.5 - High: 7.0)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Not turning every team into Swedish standard of personalities.</td>
<td>2.8 (Low: 1.5 - High: 6.5)</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Practical experience from building innovation teams.</td>
<td>5.4 (Low: 1.0 - High: 7.0)</td>
<td>4.0</td>
<td>R2, R10</td>
</tr>
<tr>
<td>35</td>
<td>Practical experience from innovation work.</td>
<td>4.5 (Low: 1.5 - High: 6.5)</td>
<td>4.0</td>
<td>R2</td>
</tr>
<tr>
<td>36</td>
<td>Providing understanding of benefits of creating temporary networks.</td>
<td>3.0 (Low: 0.5 - High: 4.5)</td>
<td>6.5</td>
<td>R3</td>
</tr>
<tr>
<td>37</td>
<td>Strengthening the self-confidence of the team members to believe in what they are doing.</td>
<td>5.5 (Low: 3.0 - High: 6.0)</td>
<td>6.25</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Supporting in methodology in picking the right people.</td>
<td>5.0 (Low: 3.5 - High: 7.0)</td>
<td>5.5</td>
<td>R10</td>
</tr>
<tr>
<td>39</td>
<td>Supporting without bothering the team.</td>
<td>4.3 (Low: 1.0 - High: 7.0)</td>
<td>6.5</td>
<td>R1</td>
</tr>
<tr>
<td>40</td>
<td>Trust in the team.</td>
<td>4.6 (Low: 3.0 - High: 7.0)</td>
<td>7.0</td>
<td></td>
</tr>
</tbody>
</table>
Table 8: The table demonstrates when in the EIP the facilitator's characteristics are most important (Paper I, Table 3).

<table>
<thead>
<tr>
<th>Phase in the EIP</th>
<th>Team</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-phase</td>
<td>20, 26, 28, 34, 35, 38</td>
<td>1, 8, 9, 10, 15, 16, 17, 19, 20, 21, 22, 24, 26, 28, 30, 31, 33, 34, 35, 36, 37, 38</td>
</tr>
<tr>
<td>Search</td>
<td>4, 5, 8, 9, 10, 11, 13, 15, 16, 17, 21, 22, 23, 24, 29, 30, 33, 40</td>
<td>2, 4, 7, 11, 12, 13, 18, 25, 29</td>
</tr>
<tr>
<td>Select</td>
<td>1, 2, 3, 6, 7, 12, 14, 18, 19, 25, 27, 31, 36, 37, 29</td>
<td>3, 5, 6, 14, 17, 40</td>
</tr>
<tr>
<td>Implement</td>
<td>32</td>
<td>27, 32, 39</td>
</tr>
<tr>
<td>Capture</td>
<td>(Out of scope)</td>
<td>(Out of scope)</td>
</tr>
</tbody>
</table>

The table demonstrates when in the EIP the facilitator's characteristics are most important (Paper I, Table 3). The importance of the innovation facilitator’s characteristics in the different phases of an on-going innovation project in the EIP according to the innovation teams and the sponsor. (The numbers below represent the innovation facilitator’s characteristics as ordered in Table 7.)

Not only was it stated that the innovation facilitator enabled the innovation teams in the second part of this research to conduct innovation work, but three areas of competence were revealed to be important for the innovation facilitator to master. The first was innovation-related knowledge, i.e. being knowledgeable in the innovation process, identified Enablers, the ITM and the CIT-process. The second area of competence was innovation-related knowledge management: being knowledgeable in the transition from tacit theoretical knowledge to suggest and advise work to conduct in practice in relation to the current situation of the innovation project. Finally, the third area was innovation-related knowledge transfer, i.e. being able to transfer the knowledge in the first two areas to an innovation team to make it its own knowledge. This implies practical and hands-on advice, but provided as education in real time, first by being highly involved and present in the innovation teams, and later by being supportive when needed or on demand. This was based on the innovation teams’ and the innovation facilitator’s perception that the innovation teams became increasingly secure in subsequent steps of the innovation process, as their innovation-related knowledge increased and the abstractness decreased. Still, the innovation facilitator needed to stay alert to advise the innovation team to reconsider decisions taken if they seemed to stray off track (Figure 11).
Figure 10: The figure demonstrates when the innovation facilitator’s characteristics are most important in an innovation project.

Figure 11: The figure demonstrates when the need for the innovation facilitator’s involvement is most important in an innovation project.
5. INNOVATION ENABLERS AND THEIR IMPORTANCE FOR INNOVATION TEAMS

5.2 The Innovation Team Framework

The findings regarding innovation enablers and their importance for innovation teams were collected from the conducted studies. Together, they form the Innovation Team Framework (ITF), which demonstrates how the findings are related to each other and transferred to the innovation team through the innovation facilitator’s three areas of competence. In order to ease the understanding of the ITF, the five findings are discussed below. The individual research contribution and its contribution to the ITF are highlighted, followed by a demonstration of the complete framework.

First, Enablers (Table 5) were identified from a literature review (Paper F) and their importance for innovation teams was investigated in a series of studies with three innovation teams (Paper G; Paper H).

The main contribution to the previous research is that these studies focused on innovation enablers for innovation teams when conducting on-going innovation work; thus, the focus was on the innovation teams’ perspective but the surrounding context of the organizational and the individual perspectives was also included to provide a holistic picture of the scattered research field. This finding also contributes to prior research by not only reviewing the research to demonstrate potential innovation enablers, but also by providing descriptions on what makes them useful in practice. All identified Enablers were assessed to be important; however, all respondents remarked that they were driven by intrinsic incentives where they did not expect monetary rewards of any kind.

When ranking the identified Enablers in order of their importance in the context of the innovation teams, another understanding emerged. Similarly to the work of Gamatese and Hallowell (2011), this study found that upper management support and the presence of knowledgeable management systems (interpreted to include the innovation facilitator) were important, but that they were the most important when creating the innovation teams. As the innovation project progressed, the need for management dramatically decreased, demonstrated by both the innovation team members and the sponsor. The presence of the innovation facilitator was highly important when creating the innovation teams and in the first phases of the innovation process, but the need for this presence and involvement became more of a need for back-office support on demand. Furthermore, Gamatese and Hallowell claim that an innovation champion is important. This statement was supported by the sponsor in the present study, while the innovation teams assessed that the innovation facilitator should not champion nor lead the innovation team at any time. Further, this research is in line with Aagard and Gersten (2011), who claim empowerment, team culture, collaboration, X-functionality, front-end innovation processes, and open-ended goals to be important. However, the main difference is that this research claims that dedication, collaboration, and mind-set are the key success factor in terms of Enablers that positively affect an innovation project, whereas lack of collaboration, dedication, entre-/intrapreneurship, human resources, knowledge, knowledge management, mind-set, and time cause negative effects on innovation projects.

The findings contribute to the ITF by providing an understanding of when to ensure that specific Enablers are established to avoid innovation-project-related problems. Table 6 is a useful tool to demonstrate that an innovation team and its sponsor may differ in understanding of what is most important to focus on, as they have different perspectives. Likewise, Figure 7 illustrates that the perceived lack of Enablers may demonstrate a need for something that the innovation team does not have the knowledge to explain, and therefore becomes e.g. a performance problem.

Second, the ITM (Paper D) emerged from the first part of this research as a result of studies of two innovation teams in SMEs, the aim of which was to understand innovation teams’
situation before innovation work was started. The aim of the ITM is to demonstrate the situation that a newly formed innovation team has to face, in order to highlight the need for preparation if it intends to conduct innovation work.

The ITM correlates with and builds on theories by Backström et al. (2011), in that it demonstrates an innovation team as a small innovative organization, whose members strive for shared ownership in accordance with the post-industrial work system, supported and driven by divergence-convergence (Backström and Olson, 2010; Hazy and Backström, 2013), and participate voluntarily (Hallgren, 2009; Hoegl et al, 2003; Xu et al, 2006). The characteristic findings relating to innovation teams demonstrate the importance of understanding and implementing four innovation-related aspects. The first is innovation-related knowledge, i.e. knowledge regarding e.g. innovation processes (Adams et al, 2006; Tidd and Bessant, 2013) and how to practice innovation work (Johnsson, 2009; Trott, 2012). The second is innovation-related knowledge gaps, i.e. knowledge regarding how to identify and fill relevant knowledge gaps (Akgün et al, 2005; Isaksen and Ekvall, 2010; Lubaktin et al, 2001). The third is innovation-related information flow, i.e. communication within the innovation team, in the innovation team members’ department, and elsewhere to collect and spread information (Nieto and Santamaria, 2006; Smart et al, 2007; von Hippel, 2006). Finally, the fourth aspect is innovation-related awareness, i.e. the individual’s potential to “see” or detect invisible innovation-related affordances that emerge in any situation or information flow (Ellström et al, 2007; Norman, 1999). These four aspects were all found to be important for innovation teams to understand when working on innovation projects.

The ITM contributes to the ITF by providing a holistic picture of an innovation team and its context. It involves the organizational and individual perspectives and serves as a tool and guideline for the innovation facilitator, management, and team members to enable the understanding of important aspects. In addition, it also provides an understanding of how an innovation team’s members could work on an individual basis and together as a team to contribute to an innovation project, which enables a team to better understand innovation teamwork.

Third, the CIT-process (Paper E) was developed as a theoretical framework to create innovation teams in order to avoid group-dynamic-related problems. It has its base in the ITM, as it demonstrates an innovative organization from the innovation team’s perspective. The CIT-process digs deeper into this area by serving as a hands-on guideline to start building acceptance for innovation teams within the organization step by step, and to kick off the innovation team. In this way, it enables a newly formed innovation team to perform without group-related problems. Each step of the process is theoretically driven and is built on research from System Theory, Innovation Management, and Knowledge Management to develop the innovation team as a post-industrial work system (Backström et al, 2011). This means that the innovation team is driven by shared ownership and consensus, and a team leader is replaced by a convener (Laloux, 2014). To establish an innovation team that does not conduct skunkwork, management has to approve the innovation team’s existence (Dobni, 2006) and by that accept the forthcoming phases of change (Gamatase and Hallowell, 2011; Hayton, 2003; Hayton and Kelly, 2006; West et al, 2004). Furthermore, the innovation team is based on diversity (Isaksen and Ekvall, 2010; Olsson et al, 2010), convergence-divergence (Backström et al, 2011; Lubaktin et al, 2001), team size (Dew and Hearn, 2009; Hoegl, 2005; Wheelan, 2009), and the team members chosen with regard to their personality and competence and willingness to participate (Edmondson, 2012; Hallgren, 2009; LePine et al, 2011). Based on existing knowledge related to group dynamic problems, the innovation facilitator educates the convener in this topic before gathering the innovation team, as well as at the kick-off, to ensure that the whole innovation team is aware of the potential problems that could occur (Kihlbom, 2005; Nanda and Singh, 2009; West et
al, 2004). In addition, teams were educated in innovation processes to avoid known performance problem from previous research (Hallgren, 2009; Kesting and Ulhöj, 2010; Kristiansen and Bloch-Poulsen, 2010).

The CIT-process contributes to prior research related to team development processes by explicitly demonstrating how to create innovation teams, and not just any work team with potential innovation output (Buijs, 2007; Tuckmann and Jensen, 1977; Wheelan, 2013) or innovative teams (Adkins, 2010; McGreevy; 2006a; 2006b; West et al, 2004). There are two major differences compared to prior research. First, the CIT-process is developed with the purpose of conducting innovation work, i.e. to deliberately develop new ideas for a successful market launch; Second, the team creation work is developed to avoid group development problems before they appear, where one does not need to rescue the teams after some time of unsuccessful work.

The CIT-process contributes to the ITF by providing a systematic and hands-on tool to create a sustainable innovation team that does not suffer from group dynamic problems.

Fourth, the pre-phase, i.e the Preparation-phase, to the innovation process was revealed to be an understanding of the aspects above with regard to the need for incubation time from management, time to create innovation teams, and initial knowledge regarding innovation work. In this way, it serves as an innovation enabler for innovation work by forming the EIP. Innovation processes have emerged through time to become a process of cyclic character with no specific starting point (e.g. Dobni, 2006; Trott, 2012), where loops of learning and actions are taken on an iterative basis towards the market. However, recent innovation processes start with an ideation-phase, followed by development and launch phases in different ways and approaches.

The EIP contributes to prior research by demonstrating that a newly formed innovation team needs time to prepare before beginning an innovation project. Prior research has shown that issues such as e.g. performance problems or conflicts occur if the team is not prepared for innovation work (Hallgren, 2009; Kesting and Ulhöj, 2010; Kristiansen and Bloch-Poulsen, 2010). This means that there is a high risk that unnecessary problems will occur in the first parts of the innovation process if the organization or the innovation team is not prepared, e.g. problems in the “Search- or Select-phase” if applying the innovation process demonstrated by Tidd and Bessant (2013), “problem identification or in contact with the end-user/end-customer” if applying the innovation process demonstrated by Johnsson (2009), “screening and idea generation or concept development” if applying the innovation process suggested by Milton and Rogers (2013), or “generation of ideas or harvesting of ideas” if applying the innovation process proposed by Adair (2004). In addition, the Preparation-phase makes sense because innovation work is claimed to include all work necessary to reach the market, and preparation is certainly related to innovation work. This research shows that an extended phase of the innovation process is beneficial for innovation teams: the innovation teams in the first part of this research, created in accordance with Hallgren (2009), which didn't include the preparation work that was developed in Paper E wasn't ready to start innovation projects until the end of those studies.

The EIP mainly contributes to the ITF by means of being the visual basis by which the other four innovation enablers relate to each other.

Fifth, the innovation facilitator and its competences were revealed to be an important aspect by studying the innovation teams and prior research regarding practical innovation work and learning aspects (Paper I). The use of an innovation facilitator found support in previous research in two ways. First, System Theory suggests that an innovation team should find its own way of working by e.g. developing its own norms and routines (Backström et al, 2011; Hazy and Backström, 2013), where a facilitator can guide complex and non-linear
innovation processes with various overlapping circles of individuals, teams, divisions, and departments (Hunter and Cushenbery, 2011). Second, champions or team leaders may hinder the innovation team from being innovative (Dulaimi et al, 2004; Gamatese and Hallowell, 2011) by e.g. establishing a culture or working climate that is not supportive of innovation work.

During the study demonstrated in Paper I, important characteristics were identified and categorized by importance in innovation projects. The innovation facilitator served as an asset to the innovation teams with hands-on advice and tools to use during the innovation projects, thus enabling the innovation teams to conduct innovation work by juggling the knowledge regarding ITM, the CIT-process, innovation processes, and Enablers (Figure 12). This finding correlates with Illeris’s (2013) Competence flower and Bozic’s (2016) integrated model of innovation competence, in the sense that the innovation facilitator should have the skills and experience to move between intrapersonal, content, and interpersonal dimensions to support the innovation team in real time. The dilemma, however, is that this research demonstrates paradoxes, such as e.g. steering the innovation team back on track when needed but not championing or leading the team, or challenging the innovation team when needed but not disturbing it. This means that the innovation facilitator needs skills to relate the current situation to the innovation process and Enablers, in order to educate and/or provide relevant advice to the convener to be forwarded to the innovation team. These skills were highlighted by the sponsor to be some of the most important success factors for progress, i.e. to listen to the innovation teams and suggest small adjustments, or highlight actions to reconsider. This was confirmed by the respondents, who had noticed the same thing but from their own perspective.

Figure 12: The figure demonstrates the innovation facilitator’s need for competence, i.e. to understand and handle the intervened and overlapping processes of the ITM, CIT-process, innovation processes, and Enablers (Paper I, Figure 7).
The innovation facilitator’s involvement and presence in the innovation teams decreased as the innovation projects emerged, from being crucial in the first phases to becoming needed on demand. This was explicitly expressed in the workshop (Appendix N) where the respondents assessed when the innovation facilitator was most needed in the innovation project. In addition, it was also noticed in the field notes, as the respondents found the abstractness level to be high in the first phases, but it became more everyday work as the innovation work entered the Implementation-phase, and therefore less abstract (Paper I). Also, the learning curve was significant. The respondents transformed their experiences into their own knowledge to be ready to start new innovation projects without or with little involvement from the innovation facilitator; this indicates that the innovation facilitator could be used as a teaching tool. In practice, this meant that the need for the innovation facilitator’s competence in the innovation teams slowly and gradually faded out. In the first two phases of the EIP, i.e. the Pre- and Search-phases, the competences of the innovation facilitator were important and on-going as parallel tracks, but as the respondents increased their innovation-related knowledge, the innovation facilitator could shift focus to transfer knowledge and be ready to step in when needed. In the first part of this research, the innovation teams were first educated in innovation-related knowledge with the aim of starting innovation projects. Even though the innovation teams showed progress in learning, the learning outcomes were slow and no innovation projects were started (Paper B). On the other hand, the latter part of this research focused more on practical innovation work, whose aim was to introduce the conveners to the forthcoming work and then educate the innovation teams through the convener as they conducted innovation work. This resulted in rapid learning outcomes. When comparing the studies conducted in Paper B and the CIT-process (Paper E) applied in the latter part of this research, one can see that in about the same timeframe as it took for the innovation teams to be gathered for seminars to learn innovation-related knowledge without disturbing everyday work too much (Paper B), the innovation teams created according to the CIT-process were already up and running in innovation projects. On the other hand, this required the innovation facilitator to possess certain characteristics and to stay alert to advise and educate the convener in real time with his or her skills and experience in innovation-related knowledge. This was also demonstrated in the assessments of the characteristics’ importance that innovation-related knowledge management is more important than innovation-related knowledge itself (Paper I, Table 1).

The innovation facilitator contributes to the ITF by being the tool that transfers the knowledge needed to an innovation team using the three areas of competence: innovation-related knowledge, innovation-related knowledge transfer, and innovation-related knowledge management (Figure 13).
Finally, the Innovatoin Team Framework (ITF) emerged throughout the findings demonstrated above, all of which are supported by and contribute to prior research. ITF is a framework built on the EIP as a base, where the aspects of innovation enablers demonstrated above are embedded in the work of the innovation facilitators. The innovation facilitator works with the innovation team during the entire innovation process using the three areas of competence. In Paper I, the innovation facilitator’s presence was demonstrated to be crucial in the Pre-, Search-, and Select-phases, as these stages are when the management is supposed to be committed, the convener introduced to the CIT-process, the innovation team gathered, and the innovation project kicked off. Furthermore, the Search- and Select-phases are based on a high degree of abstract work, which might be a problematic start for a newly formed innovation team if it is not guided by a knowledgeable person. Otherwise, the risk is that the innovation team falls back on old habits and processes. As the team emerges and the innovation work becomes less abstract, the innovation facilitator’s involvement and presence are less needed. Nevertheless, the innovation facilitator must stay alert and ready to step in to steer the innovation team back on track when needed.
5. INNOVATION ENABLERS AND THEIR IMPORTANCE FOR INNOVATION TEAMS

On a meta level, the ITF relates to the theoretical framework by contributing to the area where System Theory, Knowledge Management, and Innovation Management meet. The theoretical framework used within this research is based on these three research areas to understand the results from organizational, team, process, and competence perspectives. However, the major contribution of this research is related to Innovation Management by providing knowledge regarding innovation enablers for innovation teams.

From the innovative organizational perspective, the ITF has been developed to meet the criteria of a post-industrial setting to support an innovative working environment (Backström and Olson, 2010; Backström et al, 2011; Hazy and Backström, 2013), to encourage employees to participate by collaboration and networking (Bessant, 2003; Trott, 2012; Vandenberg, 1999; Xu et al, 2006), and to not be afraid of change (Kihlbom, 2005). These organizational aspects are seen in the ITM (Paper D) and CIT-process (Paper E) as theoretical frameworks that suggest how the innovation team (read organizational) is set up, and as practical research in the latter part of the case studies was conducted with three innovation teams created in accordance with the CIT-process (Paper G; Paper H; Paper I).

From the innovation enabler perspective, the ITF has been developed to meet the factors that are known to support innovation work. Significantly important enablers were identified from a management perspective, such as e.g. collaboration (Aagard and Gertsen, 2011; López-Fernández et al, 2011; West et al, 2004), culture (Aagard and Gertsen, 2011; Balsamo et al, 2008; Denti and Hemlin, 2012), and leadership (Backström et al, 2011; Buijs, 2007; Hülshheger et al, 2009). From the team perspective, innovation enablers were identified to relate to e.g. climate (Ekvall, 1996; Balsamo et al, 2008; Denti and Hemlin, 2012), diversity (McGreery, 2006b; West et al, 2004) and leadership (Denning, 2011, West et al, 2004). From the individual perspective, innovation enablers were identified to relate to commitment (Denti and Hemlin, 2012; McGreery, 2006b), competence (Illeris, 2013; West et al, 2004), and innovation competence (Bozic, 2016; Räsänen et al, 2015). These enablers are found in the ITM (Paper D) and CIT-process (Paper E) as theoretical frameworks in how
the innovation team setting is suggested to enable innovation teams to conduct innovation work. They are also found in the second part of the research as case studies on three innovation teams that were created in accordance with the CIT-process (Paper G; Paper H; Paper I). The aspects relating to innovation competence are also found in the suggestion of how the innovation facilitator should work (Paper I). In addition to what was revealed within the theoretical framework, a literature study was conducted regarding innovation enablers that affect innovation teams (Paper F); this contributes to prior research by suggesting even more and specific innovation enablers that affect innovation teams.

From the innovation team perspective, the ITF was developed to meet the criteria of how teams are created to become innovative. Suggestions by McDonough (2000), West et al. (2004), and McGreevy (2006a, 2006b) were taken into consideration and, among others, X-functionality, dedicated members, personalities, climate, and collaboration are important factors. In-depth studies were conducted related to team constellation based on divergence-convergence (Backström et al, 2011; Hazy and Backström, 2013), diversity (Du Chantier, 2010; Hülsheger et al, 2009; LePine et al, 2011), and team size (Hoegl, 2005; Dew and Hearn, 2009; Wheelan, 2009). These aspects are partly found in the ITM (Paper D) and explicitly demonstrated in the CIT-process (Paper E) as theoretical frameworks to create innovation teams and when the three innovation teams were created in accordance with the CIT-process (Paper G; Paper H; Paper I).

From the innovation process perspective, the ITF was developed to meet the criteria of visualizing a process that demonstrates the basic theoretical and practical aspects of innovation work. Tidd and Bessant’s (2009) innovation process was used as a guideline throughout both parts of this research. The inspiration for the EIP was born in the first part of the study (Paper B) when the incubation time was highlighted, but was finally developed in the second part of this research (Paper I), mainly based on Tidd and Bessant’s innovation process where its phases are extended to include a pre-phase, i.e. the Preparation-phase. An agile innovation process such as e.g. Johnsson’s (2009) is suggested as a tool to be provided by an innovation facilitator, starting by educating the convener who transfers the knowledge to the innovation team’s members, as seen in the case studies in the second part of the research (Paper G; Paper H; Paper I).

From the competence perspective, the ITF was inspired by the Competence flower (Illeris, 2013) and the integrated model of innovation competence (Bozic, 2015). In addition to what is suggested in these two frameworks, the studies in this research indicate that the innovation competence needed by an innovation team includes not only the competence related to innovation work, but also competence related to the identified Enablers (Paper F), as well as knowledge regarding when they are important (Paper G; Paper H) and how to utilize that knowledge (Paper I). This spans beyond what is suggested by Illeris and Bozic. Furthermore, competence was found to involve the understanding of the ITM (Paper D) and CIT-process (Paper E). As the first conducted studies (Paper A; Paper B; Paper C) demonstrated that this is too much to learn in a short period of time, it is suggested that the innovation facilitator transfer the needed competence to the convener in the form of education and real-time advice and support (Paper E). This was practically executed in the case studies in the second part of the research (Paper G; Paper H). The learning outcomes from these innovation projects relate to transformative learning, meaning that the knowledge created became the team members’ own (Ellström and Nilsen, 2014), and the innovation teams were ready to start new innovation projects without or with little support from an innovation facilitator.
DISCUSSION
6 DISCUSSION
This chapter discusses the results of this thesis in relation to the overall RQ.

The first part of this research was dedicated to understanding innovation teams’ situation before innovation work begins. This was done by conducting case studies with two innovation teams in two separate SMEs. SMEs were suitable research objects in this first part as they are seen to be more agile and innovative than larger companies (e.g. Dobni, 2006; Kuckertz et al, 2010; Tidd and Bessant, 2013), and therefore the knowledge created could serve as input for a larger, industrial company. The second part of this research was dedicated to understanding the emerging situation in on-going innovation projects performed by innovation teams. This was done by conducting case studies with three innovation teams within the same large industrial company. All participating companies were in different industries. The RQ was operationalized by identifying two sub-questions; these were answered by the conducted studies. Altogether, this study revealed five significant findings that all play important roles for innovation teams when conducting agile innovation work. Together, these findings answers to the overall RQ.

The suggested Innovation Team Framework (ITF) (Figure 14) is based on the Extended Innovation Process (EIP) (Figure 9), in which the other four aspects of important innovation enablers are integrated as separated items but should be seen as provided to the innovation team through the innovation facilitator’s three competence areas, i.e. innovation-related knowledge, innovation-related knowledge management and innovation related knowledge transfer (Figure 13). In other words, the innovation facilitator is the person who ignites the process of creating innovation teams by his or her innovation competence, using the CIT-process and guiding by using the Innovation Team Model (ITM) and the required important Enablers in the innovation process’s different phases (Figure 12). This person could be an individual within an organization who is knowledgeable enough to handle the ITF. The ITF demonstrates which areas are in focus throughout the innovation process. The Preparation-phase is intense and covers all aspects. As the innovation team and the innovation project develop, the practical work becomes less abstract and the need for the innovation facilitator’s involvement and presence decreases, as demonstrated by the faded areas in the framework (Figures 14 and 15).

The ITM emerged as a result of studies of two innovation teams in two separate SMEs in an industrial context. The ITM demonstrates the situation that a newly formed innovation team must face if it intends to conduct innovation work in an innovative environment. The ITM serves as an innovation enabler in that it is a tool and guideline provided by the innovation facilitator to management and team members to enable the understanding of the important aspects of knowledge, knowledge gaps, information flow and innovation-related awareness related to innovation. In this way, it contributes to answering the RQ by means of providing knowledge regarding the forthcoming complexity of work related to organizational, innovation team, and individual perspectives.

The CIT-process was developed to explicitly demonstrate how to create innovation teams to avoid group-dynamic-related problems, and thereby to enable a newly formed innovation team to start an innovation project well. The CIT-process serves as a hands-on guideline provided by the innovation facilitator to be used by the convener to start building acceptance for innovation teams within the organization and to kick-off the innovation team. In this way, it contributes to answering the RQ by being the fundamental basis on which to create innovation teams.

Enablers were identified in a literature review, and their importance was investigated using case studies of three innovation teams in on-going innovation projects. The main focus was to identify explicit and implicit factors that affect innovation teams, and to study their
importance and effect on innovation work, in order to contribute to answering the RQ. The findings from these studies not only find all identified Enablers to be important in on-going innovation work, but also demonstrated when and to which degree they are of importance in an innovation project. Furthermore, the studies indicated how innovation projects were negatively and positively affected by Enablers being fulfilled or not.

The pre-phase of the innovation process was revealed to be an understanding of the aspects above, with regard to the need for incubation time from management, time to create innovation teams, and initial knowledge regarding innovation work. In this way, it serves as an innovation enabler for innovation work by enabling preparation for forthcoming innovation work. The Preparation-phase contribute to answering the Research Question by being the basis of the ITF and a visual tool when introducing and educating the convener on the other aspects of innovation enablers.

The innovation facilitator’s competence were unexpectedly revealed to be highly important aspects in studying the innovation teams and conducting prior research regarding practical innovation work and learning aspects. The study revealed important characteristics concerning e.g. competence areas, skills, experience, and personal traits to possess, which were categorized by importance in an innovation project. The innovation facilitator served as a crucial asset to the innovation teams, with hands-on advice and tools to use during the innovation projects, thereby enabling the innovation teams to conduct innovation work. The knowledge regarding the innovation facilitator contributes to answering the RQ by means of being new knowledge regarding the characteristics that an innovation facilitator should possess and when these characteristics are considered to be the most important by innovation teams. This eases the planning and implementation of innovation teams in an organization. Even though the innovation facilitator’s importance was the last study conducted in this research, it revealed that the ITM, CIT-process, and EIP could not be understood and utilized by the innovation teams without the innovation facilitator’s guidance and support.
CONCLUSIONS AND FUTURE RESEARCH
7 CONCLUSIONS AND FUTURE RESEARCH

This chapter presents the final conclusions of the thesis, the contributions of the research, and future research suggestions.

The aim of this thesis was to gain an understanding of factors that enable innovation teams to conduct agile innovation work within an industrial context in spite of the revealed problems regarding performance, learning, and team development related to innovation teams.

The overall RQ was the following: Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?

The following two sub-questions were formulated to answer the overall RQ.

RQ1: Which innovation enablers are important for innovation teams?
RQ2: When are the important innovation enablers important for innovation teams when conducting agile innovation work in an industrial context?

7.1 Answering the RQ

Five main findings were identified throughout this research and resulted in the ITF, which answers the overall RQ.

- Twenty innovation enablers (Enablers) were identified in a literature review, all being important for innovation teams.
- The Innovation Team Model (ITM): a holistic model of innovation teams before innovation work begins, demonstrating its relation to the individuals within the innovation team and the organizational context.
- The process of Creating Innovation Teams (CIT-process): a process to create innovation teams to avoid group development problems and to start performing right away.
- The Extended Innovation Process (EIP): an innovation process extended with a Preparation-phase in which the innovation team is created and prepared for the forthcoming innovation work.
- The Innovation facilitator: an individual with certain skills, experience, and characteristics who supports management, the convener, and the innovation team throughout the EIP.

First, the Enablers identified in the literature review (Paper F) were all found to be important in on-going innovation work. However, some were found to be more important than others (Paper G) by means of affecting innovation projects in a negative way if they were not fulfilled. Conversely, others were found to have positive effects on innovation projects that experienced problems (Paper H). The following four innovation enablers were unexpected, as they were not found in the literature review, but were determined to be essential when creating the innovation teams and supporting them throughout the innovation project.

The ITM (Paper D) is an innovation enabler as it is used to educate the convener of an innovation team. The ITM visualizes how the team should work to access and share information within the team and in the different departments where the team members usually work. It also visualizes the innovation team’s context and puts the innovation enablers in that context.

The CIT-process (Paper E) is an innovation enabler in that it provides a structured process to create innovation teams within an organization. Its biggest contribution to the innovation team is to introduce the management and guide the convener when gathering the innovation team members before the innovation project kicks off. Within this research, the
use of the CIT-process resulted in faster learning progress compared to learning from seminars. Furthermore, the learning was sustainable in the sense that the innovation teams were ready for new innovation projects with less support from an innovation facilitator than before.

The EIP (Paper I) by its Preparation-phase is an innovation enabler in that it provides a visible map for the innovation teams that enables the members to organize themselves in time and space. The pre-phase is partly inspired by the findings regarding incubation time (Paper B), where a time gap was identified related to a learning perspective.

The innovation facilitator (Paper I) is an innovation enabler as he or she supports managers, the convener, and the innovation teams with guidance and advice related to the innovation process. The innovation facilitator played an unexpectedly important role in the pre-phase and the first two phases of the innovation process by supporting the convener in the process related to gathering the team members and kicking the innovation project off. It was stated that the innovation teams’ progress would not have been as good without the innovation facilitator’s involvement. In the first two phases of the innovation process, as the innovation work is abstract, the innovation facilitator’s presence and involvement were crucial. However, as the innovation work became less abstract, the innovation facilitator was needed more for back-office and support, or to step in to adjust the innovation team’s direction if it moved away from the innovation process. This was also connected to the increased learning of both theoretical and practical innovation-related knowledge.

The final conclusion, which meets the aim of this research, is that the ITF (Figure 14) demonstrates the identified aspects of innovation enablers above as a system, in which innovation team members and managers can observe and understand how the aspects are related to each other and to the innovation process. The ITF is to some degree a multilayer-framework, and the five aspects of innovation enablers may need to be studied separately to fully understand the depth of each aspect. One can therefore choose to see the ITF as a tool to visualize the complexity but also to show how simple the innovation team context is when all parts are put next to each other to explain their relation.

7.2 Scientific contribution

The main scientific contribution of this thesis is the ITF. The framework mainly contributes to Innovation Management in that it is directed to innovation teams and their context, as it provides knowledge on innovation enablers needed for innovation teams to conduct agile innovation work within an industrial context. To some extent, the ITF also contributes to System Theory and Knowledge Management as theories from these research areas are used and discussed within the ITF.

The ITF consists of findings that relate to the Enablers to focus on during an on-going innovation project; models and processes concerning new innovation teams’ situations before innovation work begins; explicitly demonstrated hands-on tools to create innovation teams; the extended innovation process which enables preparation for forthcoming innovation work; and the importance of an innovation facilitator in innovation work.

7.3 Industrial contribution

The practical use of the ITF is related to an organization’s strive to become more agile in its innovation work, as a complement to e.g. continuous improvements or product development. One recommendation is to study the separate aspects individually to understand how they relate to and are dependent on each other. It is recommended that the processes demonstrated within this thesis be used with care, as one important finding of this work is that the individual who claims him- or herself to be the innovation facilitator of an
innovation team needs to possess certain skills and characteristics. However, if that is not a problem, the suggestion is to start studying Paper D to understand the complexity that an innovation team will meet during its creation. This should then be followed by Paper F to understand the need for Enablers that the innovation teams found important in this study. This will provide a better understanding of forthcoming expectations as the innovation team is created and kicked off. There will be no point of return if the team is created with poor conditions but to restart the process from the beginning. To spare time and resources, the homework must be done before the organization loses trust in something that might improve its innovation work speed if it is applied correctly. On the other hand, a true practitioner would probably prefer Paper E as a start, and could then use the EIP as a roadmap and study the other papers on the go.

7.4 Future research
Based on the conducted research, a number of research opportunities emerge. These are suggested as separate research studies or in combinations.

As claimed in the research design chapter, this research completed the DRM’s DS-II stage where the ITF emerged as an overall framework. Therefore, it is suggested that innovation teams continue to be studied using the ITF as a guide.

Three of the most important Enablers identified were dedication, mind-set, and collaboration. Therefore, it is suggested that research focus on creating specific tools to develop these Enablers of innovation team members. These tools can be handed over by the innovation facilitator to the convener at the same time as the introduction to the other tools and processes takes place.

This study revealed that specific innovation enablers were more important than others in different phases of the innovation process. Therefore, research related to the assessment of forthcoming innovation enablers is suggested to develop a forecasting tool to be used by innovation facilitators, conveners, and sponsors to create potential slack in innovation projects.

The CIT-process suggests a method to create not just any innovation team, but a high-performing innovation team. Even though there were indications of increased effectiveness and performance in relation to the established CE processes, the high-performing part was outside the scope of this research. Therefore, research related to innovation teams’ effectiveness and performance is suggested.

The innovation teams in the second part of this research conducted real innovation projects. Their organizational culture was not helpful at the beginning of these projects, but to some extent changed to a more supportive atmosphere for the teams as they made progress. The innovation projects were conducted in accordance with the CIT-process, which means that a small core team drove the innovation project in collaboration with its networks. Therefore, research regarding whether an innovation team could serve as a tool to change a non-innovative culture into an innovative culture is suggested to create high involvement of employees in innovation work. Furthermore, this could result in methodologies and tools to develop innovative organizations.

One gap is identified related to the innovation teams’ perceived lack of time and human resources to be the main causes of their problems. On the other hand, the innovation teams’ sponsor assessed the innovation teams to suffer from lack of e.g. mind-set. However, the analysis demonstrated the innovation teams’ lack of e.g. dedication, entre/intrapreneurship, or knowledge management to be the main reason that problems occurred. This triggers the interest to study e.g. what an innovation team thinks it needs compared to what management thinks it needs, and what is really needed.

*****
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<th>PAGE</th>
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Interview Supported Innovation Audit: how does a complementary interview affect the understanding of an innovation audits results when the interview is based on the audit statements.

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Abstract: SMEs tend to lack the ability of sustainable development through cost-effective and repeated innovation. One way to find out a current innovation state is to run a self-assessment innovation audit, which are well used but got critics to not show reliable results. The authors formed research question: How might a complementary interview affect the understanding of the result of the innovation audit when the interview is based on the same statements used in the audit? The study was conducted at two Swedish SMEs with a mix of management and personnel. 21 respondents at both companies answered 840 audit-statements and equal amount of interview questions rephrased from a “how-perspective”. 4 audit-statements were left blank and 103 interview questions were answered, “I don’t know”. A great differ in the respondents understanding appeared and the conclusion was that a self-assessment innovation audit might not show reliable results conducted without a complementing interview.

Keywords: innovation audit; interview support; SME; method; gap
Problem:
The authors are working on a longer project that aims to strengthen innovation capacity in a number of Swedish SMEs. A first step in this work was to create an image of the participating SMEs current state of innovation.

Research as well a experience from the industry indicates a low consciousness in SMEs innovation management. Even globally successful companies at the technological edge seem to have a tendency to focus only on technology-based innovations and to a great extent manage innovation as part of the product development process (Christensen, 1997) (Tidd and Bessant, 2009) One common consequence of a deficient innovation management is that SMEs often tend to lack the ability of sustainable development through cost-effective and repeated innovation.

The authors have in various innovation related roles outside the academia under several years met a large number of SMEs and noticed that SMEs often tend to lack the ability to manage innovation in a effective way. They are often more capable of manage those parts of the innovation process that is concentrated around product development e.g prototyping and less capable to handle early and late stages of the process e.g searching for innovative possibilities or capturing other values than those directly related to increased sales, IP-rights or other values closely connected to the core of innovation. They seem to be unaware of factors that affect innovation capability and the innovation possibility outside the area of innovative products.

SMEs also seems to need to form a knowledge platform of the current state of innovation to know how and where to direct their innovation management. The knowledge captured from an innovation current state (current state) leads to awareness of strengths, weaknesses and possible improvements of their own current state of innovation, which could be used to develop their strategic innovation platform.

One way to find out a current innovation state at a company is to run an innovation audit, which was suitable for the project the authors are working in. As the authors intend to make several audits of future participating companies in the project, the authors wanted to analyze the results from an audit with purpose to understand the results even more. How does a complementary interview affect the understanding of the result of the innovation audit when the interview is based on the same statements used in the audit?

Current understanding:
Firms that are innovative are proved to be more successful than non-innovative ones and outperform the non-innovative ones both in terms of growth and financial performance. For an organization to be deliberate and repeatedly innovative a conscious innovation management is required. (Dobni, 2006) (Tidd and Bessant, 2009) Much research has been conducted about the management of the complex innovation process and a large amount of schematic models describing the innovation process is developed, which in an overview perspective are quite similar to each other (Andersson, 1996) (Ottosson, 1999) (Baxter, 2002) (Michanek and Breiler, 2004) (Tidd and Bessant, 2009). There are also a lot of literature describing how to manage innovation (Kelly, 2001) (King and Anderson, 2002) (Adair, 2004) (Johansson, 2005) (Utterback et al., 2006) containing checklists, stories of successful management and “to think about”.

Innovation models and innovation processes mention strategies about innovation in different ways. Innovation strategies or strategic innovation is two expressions not to be mixed up or misunderstood, but still important for innovation management. An innovation strategy is, to say, more of a way to develop innovations towards a identified market. Strategic innovation is on the other hand a way of thinking, planning and using innovation as a tool in firms who want to be competitive in the long run and use the existing business as an innovative way (Tidd and Bessant, 2009).

From research the authors found different kind of tools to measure innovation or to analyze organizations innovation management (Chiesa et al., 1996) (Noke and Radnor, 2004) (Adams et al., 2006) (Tidd and Bessant, 2009), The purpose with those tools are to identify strength and weakmesses in, mapping, or improving innovation management (Noke and Radnor, 2004) (Adams et al., 2006) (Tidd and Bessant, 2009), or for technical innovation (Chiesa et al., 1996) and to measure effectiveness of performed innovations. Several audits have been developed to provide a better opportunity to show an organization's present situation of innovation. Audits helps to highlight strengths and weaknesses in order to do internal analysis as well as external comparisons. Audits are in general based on a number of statements over which the respondent is supposed to self-evaluate the match of the statement and the way the organization handles innovation or an innovation process. Chiesa (Chiesa et al., 1996) developed an technical innovation audit in combination with interviews to identify strength and weaknesses with focus beyond the ordinary developing process but in technical innovations.
When studying described measurement tools above and well-known innovation models, one can realize that an important criteria for innovation performance is to involve the organization into the innovation process. Dobni (Dobni, 2006) showed the importance of organization involve for successful innovation. However, the authors notice that there seems to be a lack of broad organization involvement through those studies. Furtheron there seems to be a lack of reliable measurement tools with clear references connected to every participating persons mind or knowledge. As innovation is an complex area who every person might have their own opinion about, the authors find it interesting to analyze the result from an audit to find how participating people share references according to innovation at their company. The authors don’t find it necessary to develop another audit, there are already a lot of them covering the most important parts of the innovation model and important innovation criterias.

Recently, criticism is directed to audits as a measure tool (Hallgren, 2009). Research show that the results from audits are more suitable to support internal discussions than external benchmarking. Audits does not seem to be so reliable used as tools for benchmarking between different companies (Tidd and Bessant, 2009) and the organizational learning from the audit are often said to be more of an effect of learning from the external audit provider. Further has research showed that an organization have to be rather advanced to be able to accomplish and benefit from a self-assessment audit on their own (Hallgren, 2009). Furthermore some audits only involve the management group but suggest that broader involvement should be considered, research indicates that audits need to be supplemented with something more to see the effect of them (Hallgren, 2009) which also was done by complementing interviews according to Chiesa (Chiesa et al., 1996) though they found respondents to consider asked questions as difficult and complicated to understand.

**Research question:**
As the project is a long-term project and the authors intend to make several audits of future participating companies, the authors wanted to gain a deeper understanding from the chosen audit. In order to do so the authors made an additional interview based on the audit which formed the following research question: *How might a complementary interview affect the understanding of the result of the innovation audit when the interview is based on the same statements used in the audit?*

**Design/method/approach:**
The study was conducted at two Swedish SMEs, Company A and Company B. The selection of companies was done by that they would be in different businesses, having their own production and located in Eskilstuna, Sweden. The companies would also be interested in developing an more innovative structure to the company. Another reason for studying companies located in Eskilstuna was to be nearby Mälardalen’s University for which the author belongs to.

Company A is one of the leaders in their niche of components in the car manufacturing industry and their customers are spread all over the world. Company B is an electronics consultant which develops and produces electronic components to be built in other products. The authors met the CEOs at both companies to explain how the survey would be managed. Audits and interviews were conducted with both management and personnel from different departments within the companies. The CEOs choose all personnel to participate in the survey and the authors had no impact of the selection, nor didn’t they know anyone in person before the survey. According to the method strategy, the authors were focusing at working areas and not on gender or age. The purpose with this method was to collect as broad information and knowledge as possible from the companies. At company A did 11 people out of a total staff of 65 participate and at Company B did 10 people out of a total staff of 38 participate, at both companies there were a mix of management and personnel according to innovation models which support the involvement of “the whole” company into the innovation process. By involving them in the survey the authors assumed to get a true picture of the current innovation state.

In order to identify a current state of innovation the authors chose to use a pre-developed audit. The audit is developed by Tidd and Bessant (Tidd and Bessant, 2009) and the audit headline is “How do we manage Innovation”. This audit was chosen because it is part of a comprehensive theoretical context developed by well-reputed scientists with long experience from academia as well as industry.

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The audit is based on five areas critical for successful innovation management, including Strategy, Processes, Organization, Linkages and Learning. It is a self-assessment audit that contains 40 statements, eight from each area, that describes "the way we do things here", e.g. We are good at learning from other organizations. In order to gain a deeper understanding of the audit results the authors choose to complement the audit with an additional interview. Interview questions was based on the audit statements but rewritten as questions from a "how" perspective e.g. How do you learn from other organizations?

Both audits and interviews were given in Swedish why the original audit were translated into Swedish. All respondents conducted the audit before doing the interview. Audits and interviews were sometimes conducted the same day but more often at different days, not more than one week between the audit and interview.

Audits and interviews were given at the companies. All respondents from company A took the audit at one occasion and all respondents from company B at another occasion. Instructions as well as definitions where written at each audit but also given verbally before handed out to respondents. Respondent answered the audit by scoring each statement with a number from 1 (not true at all) to 7 (very true) depending on how well they considered statements to describe “the way we do things around here”. An average time for one audit was about 20 minutes. The respondents sat in the same room but no discussions were allowed, if there was any problem in understanding the statements the respondent could ask the authors who were present the whole time. When the respondents had any questions the author made the same statement but in other words.

The interview questions were structured with open answers and conducted individually by each one of the respondents. The interviewer (one of the authors) read the questions loud and the respondent was free to speak without being interrupted or corrected. When respondents did not understand a question the interviewer gave a further explanation or rephrased the question without changing the overall meaning. The average time for conducting the interview where approximately 1 hour and 10 minutes. The interviewer typed the answers simultaneously as the respondent gave the answer and audio-recordings were also made.

In total 21 out of 103 possible respondents at both companies, answered 840 audit statements and 840 interview questions that where documented through written audits, audio recordings and written interviews notes.

Findings:
Interview answers were given on a spontaneous five-graded scale. Regardless of the content of the answer and interview area all interview answers could be suited into one of five subgroups at this scale. The scale ranged, at one extreme, from not being able to answer the question, to - at the other extreme, being able to give an answer that described not only how a certain behavior was conducted but also why it is conducted and in that way. All five subgroups of the scale were:

<table>
<thead>
<tr>
<th>not</th>
<th>if</th>
<th>what</th>
<th>how</th>
<th>why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not able to answer</td>
<td>Able to answer if done</td>
<td>Able to answer what is done</td>
<td>Able to answer how is done</td>
<td>Able to answer why done</td>
</tr>
</tbody>
</table>

Table 2 below shows the average audit score of all 40 statements for each of the respondents from both companies. Scores where given on a scale ranging from 1 (not true at all) to 7 (very true) depending on how well the respondents considered statements to describe “the way we do things around here”. The average audit score of company A is 3.9 leaving four respondents with under-average scores and four with over average scores - which gives a total score-span of 2.0 units. The average audit score of company B is 5.3 where four respondents had individual under-average scores and five over-average scores. The total score-span of company B where 1.8 units.

Table 2: Respondents average audit score

<table>
<thead>
<tr>
<th>Respondent</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>Co total average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co A</td>
<td>3.3</td>
<td>3.4</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.9</td>
<td>3.9</td>
<td>4.2</td>
<td>4.3</td>
<td>4.3</td>
<td>5.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Co B</td>
<td>4.2</td>
<td>4.4</td>
<td>5.2</td>
<td>5.2</td>
<td>5.3</td>
<td>5.4</td>
<td>5.6</td>
<td>5.7</td>
<td>5.9</td>
<td>6.0</td>
<td>-</td>
<td>5.3</td>
</tr>
</tbody>
</table>
Out of 840 audit-statements, e.g. *we work well in teams*, four statements were left unanswered. One respondent from company B choose to leave two statements blank, one from the linkages-area and one from the process-area, one respondent from company A left one organization-statement blank and a second respondent from company A choose to leave a blank answer at one of the organization-statements.

Out of 840 interview questions, e.g. *How do you work in teams?*, 103 where answered “I don't know”. According to the interview answers, the reason for not being able to answer the interview questions where mainly two;

1. The respondents did not know “how”, “what” or sometimes even “if” the organization worked with what was asked for e.g. working in teams. “I don't know”-answers where often motivated with “It is not my area”.

2. The respondent did not fully understand the meaning of the area asked for. E.g when asked “how do you work in teams” the respondent did not know what teams there were or did not understand what was meant by “teams”.

Table 3 lists the number of unanswered audit statement and interview questions and shows how these are distributed over audit/interview areas.

Table 3: Number of audit statements and interview questions not answered

<table>
<thead>
<tr>
<th>Areas</th>
<th>Co A Average audit score</th>
<th>Co A Blank audits</th>
<th>Co A “I don't know”-answers interview</th>
<th>Co B Average audit score</th>
<th>Co B Blank audits</th>
<th>Co B “I don't know”-answers interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>3.9</td>
<td>24 (of 88)</td>
<td>5.5</td>
<td>8 (of 80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processes</td>
<td>3.9</td>
<td>10 (of 88)</td>
<td>5.1</td>
<td>1 (of 80)</td>
<td>10 (of 80)</td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>4.1</td>
<td>1 (of 88)</td>
<td>5.4</td>
<td>5 (of 80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linkages</td>
<td>4.3</td>
<td>1 (of 88)</td>
<td>14 (of 88)</td>
<td>5.5</td>
<td>1 (of 80)</td>
<td>9 (of 80)</td>
</tr>
<tr>
<td>Learning</td>
<td>3.5</td>
<td>10 (of 88)</td>
<td>4.9</td>
<td>8 (of 80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All areas</td>
<td>3.9</td>
<td>2 (of 440)</td>
<td>63 (of 440)</td>
<td>5.3</td>
<td>2 (of 400)</td>
<td>40 (of 400)</td>
</tr>
</tbody>
</table>

Table 4 below lists the interview questions from each of the five interview/audit areas that received most “I don't know answers”. Seven out of ten statements connected to those questions (e.g. statement *we work well in teams* and the question *How do you work in teams?*) where scored higher in the audit than the average statement of the area. These are colored marked in the table below. The interview questions from each of the five interview/audit areas that received least “I don't know answers” is also listed in the table.

Table 4: Average audit score

<table>
<thead>
<tr>
<th>Area</th>
<th>Co</th>
<th>No. of question and statement</th>
<th>No. of “I don't know”-answers to the interview question</th>
<th>No. of audit estimations left blank</th>
<th>Question average</th>
<th>Area average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processes A</td>
<td>Processes no 22</td>
<td>5</td>
<td>0</td>
<td>4.2</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Processes no 37</td>
<td>0</td>
<td>0</td>
<td>5.7</td>
<td>3.9</td>
<td></td>
</tr>
</tbody>
</table>
Contribution:
The major contribution of the complementary interviews was that it offered additional reference points, which made it possible to refer different answers to each other and to interview answers. Thereby offer a more nuanced understanding of the results. Especially three kinds of reference points affected the understanding of the audit results; the spontaneous answering scale as shown in table 1; non-answers of both audit statements and interview questions (audit statements left blank and interview questions answered “I don’t know”); average audit score of statements interlinked with different interview questions or groups of interview questions.

How did the spontaneous answer scale (not, if, what, how and why) affect the understanding of the audit results? The spontaneous scale made it possible to refer individual answers to each other and thereby reveal differences in knowledge about the statement areas. This could indicate that results from the audit describe if respondents are working in a way that supports innovation rather than to what extent that behavior is implemented throughout the organization. E.g. one respondent who is able to score an audit statement without being able to describe how the statement is conducted (or even what), which could indicate that the respondent know what is done but is not part of that work.

How did the non-answers of the audit and interview affect the understanding of the audit results? The numbers of non-answers given at the interviews were more than 25 times the number of non-answers given at the audits.

The two main reasons for not being able to answer the interview questions seemed to be either lack of knowledge of the area asked for or not understanding the question asked. When respondents did not know

<table>
<thead>
<tr>
<th></th>
<th>Processes no 32</th>
<th>3</th>
<th>0</th>
<th>4.6</th>
<th>5.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Processes no 37</td>
<td>0</td>
<td>0</td>
<td>5.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Linkages</td>
<td>Linkages no 34</td>
<td>5</td>
<td>0</td>
<td>3.0</td>
<td>4.3</td>
</tr>
<tr>
<td>A</td>
<td>Linkages no 29</td>
<td>0</td>
<td>0</td>
<td>4.6</td>
<td>4.3</td>
</tr>
<tr>
<td>B</td>
<td>Linkages no 29</td>
<td>3</td>
<td>0</td>
<td>4.6</td>
<td>4.3</td>
</tr>
<tr>
<td>B</td>
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<tr>
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<tr>
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<tr>
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<td>Strategy no 1</td>
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<tr>
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<td>4.0</td>
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<tr>
<td>B</td>
<td>Strategy no 21</td>
<td>0</td>
<td>0</td>
<td>4.4</td>
<td>5.5</td>
</tr>
</tbody>
</table>
“how”, “what” or sometimes even “if” the organization worked with what was asked for e.g. working in teams. “I don’t know”-answers were often motivated with “It is not my area”. The difference between number of non-answers given at the audit and non-answers given at the interview because of lack of knowledge in question asked could also implicate that respondents know about what is asked for but is not part of that themselves.

The interviewers often felt that respondents were unable to answer the interview questions because they did not understand the question. Interview questions were based on the audit statements which means that if respondents did not fully understand what was asked for in the interview one should expect them to have problems with the statements as well. If true, that would indicate that respondents at several occasions estimated how well a statement matched “the way we do things around here” at the company without fully understanding what was actually estimated.

How did audit scores of statements that are interlinked with different interview questions or groups of interview questions affect the understanding of the audit results? The most surprising finding was when referring average audit scores to interview questions with the most “I don’t know” answers. It showed that 7 out of 10 of the audit statements interlinked with the interview questions with most “I don’t know answers” (of each area) were given a higher audit score than the average score of that audit area (e.g. linkages-area). This could indicate that the respondents did not fully understand what they where estimating because the statement was given a high average score in the audit (e.g. considered to give a good description of “the way we do things around her”) but a large proportion of the respondents were unable to describe “how”.

Overall interviews offered additional references, that were not absolute, but still provided a possibility to refer individual answers or groups of answers to each other and helped to reveal nuances that could not be read out of the audit on its own.

**Practical implications:**
According to this survey, based on the research question, the authors have pointed out several findings that might have an affect in understanding the results of an additional interview to an innovation audit. Research show that the results from audits are more suitable to support internal discussions than external benchmarking (Hallgren, 2009) (Tidd and Bessant, 2009) which should be taken into account when practical implications are to be discussed. This kind of interview-supported-audit-method might be a tool that increases the usability of audits as benchmarking tools, which the authors would be interesting to follow through future research.

As a result of this survey, the authors find the complementing interviews useful for; Existing innovation audits in order to detect differences in how a respondent is able to answer from a given statement and an open question regarding the same area; A simple add-on to established innovation audits the method showed in this paper offers a extended frame of reference; As a frame of reference that could increase the usability of existing audits in respect of an organization's internal innovation analysis as well as its reliability in scientific and academic context; Extended comparability that increases the reliability of data analyses by e.g lessen the subjectivity when data is collected by two or more interviewers and/or when using of a common frame of reference when interpreting individual answers.

The main implications and usefulness for academia is the possibilities to conduct more detailed analyzing in accordance to the collected data. The interviews allow increased analyzing in terms of internally comparability between e.g. individuals, groups of individuals, departments and positions. Further on, different measurement occasions, does not only show development of areas measured but also development in individual’s awareness of innovation, which might reveal innovation-gaps and innovation-imbalances. Which also, even further on, can be used externally when comparing innovation awareness between different companies.

Practical implications for practitioners could be that internal as well as external points of reference would extend the usability and positive effects of self conducted audits for organizations that choose to use such. Points of reference ease the complexity of the analyze-phase and make it easier to evaluate collected data. Something that could be especially important when someone from outside the profession of innovation is auditing their own business. Strength of the method is that it is easy to use and that it provides additional points of reference independently of what audit attached to. This makes it possible to use any established audit suitable for the company. A more accurate picture of current state of innovation increases practitioner’s ability to locate resources to strengthen their innovation capability in a better way by revealing potential innovation-gaps and innovation-imbalances. As an external point of reference it could be used as a fix point against which one or more results could be related to set light on how one or more results is related to the fix point. Could be used for in-house comparisons as well as for comparisons with results from other organizations.
References and Notes


Abstract: This paper aims to achieve a deeper understanding of innovation-gaps, found in a previous study according to innovation-audits made by the authors to this paper. Negative innovation-gap is of interest as they might affect innovation-performance within companies and further on Total innovation management (TIM). TIM is a holistic view of innovation, involving a broad representation of employees and functions for which the innovation-gaps could be crucial. This study was made at two Swedish industrial SMEs, 1170 written questions asked to 18 employees, 12 workshops held with two company-specific-groups and one company-mixed-group with senior management. The major findings were “organisational related innovation-gaps”, “individual related innovation-gaps” and several subgroups to both of them, e.g. conflicting incentives and time-related-gaps. The conclusion is to not try to categorise the gaps, but to be aware of them when practicing innovation management, as gaps, when become too big, seems to affect innovation-performance in a negative way.

Keywords: innovation workshop; SME; innovation-gap, innovation management; innovation-gap analysis.
1 Problem

Firms that are innovative are proved to be more successful than non-innovative ones and outperform the non-innovative ones both in terms of growth and financial performance. Facts that have come force SMEs to be repeatedly innovative to maintain their competitive edge in an increasingly globalized and competitive market.

Experience as well as earlier research show that managers in industrial SMEs often approaches innovation in an unholistic way. Innovation is often managed as a traditional product development process concentrating innovation efforts to a few areas and involving only few of the employees, which fragments the innovativeness of the organisation. The lack of an total innovation management (TIM) approach lessens positive effects of innovation and thereby decreases companies competitiveness, revenue and ability to grow (Xu et al, 2006).

A previous study of Karlsson and Johnsson revealed large internal innovation related differences between e.g. individuals as well as positions. Those innovation-gaps complicated innovation management and seemed to have a negative effect on innovation performance (Karlsson and Johnsson, 2010). Why this paper is aiming to contribute by achieving a deeper understanding of innovation-gaps with a negative impact on innovation in the context of management and employees at SME:s.

2 Current understanding

For an organization to be deliberate and repeatedly innovative a conscious innovation management is required (Dobni, 2006) (Tidd and Bessant, 2009) and current research focus on Total Innovation Management (TIM) defined as “innovation by anyone at any time in all processes, among different functions and around the world” (Xu et al, 2006). Resent research stresses the importance of making every employee an active part of the innovation process striving to get employees contributing to innovation by free will (Xu et al, 2006) (Pearson, 2002) (Hallgren, 2009) (Dobni, 2006) and points out the positive and critical effects of a broad representation of functions (Kelly, 2005)

Developing a TIM-oriented organization within a SME includes a change in mind-set within both management and employees towards a more holistic view of innovation, involving a broad representation of employees (Xu et al, 2006). As TIM is about implementing innovation into an organization in a broad perspective it might lead to change-resistance, well documented in various contexts, often focusing on innovative organizations and corporate entrepreneurship (Hayton, 2003) (Hayton and Kelly, 2006) (Ribeiro-Soriano and Urbano, 2010) (Un, 2010), which is important for the innovation management to address in the learning process which is most effective when practicing “storytelling of successful behaviour” combined with “learning by doing” (Pfeffer, 2000) (Von Hippel and Tyre, 1995) Successfully creation of an innovative organization requires fully support and resources to manage innovation (Tidd and Bessant, 2009) (Hallgren, 2009) (Dobni, 2006) and is created by managers who understands the complexity of individuals and organisations (Backström and Olson, 2010).

Previous research show a distinctive innovation-gap (gap) between managers and employees, functions and individuals. The gaps indicate differences in e.g. innovation-knowledge, -awareness, -maturity which is central factors in an innovative organization. Innovation-gaps might affect implementation of innovation within organisations as they hinder individual's understanding of purpose and importance of every employees participation. Innovation-gaps also seem to hinder innovation-communication and understanding of innovation related activities. (Karlsson and Johnsson, 2010). A creative organization, according to Backström, is a balance of individuals autonomy and integration, too much integration, compared to autonomy, makes it difficult for
individuals to develop their work. On the other side, too much autonomy decreases individuals possibilities to contribute to the whole organization (Backström and Olsson, 2010).

3 Research question
A previous study of Karlsson and Johnsson revealed large internal innovation related differences between e.g. individuals and positions. Those innovation-gaps complicated innovation management and seemed to have a negative effect on innovation performance (Karlsson and Johnsson, 2010). Purpose of this paper is to identify what innovation-gaps can be identified to gain a deeper understanding about those.

Research Question: What negative innovation-related gaps can be identified in the SMEs participating in the study.

4 Design/method/approach
This paper is based on a case study (study) in the beginning of a research project supporting and studying innovation management in Swedish SMEs. The study is the second in a series of three studies. After all the three studies in the series is completed all three studies is planned to be repeated a second time with different companies. The first study in the series is a interview supported audit conducted in order to gain a better understanding of the current state of innovation in the participating companies. Large internal innovation-related gaps were revealed between e.g. individuals and positions were revealed in that study. This second study was designed to achieve a deeper understanding of existing innovation-gaps. This study focused only on gaps with a negative impact on innovation. The third study will further research innovation management in SMEs.

The case study was conducted at two Swedish industrial SMEs, Company-A and Company-B. Both companies participated in the first study as well. Selection criteria when choosing companies for the study were that they should be in different business located in Eskilstuna, Sweden, having their own production, wanting to develop an more innovative structure in the company and also accepting to share their experience to the other participating company in the study. Company A is one of the world leaders in their niche of components in the car manufacturing industry with global customers. Company B is an electronics design- and consultant company that develops and produces electronic components be built in other products or electronic systems. They are one of the leading companies at their market in Mälardalen (Stockholm and nearby cities). At company A did 10 out of 65 employees participate and at Company B did 8 out of 38 employees participate.

The study was based on a workshop series in four steps following the four phases of the innovation process model designed by Tidd and Bessant (Tidd and Bessant, 2009). The innovation process consists four major block, named “Search”, “Select”, “Implement” and “Capture” which also were the main topic for each workshop. The model has been used in both the first and the second study. The model was chosen partly because it is part of a comprehensive theoretical context developed by well-reputed scientists with long experience from academia as well as industry. Partly it was chosen because of its communicability. The simplicity and linearity of the model makes it easier for people who are unaccustomed to work with innovation to embrace the concept of innovation and simplifies the conceptual understanding of innovation (Van de Ven et al, 1999).

The participants of the workshop series were the same persons who had earlier participated in the previous survey based on a interview supported audit (Karlsson and Johnsson, 2010). The Participants represented both management and personnel from different departments within the companies. The CEOs where to choose all participating personnel without any other influence from the authors than the request to get such a broad representation of departments/working areas and functions as possible.
Two company-specific Innovation-steering groups (IS-groups) and a one group of senior management from both companies were formed, based on research of Hallgren (Hallgren, 2009). Group-M consisted senior management from both companies. IS-group-A from Company-A and IS-group-B from Company-B consisted a mix of middle management and employees representing a broad representation of departments from the company, but no senior management.

Each workshop step were first held with Group-M, and then held with each of the IS-groups, one at a time. Each workshop step where held with all three groups within one week. The program at each workshop followed the structure starting with a short introduction to the topic, but no explanations or discussions were held at the introduction. Next phase of the workshop were dedicated to conversations between the researchers and the participants, the topics were planned in advanced, focusing on reflections from the earlier study (Karlsson and Johnsson, 2010), lecturing and examples of best practise formed into questions to be answered and discussed. The researcher acted as facilitators keeping the participants to the subjects. Each workshop were held approximately every fifth week and lasted for, in average, 2 hours.

Data from the workshops was collected through the written questionnaires, notes, audio-recordings and observations. Relevant data from the survey have been translated from Swedish to English. In total 18 out of 103 possible respondents at both companies, answered 20 questions each at 4 different workshops. All respondents were not participating at all four workshop steps depending on working situations, therefore, the number of answers was in total 1170.

Written questionnaires were given to the participants to answer directly after the introduction at every workshop. The questions were open and based on the topic for the workshop. Focus on the questionnaire were at both strategic and operational level, e.g. (Search workshop) “Who is encouraged/encourages you to search for innovation opportunities?” or (Implement workshop) “How do you cooperate with suppliers when developing new products or services?” Each questionnaire contained a total of 20 questions and required an average of about 30min to answer.

In order to achieve a deeper understanding of the innovations gaps questionnaires were analyzed in two ways. One part was to analyze the questionnaires according to a three-grade scale; “Blank answer”, “Short answer” and “Describing answer”. At this part of the analysis less attention was paid on what information the answers consisted but if and how the participants were answering to discover how the participants were contributing, sharing and engaged in answering the questionnaires. Questionnaires were also analyzed with respect to the content of the written answers.

The audio-recordings were analyzed by listening to them several times, by both authors one by one and together followed by discussions, quoting - and notes-writing, comparing data from managers as well as employees in order to discover divergences. Focus when listening to the audio-recordings were; Discussion content, How the participants were engaged and contributing; How the participants treated each other; How the participants involved others into discussions; How the participants related to innovation and their knowledge about the innovation process.

5 Findings

Findings from this study are shown in the following order; audio recordings, questionnaires and a comparison between the groups.

The audio recordings were analyzed and put into a table describing an identified gap and how they seem to affect the organisation. The table are supported with selected quotations to stress the connection between different data sources. Participants are treated anonymous when quoted from the audio recordings. Different individuals are separated according to Table 1.

Table 1: Participants on recordings
<table>
<thead>
<tr>
<th>Researchers</th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1: Researcher 1</td>
<td>Ap1: participant 1</td>
<td>Bp1: participant 1</td>
</tr>
<tr>
<td>Ap4: participant 4</td>
<td>Bp4: participant 4</td>
<td></td>
</tr>
<tr>
<td>Ap5: participant 5</td>
<td>Bp5: participant 5</td>
<td></td>
</tr>
<tr>
<td>Ap6: participant 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ap7: participant 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Summary of representative findings of organisational gaps, showing characteristics, gaps and possible cause.

<table>
<thead>
<tr>
<th>Organizational gap</th>
<th>Characteristics</th>
<th>Possible cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time related</td>
<td>Differences between long-term ambition and real innovation activities.</td>
<td>Difficulties in making assessments for long-term, often more radical innovation investment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short Return of Investment-horizon.</td>
</tr>
<tr>
<td>Innovation uniqueness</td>
<td>Differences in ambition for innovation mix and actual innovation activities.</td>
<td>Demands for high billing rate creates priority for customer-initiated projects.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Difficulties in making assessments for long-term, often more radical innovation investment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short Return of Investment-horizon.</td>
</tr>
<tr>
<td>Innovation-area</td>
<td>Differences in ambition to innovate outside the current core area of innovation and actual innovation activities.</td>
<td>Difficulties in assessing risks outside current core area of innovation.</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uncertainty about how the process works outside the current core innovation-area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low awareness of innovative opportunities outside the current core area of innovation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Innovation projects often initiated by established customers.</td>
</tr>
<tr>
<td>Function related</td>
<td>Management and employees perceive the same innovation situation differently.</td>
<td>Unclear and inconsistent innovation communications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inadequate follow-up from both management and employees.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conflicting incentives</td>
</tr>
<tr>
<td></td>
<td>Different degree of participation in innovation activities between various positions.</td>
<td>Different incentives directed to different positions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positions in varying degree associated with innovation performance by tradition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low awareness of innovative opportunities outside traditional innovation-areas.</td>
</tr>
</tbody>
</table>
Quotings – Time related
R1: Innovation strategies. Develop innovation model. What problems would you meet, you think?
Bp3: The free mind-set might be a problem, everything is time controlled. Our CEO is very time-oriented. That is, time is very important to him. We register and fixes. God bless you if you forget to put the time right. Really important to put in the time, not so important what you actually do as long as you are here (at construction dep). No work on own responsibility.

Quotings – Innovation uniqueness, Area of innovation
Bp1: “The problem for us” is that we seldom have new a product to present. We offer the same product all the time. We have a concept, which we try to sell every time. We have very few physical products. We do everything as client assignments. We are not present when the customer decides what to be developed.

Quotings – Function related
R1: I wonder if you. Where could you search for opportunities for what you don’t produce today to consciously widen the search for innovation?
Ap6: (Answers) Bring the whole company and spread all over the city, at the gas-stations, garages and Real Estates companies.
Ap2: (Interrupting) We do that all the time.
Ap6: (Continuing) Walk around the Real estates. Is it possible to connect engine-heater? What is the environment like? It might be impossible? How widespread is the problem? Is that the problem? It might be a problem for customers living in apartments or being at work?
Ap2: (Replying) I believe we have this covered.
Ap6: (Continuing) How large percent of the citizens has the opportunity...
Ap3: (Interrupting) Might be so, but how are the conditions tomorrow? Ap2: We’re looking at the accessibility for customers to reach the electricity grid. Cause we do electrical heaters, nothing else which keep you looking at the infra structure and the trends of it. What is next in the heavy truck-business? Will it be prohibited to run engines idling on parking lots in Germany? Will there be prohibited to use fuel heaters? Will there be a paying system to swipe your plastic card to get electricity? When ill al that happen?
Ap3: That’s what I mend. How will it be...
Ap2: (Interrupting Ap3) How is the situation in Russia? Is it legal to have electricity outside their houses? Are most citizens living in apartments and do they have access to electricity. Are the electricity provided to the houses? Our products might not be introduced there yet.
R2: Do you know all this?! You know all this!
Ap2: I have pretty much knowledge about this.
R2: Have you spread this to all the employees within Company A?
Ap1: Weeell. We discuss this sometimes.

Quotings – Conflicting incentives
R1: The idea an important resource. We assume that there is one here. In a practical way. Would it be possible for you to be involved in a group who develops the idea together? Or is an external rescore needed to get thing going? Is the company mature enough to work with innovations?
Bp2: We are two people and need to be four, and we will not be four. And of course we want a group to work with this.
Bp4: There is so much to do, there is not enough time anyway. To think outside the box doesn’t exist.
Bp2: No, there is no way.
Bp4: This kind of meetings are a stress factor.

Table 3: Summary of representative findings of Individual gaps, showing characteristics, gaps and possible cause.
### Individual gap

<table>
<thead>
<tr>
<th>Gap</th>
<th>Characteristics</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Individual differences in the definition of what innovation means.</td>
<td>No company definition of innovation.</td>
</tr>
<tr>
<td>Maturity</td>
<td>Differences in individual innovation-maturity and understanding other innovation process.</td>
<td>Individual differences in experience of innovation activities. The company has no clear innovation culture.</td>
</tr>
<tr>
<td>Experience</td>
<td>Differences in individual understanding how to run innovation projects.</td>
<td>Individual differences in experience of innovation activities.</td>
</tr>
</tbody>
</table>

#### Quotings – Innovation Definition, Maturity and Experience

Ap5: I’m not used to think like this.
Ap1: Exactly, that’s the problem you know. It’s only Ap2 who is used to this.
R2: I’m saying it again. It really doesn’t matter. It’s very important that you describe it.
Ap5: But we don’t work with this...
It’s hard even if you feel that you don’t know.
Ap7: What did she say, the fragile one?
Ap4: I’m completely empty. I...
Ap5: I must ask something. This about “implement”. What did it mean again?
R2: Well, It’s the about the whole phase. You have chosen project. Now you have started, prototypes perhaps. Until you launch on the market.
Ap4: It stands perfectly still in my head. No, but this, today I am not part of the game. Not at all.
R2: It might be easier questions on page 4?
Ap4: I have already gone through all the pages (laughter). No. No. I leave it out here. No, this is not my thing. (yawn)

#### Table 4: Summary of questionnaire answers

<table>
<thead>
<tr>
<th>Group</th>
<th>Answer</th>
<th>WS1, Search</th>
<th>WS2, Select</th>
<th>WS3, Implement</th>
<th>WS4, Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% (n=40)</td>
<td>% (n=40)</td>
<td>% (n=40)</td>
<td>% (n=20)</td>
</tr>
<tr>
<td>MA</td>
<td>Blank</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Short</td>
<td>88</td>
<td>63</td>
<td>40</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Descriptive</td>
<td>3</td>
<td>18</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>% (n=120)</td>
<td>% (n=108)</td>
<td>% (n=140)</td>
<td>% (n=144)</td>
</tr>
<tr>
<td>A</td>
<td>Blank</td>
<td>22</td>
<td>27</td>
<td>40</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Short</td>
<td>69</td>
<td>58</td>
<td>43</td>
<td>31</td>
</tr>
</tbody>
</table>
Significant findings for IS-group-A is that the number of “Blanc answer” increases for every workshop and the “Short answers” decreases for every workshop. All groups have most “Blanc Answers” in the second (Select) workshop, except for IS-group-A who has most “Blanc answers” in the last (Capture) one. All groups have most “Short Answers” in the first (Search) workshop, except for Manager Company A who has most “Short answers” in the last (Capture) one. Both Managers and employees at Company B tend to answer quite the same. In company A, managers and employees have a significant differ in their answers, especially in the third (implement) and forth (Capture) workshop.

Group-M was in overall engaged in the workshops ensuring the importance of implementing innovation but more focused on innovation-tools and structure than implementing an innovation mind-set. Innovation was often associated with technical product-development. Management from both companies were open-minded and sharing experience with each other. Management from Company A was describing their organization as difficult to lead as the senior management had been frequently changed almost every second year, which has affected the employees at Company A to be sceptical to senior management. Management from Company B was very confident in “knowing” what innovation was and how to incorporate innovation into their company, only missing some complementary innovation-tools to their LEAN-focused organization, as everyone was told to look for opportunities for innovation.

IS-group-A was both engaged but at the same time negative to the workshop series. Resistance took action by being rude to each other and the researchers. They were also ignorant, silent, criticizing workshops for being time-consuming, not answering questionnaires, arguing for not participating because “they didn't work with R&D”. Over time the resistance diminished radically, innovation-gaps decreased and the participants became engaged, enthusiastic, supportive, contributing and understanding their role in a more innovative organization in the future.

IS-group-B was at all time positive to innovation as well as to the workshops but so unwilling to do “wrong” that it hindered them in answering the questionnaires and participating in discussions. The participants were very focused on time reporting and pointed out low billability as a stress-factor in the early stages of innovation. At the last (capture) workshop the participants started to open up for more open thinking, suggesting new possible projects to start by their own.
6 Contribution

The major contribution of the this study was a deeper understanding of innovation gaps within the participating SME:s. Common to those gaps found is that they fragment the company's innovation structure and thus impedes innovation management.

According to what seems to be the characteristics of those gaps found, the authors have choose to divide these into two major groups of innovation related gaps; Organisational related innovation-gaps (organisational gaps) and Individual related innovation-gaps (individual gaps).

Organisational innovation-gaps is characterised by differences caused by organisational related reasons. As differences between individuals caused by the positions they hold, organisational innovation structure, innovation management or differences in organisational aims and actual actions.

Individual related innovation-gaps is characterised by differences between individuals independent of what positions these individuals holds, organisational innovation structure and innovation management even though those gaps probably could be bridged if those lacks of organisational factors were strengthen.

It was possible to identify a large number of subgroups of innovation gaps belonging to these two main groups. Several of the gaps lacked an unequivocal distinction to other gaps and in a number of cases gaps where gaps were overlapping each other.

The amount of different gaps identified and the problem of clearly distinguishing them from each other makes it unlikely that it will be possible to identify a larger number of specific gaps with a general explanatory value. Despite the lack of generalizability of identified gaps, the authors consider innovation-gap analysis to have a major innovation-management value.

Innovation management research have over the years moved its focus from isolated activities and individuals (e.g. R&D departments and entrepreneurs) to show that a more holistic and balanced approach is the most advantageous when developing an innovative organization. Based on that authors' opinion is that a gap analysis could be an effective way for total innovation oriented managers to maintain a holistic focus on balanced innovation.

To sum up the authors' opinion is that continuous gap-analysis could be used to set a holistic focus on innovation. Focus for such gap-analysis is suggested to be set on factors with a critical impact on innovation performance. When doing so attention is suggested to be set on the width of gaps considered to be of critical importance for innovation performance. Analysis of gap-width should be addressed both with respect to current gap-width and critical width were gap-width generates negative effects on innovation-performance to determine when a gap is worth reducing.

7 Practical implications:

The practical implication of this survey is that a lot of innovation-gaps can be identified and that they seems to have a potential negative impact on innovation performance by fragmenting the innovativeness of an organisation.

Different gaps identified in the survey were often overlapping and hard to distinguish from each other. Why results implicate that manager with a total innovation perspective rather should use gap-
analysis as an integrated, on-going part of continuous innovation management than trying to identifying predefined gaps.

The authors' opinion is that a company specific and continuous gap-analysis could be an effective way for total innovation oriented managers to maintain a holistic focus on balanced innovation. Focus for such gap-analysis is suggested to be set on factors with a critical impact on innovation performance. Doing so, managers are suggested to pay attention to the width of gaps considered to be of critical importance for innovation performance. Analysis of gap-width should be addressed both with respect to current gap-width and critical width were gap-width leads to negative effects on innovation-performance and thereby be able to determine when these should be reduced.

References and Notes
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**Untapped Innovation Capacity within Ordinary Employees Work-activities**

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**Abstract:** This case study shows the existence of potential untapped innovation capacity within employees’ ordinary work. Purpose of identifying untapped innovation capacity is to involve a broader participation of employees into innovation-work in order to increase innovation-efficiency in companies. The case study was conducted at one Swedish SME where four participating employees were interviewed and observed when doing their ordinary work. Communication via i.e. e-mails, conversations and phone-calls were identified in 32% of the 267 documented work-activities and is suitable as work-activities when searching for i.e. innovative opportunities, suppliers etcetera according to innovation models, which could contribute to innovation and done by anyone at any department. Future research is suggested to develop and test if communication-based work-activities where innovation-cognition could be added to employees when communicating in their ordinary work with purpose to contribute to an overall innovation-work. The benefits would be that more employees easily could contribute to innovation work by being aware of innovation-issues while communication as usual in their ordinary work.

**Keywords:** SME; untapped innovation capacity; innovation; cognition; total innovation management, bias, employee involvement; ordinary work; multi-functional
1. Problem

How to release untapped innovation capacities within SMEs is of interest as research and experience show ineffective use of internal resources when it comes to innovation-work. Effective use and exploitation of innovative resources in SMEs is increasingly important in a global economy where innovative companies are proved to be more successful (Pattersson, 2009), (Tidd and Bessant, 2009), (Dobni, 2006). SMEs does i.e. represent 99.8% of all companies in Europe, providing employment for over 88 billion people. Sweden is no exception where SMEs represents 99.9% of all companies (http://www.svensknaringsliv.se, 2011).

For instance in Swedish SMEs, ordinary employees from other than traditional innovation departments i.e. R&D- or development-departments is left out of innovation-work, which is the basis to handle when releasing untapped innovation capacity within a SME. Ordinary employees, represents employees not used to be involved in innovation work, are proved to be an important recourse in the innovation processes (Kesting and Ulhöj, 2010). Even though ordinary employees are proved to be a multifunctional resource when developing organizations, to achieve greater results, become more innovative and contribute to innovation (Hallgren, 2009), (Xu et al, 2006), (Pfeffer, 2000), (Vanderberg et al, 1999) ordinary employees seldom participate in innovation-work. Reasons for low participation in innovation-work of ordinary employees is i.e. that they perceive lack of time, resources, knowledge or managing to be able to contribute to innovation-work (Johnsson and Karlsson, 2011), (Kesting and Ulhöj, 2010) and lack of communication between management and employees (Johnsson and Karlsson, 2011).

The hypothesis is that ordinary employees established-ordinary-work-activities or day-to-day-work (work-activities) contains potentially innovative but untapped elements that could contribute to innovation-work if observed (untapped innovation capacity) and managed.

Peoples’ minds are, even if most people don’t think so, driven by the subconscious and actions tend to follow established behaviors connected to the individual and current context (Maturana och Varela, 1987).

One could expect that, if a broad representation of employees’ mind were biased from innovation-cognition, untapped innovation capacity would be released and increase innovation effectiveness. To identify untapped innovation capacity there is a need of developing managerial methodologies consisting innovation-cognition for which this paper will contribute, helping managers and ordinary employees to identify and benefit from work-activities that contains potential untapped innovation capacity.

The aim for this paper is to achieve a deeper understanding about work-activities that contains potential untapped innovation capacity in the participating SME. The Purpose is to study if there are identifiable possible work-activities suitable for a future development and test of a managerial innovation-cognition based methodology.

2. Current Understanding

Research show that a multifunctional participation from employees are beneficial for innovation-work (Hallgren, 2009), (Xu et al, 2006), (Dobni, 2006) and organizational development (O’Reilly and Pfeffer, 2000) but SMEs tends to limit participation in innovation to employees at R&D- and development-departments. One reason is conflicting incentives showed in i.e. lack of communication between management and employees and expectations of whom to contribute to innovation (Johnsson and Karlsson, 2011) which is an in-effective way that decreases the use of resources (O’Reilly and Pfeffer, 2000) and effects of innovation-work (Hallgren, 2009), (Xu et al, 2006). As people most often are biased from pre-knowledge and traditions they tries to conserve and strive to preserve what is already established (Aronson, 1999), and when involving ordinary employees into innovation-work who are not used to it, one can expect change-resistance (Johnsson and Karlsson, 2011). Another reason for low involvement of ordinary employees in innovation-work is the lack of individual’s understanding of the process of innovation (Kesting and Ulhöj, 2010).

When leading innovation one critical part is to set a working environment where the employees are motivated and have self-confident, which focus the need of leadership where the leader is i.e. participating, supporting and letting employees make own decisions (Byrne et al, 2009), striving to get employees to freely contribute to innovation (Xu et al, 2006), (Pearson, 2002), (Hallgren, 2009), (Dobni, 2006) and points out the positive and critical effects of a broad representation of functions (Kelly, 2005). Innovation-work differs from ordinary work-activities in that way that innovation-work has the purpose of contributing to something new. Innovation models are well described in several schematic models during the last decades (Tidd and Bessant, 2009), (Johnsson, 2009), (Michanek and Breiler, 2004), (Baxter, 2002), (Ottosson, 1999), (Andersson, 1996) and further on described for practitioners in literature (Utterback et al., 2006), (Johansson, 2005), (Adair, 2004), (King and Anderson, 2002), (Kelly, 2001) but not handling the opportunity of releasing untapped innovation capacity from ordinary employees’ work-activities.
Recent research argues for including cognition into innovation-work (Mumford, 2009), (Spena and Colurcio, 2010) where cognition have i.e. been successfully tested for contributing to creative problem solving (Mumford and Connely, 1994), and as stimuli for brainstorming groups to perform better (Dew and Hearn, 2009). Research show that cognition is recommended to be included into innovation-work (Mumford, 2009), (Spena and Colurcio, 2010) and argued to be managed by developing managerial innovation methodologies (Manral, 2011) handling the complexity of innovation, based on innovation cognition (Mumford, 2009) but it also stresses the need of expertise (Mumford and Hunter, 2005) as the leadership is an unusually complex activity (Mumford and Licuanan, 2004).

3. Research question
In order to achieve a deeper understanding of potential untapped innovation capacities the research question for this case study is; What work-activities within the participating SME include potential untapped innovation capacity?

4. Design/method/approach
This survey was made as a case study, which is suitable when observing settings in real-time (Blessing and Chakrabarti, 2009), ordinary employees have been observed while doing their ordinary work. The aim of this case study was to identify, if possible, work-activities containing potential untapped innovation capacities. Data were collected from four participating employees in two phases at one Swedish SME, starting with an interview as an introduction to the participate’s work and followed by an observation of the participant in real-time. All data were collected from one participant at time. The SME is an electronics design- and consultant company that develops and produces electronic components to be built in other products or electronic systems. They are one of the leading companies at their market in Mälardalen (Stockholm and nearby cities). The four participating respondents at the SME have innovation-pre-knowledge from two previous case studies, where interview-supported innovation audits showed to be a reasonable complement to traditionally self-estimating-based audits (Karlsson and Johnsson, 2010) and that innovation-gaps cause negative innovation performance when growing to large (Johnsson and Karlsson, 2011).

The four participants in this case study, three men and one woman, represents a multi-functional group consisting R&D-, Technical-, Purchase- and Production-departments which would give a multi-perspective when identifying potential untapped innovation capacity. In the first phase within this case study, a semi-structured interview based on an interview guide containing 54 innovation-related questions about the participant’s work-activities with focus from every individual participant’s work-perspective was conducted. The participants were informed one week ahead about how to prepare for the interview concerning how they work and how they relate to other departments and the forthcoming observation. The purpose of the interview was to achieve a deeper understanding of the participant’s work and how they perceive their work to relate to other departments and on-going innovation-work, but also to let the participant reflect over their work before the second phase was conducted. The participants could speak freely and for as long as they wanted. Answers were followed up by sub-questions with purpose to achieve a dialog were the participant felt secure in the interview-situation, but also to secure that questions were fully answered. In average the interviews lasted for about 1 hour and 45 minutes where data were collected through notes and audio-recordings.

Selected questions from the conducted interview (Answers in table 1):
1. How do you describe innovation in your own words?
2. How would you describe what innovative-work is?
3. How do you contribute to innovation?
4. What other departments do you work together with when doing your work?

In the second phase the respondents work-activities was observed for two hours while notes were taken and video-recordings were taken from two separate video-cameras. The participants received instructions to work as normal as possible under present circumstances and to speak loud while working during the whole session in order to collect more data to the video-recordings. The Purpose with the observations was to collect data to be analyzed in order to identify potential untapped innovation-capacity within the participants’ ordinary work-activities (table 2). By doing observations in person there was also an opportunity to “feel” the environment and experience how work was done. Data during the two-hour observation was collected through notes where every observed action and time was documented and video-recorded. At the end of the observation the participants were asked two questions (Answers in table 3):
1. Have this been an ordinary day at work?
2. Do you feel that you have worked with innovation today?
Reflections from the conducted observation were made immediately after each observation and video-recordings were downloaded to an external hard-drive and stored at the company. A qualitative analysis of collected data was made within this case study according to the innovation model authored by Tidd and Bessant (Tidd and Bessant, 2009) focusing on the areas search-, select-, implement-, and creating values- of innovative opportunities. Focus when analyzing data was to identify, if possible, work-activities containing potential untapped innovation capacity. Criteria when analyzing the data was to look for work-activities suitable for a future development of managerial innovation methodologies which would:

- Handle the complexity of innovation.
- Be able to influence with innovation cognition
- Adaptable for ordinary employees at the company.

The data was analyzed in three steps. (1) Analyzing the interview and observation separately and then (2) compare in order to identify work-activities matching criteria for the case study and finally (3) categorize identified work-activities. (1) The interviews were analyzed in order to identify how the participants perceive i.e. what innovation is, what innovative work is, how they contribute to innovation and how the departments relate to each other. The audio-recordings from the interviews were analyzed by listening to them several times followed by quoting - and notes-writing, comparing data from the participants in order to discover similarities and divergences. Quoting from selected interview-questions are put into a table to stress similarities and divergences. Participants are treated anonymous when quoted from the audio recordings.

The observations were analyzed by carefully understanding the content of the notes, highlighting keywords matching the innovation model and analyze-criteria. At this part of the analysis less attention was paid on what the work-activities consisted but how the participants were taking action during the work-activities. There was no difference in private- or job-related activities or the outcome of the activities during this analyze.

(2) When analyzing the different participants and criteria to each other potential untapped innovation capacity were found to be within the term of communication, which matches all set criteria. (3) The communication was grouped in two directions according to the participants work-activities: information-input and information-output, where information-input is when the participant get some kind of information and information-output is when the participant share information on own initiative with someone else. Both information-input and information-output were divided in internal- and external-communication. The difference between Internal- and external- communication is that internal communication was between colleagues within the company and external communication was communication with people from other companies or private persons.

5. Findings

The data, which is treated anonymous at all times, from this case study are shown in the following order; Table 1 show quoting from interviews; Table 2 and table 3 show selected notes from observations; Table 4 show a summary of identified work-activities containing communication-based potential untapped innovation capacity.

The following quoting in table 1 are selected to stress the complexly of innovation, showing similarities and divergences in mind-set concerning issues important to handle when involving ordinary employees into innovation-work.

Table 1: Selected quoting from interviews in phase 1.

<table>
<thead>
<tr>
<th>How do you describe innovation in your own words?</th>
<th>Quoting:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical-department:</td>
<td>Well, I don’t really know. You’re so biased by how it should be described. Maybe not invention, but it’s in that direction. It’s a higher level than ordinary construction-work. It’s when you get a good idea, I think anyway. When you get time for reflection it generates the smartest solutions, I think that’s innovation in some way.</td>
</tr>
<tr>
<td>Purchase-department:</td>
<td>Maybe it’s when work is not so controlled. Perhaps more free time for own interpretations and ideas. There is a lack of time for doing that. I think that if you want innovation you have to set aside time for creativity. There is too much focus solving problems that come up.</td>
</tr>
<tr>
<td>Production-department:</td>
<td>I think it’s inventions if I should describe it in short words, but it hasn’t need not be a new thing. It can also be a new approach and what’s included in the job. Also to do things in a new way, perhaps more effectively when it comes into production. Invent new solutions.</td>
</tr>
<tr>
<td>R&amp;D-department</td>
<td>Some kind of development or improvement, you can mix different technologies to produce an innovation. You take some experience from different areas to solve a problem in a slightly different way. Innovation is when it differs from the standard solution in general. It</td>
</tr>
</tbody>
</table>
depends on what dimension it must be, one can of course do improved features on circuit boards and things like that but one can hardly call that innovation.

<table>
<thead>
<tr>
<th>How do you describe innovative work?</th>
<th>Technical-department</th>
<th>Purchase-department</th>
<th>Production-department</th>
<th>R&amp;D-department</th>
</tr>
</thead>
<tbody>
<tr>
<td>You should not be booked to 110% with everyday’s tasks. I like the highs and lows but workload cannot be on top all the time and not lows all the time either. One must be able to pause and think sometimes, or reflect rather than think. But you have to have permission to reflect, there must be time for reflection in the projects. If you have fixed-price-projects and reaches 90% and get a great idea there will be difficult to sell the idea to start from scratch again.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Some projects and stuff like that, you might brainstorm together and share ideas. For me it would be with management- and marketing-team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well, I’d probably find it depending on how you are as a person. If you are a person who thinks and reflects, so to speak. I think it's hard to get everyone to think innovatively. It's probably very individual and what personality you have.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would say it’s maybe about deviating from the “path” (laughs) and not to follow all set routines. The goal is to get everything into routines according to Lean. You must be able to have some freedom as well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do you contribute to innovation to the company?</th>
<th>Technical-department</th>
<th>Purchase-department</th>
<th>Production-department</th>
<th>R&amp;D-department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult question. My broad technical knowledge (contributes). I can find other perspectives on things, if you are very specialized then you don’t know what is available outside the blinders. I work with hardware but can understand some software to or how I want the software to work. Therefore, I cooperate very well with my colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am online and looking at forums and trade sites and trying to pick up ideas. I try to get some news and I hang out in social contexts at trade shows and sharing ideas. I'm a bit limited here at the purchasing department. I do not think we are developing the buying-process itself. To be innovative to me is to find new suppliers that contribute to the company. In the purchasing process, products that are already decided drive you. Then it's just to make the smartest way to obtain them at the right cost for the company.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We always try to contribute by asking questions. Do we have to do like this? Do we have to do it in this way? All employees don’t question at all. They just do what it says (on the order). It is about constantly trying to think about how you can do in a different way. Improve the efficiency, make smarter. Especially fixtures and moulds, that's where I can contribute and that concern us out here. We're not so much into design. It's mainly about asking questioning, especially if there is a new job that is going to be produced.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I’m trying to think of the customers we have, taking experiences and impressions and trying to think of new things you can offer the customers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What other departments do you work together with when doing your work?</th>
<th>Technical-department</th>
<th>Purchase-department</th>
<th>Production-department</th>
<th>R&amp;D-department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Especially Purchase-department, to some extent Production- and Marketing-department.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production-, Marketing- and Technical-department (including administration and finance) and if you consider inventory as a separate department as I as buyer is responsible for inventories</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It becomes almost everyone. It includes “machine” in production-department, as I am process-manager. I work with R&amp;D-department when there are question marks in new products. It happens that I talk to Sales- and Marketing-department when it comes to new products but mostly I work with “machine” and Technical-department.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All departments. As a project manager I’m in from start to final delivery. I have contact with Market-, Purchase-, Technical- and Production-department.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following observations in table 2 are selected to stress the variation of work-activities between different departments but also to highlight the presence of different ways of communication appearing at the participants’ work-activities:

**Table 2: Selected observations showing communication from phase 2, keywords are highlighted.**

<table>
<thead>
<tr>
<th>Department</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical-department</td>
<td>A colleague asks the participant a question: “What should I consider if I should buy one of these with low current-leakage? It's very sensitive if you want to pursue this gate.” (Table 4.1: Information-input, Internal conversation same department)</td>
</tr>
<tr>
<td>Purchase-department</td>
<td>The participant listens to a voice message: “A supplier wonders if we are satisfied with the delivery. To save time I respond with an e-mail. -We are satisfied”. (Table 4.1: Information-input, External phone-call)</td>
</tr>
<tr>
<td></td>
<td>The participant receives an e-mail from a supplier who wants to know if the company is end-user in order to check other applications that the component can be used for. -Sometimes you do not want to reveal secrets as we have our own R&amp;D and do not want to give any clues. (Table 4.1: Information-input, External e-mail)</td>
</tr>
<tr>
<td></td>
<td>The participant receives an e-mail from a supplier who wants to visit in purpose to show new products which is turned down this time. (Table 4.1: Information-input, External e-mail)</td>
</tr>
<tr>
<td>Production-department</td>
<td>The participant is talking with a colleague at the working-place about a stolen motocross. (Table 4.1: Information-input, Internal conversation same department) (Private conversation)</td>
</tr>
<tr>
<td></td>
<td>The participant is visiting Purchase-department, who is busy in the phone. The participant waits outside the office. No response, walking back to the work-place after a few minutes. (Table 4.2: Information-output, visit to other department)</td>
</tr>
<tr>
<td></td>
<td>The participant is having a discussion with a colleague about how to inspect some components. Switching subject to harassment at schools when finished the first discussion. (Table 4.1: Information-input, Internal conversation same department)</td>
</tr>
<tr>
<td>R&amp;D-department</td>
<td>A colleague from the Administration-department is visiting the participant to control some information. (Table 4.1: Information-input, visit from other department)</td>
</tr>
<tr>
<td></td>
<td>The participant discusses acoustics with a colleague concerning a product being developed. Discussion about how “beeps” is important to sound the same at all times. (Table 4.1: Information-input, Internal conversation same department)</td>
</tr>
</tbody>
</table>

Following quoting in table 3 are final questions when completed observation, showing that all participants consider work during the observation to be ordinary work and did not experienced any work-activities to contribute to innovation-work

**Table 3: Final questions after observation in phase 2, keywords are highlighted.**

<table>
<thead>
<tr>
<th>Have this been an ordinary day at work?</th>
<th>Department:</th>
<th>Answer:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical-department</td>
<td>Partly. The phone is normally more busy.</td>
</tr>
<tr>
<td></td>
<td>Purchase-department</td>
<td>Yes, I would say, you get disturbed all the time.</td>
</tr>
<tr>
<td></td>
<td>Production-department</td>
<td>Well yes, a pretty quiet day. It tends to be more busy. Now you have only seen the inspection. Otherwise, I usually also pick components, assemble, cut cards.</td>
</tr>
<tr>
<td></td>
<td>R&amp;D-department</td>
<td>Yes, it was an ordinary day. You never know what’s coming next.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you feel that you could have contributed to innovation today?</th>
<th>Department:</th>
<th>Answer:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical-department</td>
<td>No, not really. Not me anyway. I was working on lists, Not directly anyway.</td>
</tr>
<tr>
<td></td>
<td>Purchase-department</td>
<td>No, I don’t think so</td>
</tr>
<tr>
<td></td>
<td>Production-department</td>
<td>No, not then. I did the usual, just inspected and shipped out things.</td>
</tr>
<tr>
<td></td>
<td>R&amp;D-department</td>
<td>Not anything special, no.</td>
</tr>
</tbody>
</table>
Following summary in table 4.1 to 4.4 show work-activities containing communication-based potential untapped innovation capacity being observed in 32% (86) of the 267 documented activities. Other documented work-activities were ordinary work (55%) and planned innovation work (13%).

Out of the 86 observed potential communication-based untapped innovation capacities were:
- Production-department 43% of activities.
- Purchase-department 29% of activities.
- Technical-department 23% of activities.
- R&D-department 5% of activities.

Table 4.1: Summary of identified work-activities containing communication-based information-input.

<table>
<thead>
<tr>
<th>Information-Input</th>
<th>Department</th>
<th>Technical</th>
<th>Purchase</th>
<th>Production</th>
<th>R&amp;D</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity, Internal-inside company</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2,3%</td>
<td></td>
</tr>
<tr>
<td>Phone-call</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0%</td>
<td></td>
</tr>
<tr>
<td>Conversation same department</td>
<td>6</td>
<td>-</td>
<td>5</td>
<td>2</td>
<td>15,1%</td>
<td></td>
</tr>
<tr>
<td>Visit from other department</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>3,5%</td>
<td></td>
</tr>
<tr>
<td>Total internal input</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>9,3%</td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>9,3%</td>
<td>3,5%</td>
<td>5,8%</td>
<td>2,3%</td>
<td>20,9%</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Summary of identified work-activities containing communication-based information-output.

<table>
<thead>
<tr>
<th>Information-Output</th>
<th>Department</th>
<th>Technical</th>
<th>Purchase</th>
<th>Production</th>
<th>R&amp;D</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity, Internal-inside company</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0%</td>
<td></td>
</tr>
<tr>
<td>Phone-call</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0%</td>
<td></td>
</tr>
<tr>
<td>Conversation same department</td>
<td>7</td>
<td>1</td>
<td>22</td>
<td>1</td>
<td>36,0%</td>
<td></td>
</tr>
<tr>
<td>Visit to other department</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>-</td>
<td>8,1%</td>
<td></td>
</tr>
<tr>
<td>Total internal output</td>
<td>7</td>
<td>2</td>
<td>28</td>
<td>1</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>8%</td>
<td>2%</td>
<td>33%</td>
<td>1%</td>
<td>44,1%</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3: Summary of identified work-activities containing communication-based information-input and/or output.

<table>
<thead>
<tr>
<th>Information In / Out-put</th>
<th>Department</th>
<th>Technical</th>
<th>Purchase</th>
<th>Production</th>
<th>R&amp;D</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>Coffee/-lunch break</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>7,0%</td>
<td></td>
</tr>
<tr>
<td>Total In / Out-put</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>7,0%</td>
<td></td>
</tr>
</tbody>
</table>
6. Contribution

Potential untapped innovation capacities, all based on communication in different ways and identified in ordinary work-activities, were observed in 32% of the 267 documented activities. The potential untapped innovation capacities were divided into two groups and two subgroups all consisting potential information exchange: “Information input” and “Information output” with the subgroups “Internal information-exchange” and “External information-exchange”. This case study showed untapped innovation capacity in both job- and private-related situations as i.e. conversations, phone-calls, e-mails and breaks for coffee or lunch. In a innovation-cognition perspective those situations would be suitable for i.e. sharing experience, asking/answering questions to suppliers/customers/users, networking, searching for opportunities/solutions and being a part of a multifunctional innovation-work without negatively effecting the overall working-situation.

According to suggested research there is an opportunity to tap innovation capacities from ordinary employees by involving them in searching-activities based on innovation-cognition as the first phase in innovation-work focuses on searching for innovative opportunities. “Search-activities” are also included all over innovation-work for which ordinary employees could contribute. When ordinary employees get directions based on innovation-cognition they would be able to be included in searching-activities by communicating in their already established work-activities that would require almost no extra work. One example might be to ask an innovation-based question included in an ordinary e-mail or in a phone call in order to contribute to innovation-work.

Given that this case study showed that Production-department contained more than eight times more of untapped innovation capacity than R&D-department, who contained least of untapped innovation capacities of the participants. Focus when developing managerial methodologies are suggested to consider those facts and also include that Purchase-department was the only department receiving external input within ordinary work-activities and Production-department was the only department having private conversations between colleagues during on-going work-activities.

Previous research is suggesting development of managerial methodology (Manral, 2011) where cognition is recommended to be included into innovation-work (Mumford, 2009), (Spena and Colurcio, 2010), for which this case study is contributing by knowledge of work-activities containing potential untapped innovation capacities and what department who contains most potential untapped innovation capacities.

Critics and limitations of the conducted case study are mainly the small number of participants and the short observation time of participants in their ordinary work that hinders the results to be generalized (Blessing and Chakrabarti, 2009). Even though the researcher tried to be “invisible” during the observation the researchers appearance is obviously disturbing for a participant, there is a risk that what was observed doesn’t look the same way when the camera is off and nobody is observing every movement and taking notes constantly. Another disturbing moment for the participants was to speak loud while working as speaking loud to one-self was not a normal way of working for any of the participants. The disturbing parts within the observation might have resulted in a non-complete picture of the participants’ work-activities to identify potential work-activities consisting untapped innovation capacity. Even though this case study showed work-activities containing potential untapped innovation capacity in 32% of the observed work-activities there are no guarantees for achieving more innovation-work until the ordinary employees have learned themselves to take advantage of on-going internal- and external communication, which is a challenge for both management and employees.

However, the results show significant number of communication-based work-activities that might be used as information transfers between departments, colleagues and external people. Suggested future research is to develop and test a managerial methodology where the search-activities are based on communication-based innovation-cognition in order to involve ordinary employees into innovation-work in purpose to achieve a

<table>
<thead>
<tr>
<th>Department</th>
<th>Technical</th>
<th>Purchase</th>
<th>Production</th>
<th>R&amp;D</th>
</tr>
</thead>
<tbody>
<tr>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td>% (n=86)</td>
<td></td>
</tr>
<tr>
<td>Total summary all activities 4.1-4.3</td>
<td>20</td>
<td>25</td>
<td>37</td>
<td>4</td>
</tr>
<tr>
<td>Percentage</td>
<td>23%</td>
<td>29%</td>
<td>43%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Table 4.4: Total summary table 4.1 - 4.3 of identified work-activities containing communication-based potential untapped innovation capacity.
more effective innovation-work. As peoples mind are driven by the unconscious, innovation-cognition might be successful implemented if a proper developed methodology handling the complexity of innovation (Mumford, 2009) managed by expertise (Munford and Hunter, 2005).

7. Practical implication

Innovation has become a buzz-word in the industry and the trend is to involve ordinary employees into innovation-work and to get everyone to innovate every day, resulting in innovation management tools for handling ideas. However, to get ordinary employees to be involved in a new work-situation, thinking different or doing work for which they don’t feel confidence in might cause change resistance (Aronson, 1999) or status quo (Markides, 1998).

When releasing untapped innovation capacity, the purpose is to increase the innovation-efficiency by involving ordinary employees into the innovation work. From the perspective of a company the investment is relatively low as the ordinary employees are already in place. The results from this case study is of relevance for the industry where the major benefit is the focus on not putting extra work-load to the ordinary employees, but to involve them to contribute to innovation by doing what they already do: Communicating in ordinary work and by that become an extra resource to R&D- or development-departments.

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Innovation Teams: Before Innovation Work is Begun

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*Corresponding author

Abstract: This paper focuses on innovation teams before innovation work is begun. Reason is that innovation teams are considered to be successful doing such work. However, prior studies show problems in innovation-related knowledge, knowledge gaps, information and awareness why this research aims to understand these aspects and how they relate to newly formed innovation teams as they need to handle these aspects. Two case studies conducted during 1.5 years show that a newly formed innovation team is in a very complicated situation where the identified aspects relate not only to the individual members, but also to the team, its context and network within and outside the organization. Practical implications from this research could be used when planning, creating and starting up new innovation teams, helping management and team members to understand the complexity, for which a model is developed and described.

Keywords: Innovation team; innovation group; organization, innovation work; education; knowledge; knowledge gap; information flow; awareness; affordances.

1 Problem

Introduction

This is the fourth paper from a research study, covering data collection spanning over 1.5 years conducted on two innovation teams in two Swedish SMEs where the focus is to better understand innovation teams’ situation before innovation work is begun. This paper is based on conclusions from the three prior papers generated within the same research.

Why innovation teams?

Innovative organizations are more successful than other organizations (Dobni, 2006: Pattersson, 2009: Tidd and Bessant, 2009) but they need to reframe their organizations to support radical innovation, as complement to incremental innovation, to stay in business (Tidd et al, 2010).

Multifunctional and cross-functional teams perform better than single persons (Arranz and Arroyabe, 2009) because the broad range of knowledge stimulates the creation of new ideas and increase the spread of knowledge and favor creative performance (Ahmed, 1998: Backström and Olson, 2010: Kelly, 2005: Smart et al, 2007).

Problem clarification

I make the assumption within this research that innovation teams are suitable for both innovation work and to stepwise transform an organization into an innovative organization. However, an empirical study of innovation teams identifies problems as e.g. need of knowledge concerning innovation management, mistrust, complaints, conflicts, lack of incentives, stress syndromes, scepticism and learning problems which results in performance problems (Hallgren, 2009: Johannessen and Olsen, 2011: Kesting and Ulhöj, 2010: Kristiansen and Boch-Poulsen, 2010: Lundin and Söderholm, 1995: Zuidema and Kleiner, 1994).

Four major innovation related aspects appear within identified problems:
(1) Knowledge; Research demonstrate lack of knowledge as affecting strategic decision-making, innovation management, management of conflicts (Kesting and Ulhöj, 2010), the need for fundamental knowledge regarding innovation and the need for an experienced facilitator to guide and manage a
project (Hallgren, 2009) and stress caused by unfamiliarity with new situations (Zuïdema and Kleiner, 1994)

(2) Knowledge gaps; Problems associated with innovation-related knowledge gaps, identified using theories of change resistance and system complexity, are mistrust in management, conflicts between team-members (Zuïdema and Kleiner, 1994), negative comments among employees (Hallgren, 2009), destructive criticism instead of collaboration, conflicts regarding project agendas, complaints about extended meetings and work overload, expressions of doubt, (Kristiansen and Bloch-Poulsen, 2010), tension between the temporary and the permanent in an organization (Johannessen and Olsen, 2011), lack of incentives (Kesting and Ulhöj, 2010), delay in the introduction and development of routines and organizational memory and learning and focus on immediate delivery (Lundin and Söderholm, 1995).

(3) Information flow; Lack of communication hinders transfer of learning from one project to another (Johannessen and Olsen, 2011: Lundin and Söderholm, 1995).

(4) Awareness; Cognitive bias hindered employees from thinking outside their ordinary routines (Kesting and Ulhöj, 2010), interpreted as a practical problem related to the incapacity of the employees to recognize (by means of innovation-related awareness) innovation opportunities.

Another problem identified from prior research is that one can observe a focus on groups or teams, with no distinction between the two terms despite the great difference between them (Wheelan, 2013), already performing innovation work without studying the formative stage before the group began innovation work. Research show, for which prior research does not explicit clarify in this context, is that it takes approximately 6-8 month for a newly formed working group to emerge through four phases to a high performing working team (Tuckmann and Jensen, 1977: Wheelan, 2013) where the first three steps consist of formations, conflicts and trust. The fourth stage is where the team is high performing but only about 15% reaches that level according to Wheelan (2013).

This research aim to clarify how members’ innovation related knowledge, knowledge gaps, information flow and awareness relate to a newly formed innovation group. Benefits would be to better organize innovation teams, resulting in better innovation performance.

2 Current understanding

Current understanding of innovation teams is found as bits and pieces embedded in prior research demonstrating innovation success factors in all levels. For that reason this research will over organizational-, group/team-, and individual level to provide a more holistic picture of the situation of a newly formed innovation team before starting innovation work.

Innovative organizations could be identified by its setting of top management’s wish to involve employees and support innovation work (Ahmed, 1998), or by using system theory to understand the organization’s work system (Backström et al, 2011). Success factors when transforming an organization into an innovative organization (van der Panne, 2003) and innovation models are well demonstrated (Andersson, 1996: Johnsson, 2009: Tidd and Bessant, 2013: Trott, 2013), all including e.g. organizational levels, knowledge management, need of management skills and information of how innovation should be performed.

Groups and teams of different kinds are well known in research since the 1980’s, starting from the Self-Directed Work Groups (Zuïdema and Kleiner, 1994) to today’s Employee Driven Innovation in Teams (Kristiansen and Bloch-Poulsen, 2010. Still, problems are noticed within identified groups/teams, validating research on innovation teams to be conducted.

Table 1: The table shows different innovation teams, their positive effects and problems that have occurred in the teams.

<table>
<thead>
<tr>
<th>Innovation team</th>
<th>Authors</th>
<th>Positive effects from team</th>
<th>Problems in team</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Seeing the big picture.</td>
<td>Conflicts between team-members.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Educating both members and management.</td>
<td>Stress caused by unfamiliarity with new situations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encouraging trust by delegating.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supporting mistakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guiding the group by coaching instead of supervision.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encouraging communication and reflection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steering work towards company goals.</td>
<td></td>
</tr>
<tr>
<td>IS-Group (Innovation steering group)</td>
<td>Hallgren (2009)</td>
<td>Learning was improved concerning innovation management. The Members was from different department and levels started to change the organization by spreading knowledge by themselves. Top management satisfied with project result. Involving rest of the employees in project. Improved energy, motivation, involvement, enthusiasm and communication. Changing habits and routines in organization.</td>
<td>In need of fundamental knowledge regarding innovation. Negative comments among employees. Need of facilitator that can learn and drive project.</td>
</tr>
<tr>
<td>EDIT (Employee Driven Innovation in regular Team)</td>
<td>Kristiansen &amp; Bloch-Poulsen (2010)</td>
<td>Employees contribute to innovation, no matter of educational background or what department the employee is working. Stress was reduced. Improved cooperation - Improved efficiency.</td>
<td>Looking for shortcomings and pitfalls instead of collaborating. Fighting regarding project agendas. Complaints about long meetings. Complaints about work overload. Expressions of skepticism.</td>
</tr>
<tr>
<td>Temporary group</td>
<td>Lindner &amp; Wald (2011)</td>
<td>- Improved culture and climate. - Knowledge culture have positive effects Informational network have positive effect on knowledge culture</td>
<td>Hinders the emergence and development of routines and organizational memory and therefore impedes organizational learning. Discontinuous working constellations and teams lead to fragmentation and disintegration of individual and organizational knowledge. Lack of natural mechanism of learning makes the transfer of knowledge difficult between one project to one other project or to the permanent part of the organization. Focus on immediate delivery, which is not in line with knowledge management. Time-lag between investment and return of investment, this conflict of goals may result in an insufficient transfer of knowledge between projects.</td>
</tr>
<tr>
<td></td>
<td>Johannessen &amp; Olsen (2011)</td>
<td>- Supports creative work. - Communication is success factor</td>
<td>Tension between the temporary and the permanent in the organization. Requires very complex social mechanisms. Lack of communication.</td>
</tr>
</tbody>
</table>

Definitions used within this paper
Innovation within this paper is defined to be an “implementation of a new or significantly improved product (or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005) with the extension to also have added value on an internal or external market (Anderson 1996; Lans, 1997; VINNOVA, 2012).
I define innovation work to include all necessary work required to launch and generate values out of the new e.g. product. In practice this means that innovation work include involvement from many different departments (Andersson, 1996: Baxter, 2002: Johnsson, 2009: Michanek and Breiler, 2004: Ottosson, 1999: Tidd and Bessant, 2013).

Groups and teams are not the same. A group is defined as a complex social system of two or more people embedded in an organization (Hoegl, 2005). A group strives towards common goals and a structure to fulfill the goal (Wheelan, 2010). The members may not yet have “found each other” (Backström and Olson, 2010), have not yet developed efficient ways of working together (Wheelan, 2010) and they may not perceive oneself or other members as in a team according to Hoegl (2005). A team is a social system of people embedded in an organization, whose members perceive themselves as such and are perceived as members by others (Hoegl, 2005: Wheelan 2010). However, in this paper I will use the term team regardless of its status in order to not confuse if it’s not necessary to be very explicit of the difference for some reason. Another reason for using team instead of group, which relate to the prior reason, is that this paper could be used when working to organize a new innovation team (including the time for emergence of groups into team) in an organization, which ease the communication.
Small and Medium sized Enterprises (SME) are defined as companies with 10-250 employees, an annual turnover of maximum 50 million Euros and a balance of not more than 43 million Euros (VINNOVA, 2012).

3 Research question
The overall Research Question (RQ) within this paper is: "What would a model that describes the innovation-related knowledge, knowledge gaps, information flow and awareness of a newly formed innovation look like and be described?

Four sub-questions addressed to each one of the identified aspects have been used in two embedded case studies when developing the answer to the overall RQ.

Rq1: What innovation-related knowledge do the members of a newly formed innovation team and the senior managers have, regarding their companies’ innovation-related Strategy, Process, Organization, Linkages and Learning of their company?

Rq2: Are there innovation related knowledge gaps within a newly formed innovation team and the senior managers that could be identified, affecting the innovation team? If yes, how? If not, why?

Rq3: Are there innovation related information flow in the members’ of a newly formed innovation team’s daily work? If yes, what kind of information flow is most prominent? If not, why?

Rq4: Are the members of a newly formed innovation team able to detect innovation opportunities in their daily work. If yes, what have they detected? If not, why?

4 Research design
The research has been conducted in two case studies on two newly formed innovation teams in two SMEs in Sweden. Research involving SMEs is of relevance as SMEs represent 99.8% of all companies in Europe, providing employment for over 88 billion people. Sweden is no exception, SMEs representing 99.9% of all companies (http://www.svensknaringsliv.se, 2011).

The research has been conducted in two case studies on two newly formed innovation teams in two Small and Medium sized Enterprises (SME) in Sweden. The two companies, Company A and Company B, were selected on the basis of four criteria, (1) being located in Eskilstuna as the financier of this research support research on owner-driven SMEs located in Eskilstuna, (2) having their own development and production, (3) not competing in the same business area as the other participating SME and (4) being one of the leaders in their niche. Company A is an OEM (Original Equipment Manufacturer) in the car component industry with customers spread all over the world. Company B develops and produces electronic components to be incorporated in other products for customers that are active on the global market. Two innovation teams and one managerial team consisting of 21 of 103 possible respondents at the both companies have participated in five case studies, generating results from a total of 12 workshops, 840 audit statements, 2234 interview questions and nearly 8 hours of visual observation.

The research was executed in an iterative and cyclic way in accordance with Blessing and Chakrabarti (2009), were the first phase in Case study 1 led to a second phase, which resulted in a second embedded case study consisting four case studies (Case study 2-5). Case study 1 (Rq1 and Rq2) gave a deeper understanding of innovation-related knowledge and knowledge gaps of the members of the participating innovation teams. Rq1 was conducted by an interview-supported audit on 21 respondents answering in total 840 self-assessment audit statements and 103 open-ended questions in which the answers from Rq1 inspired to Rq2 in which how innovation-related knowledge gaps affected innovation was studied via 12 workshops. 18 respondents answered in total 1170 open-ended questions. Results from Case study 1 inspired to Case study 2 (Rq3 and Rq4) in which innovation-related information flow and awareness of four members in one innovation team was studied by observation of their daily work and the participants answered in total 216 open-ended questions. All together, the studies contribute to the understanding of members’ innovation-related knowledge, knowledge gaps, information flow and awareness of the newly formed innovation team, for which conclusions were made.

Case study 1 was conducted in two phases at Companies A and B. The first phase was an interview-supported audit that resulted in a paper (Paper I) by Karlsson and Johnsson (2010). The second phase, which was a workshop series, resulted in another paper (Paper II) by Johnsson and Karlsson (2011). The second study, an embedded case study, (Case study 2-5) was conducted as verbal interviews and verbalized observations of four members in an innovation team at Company B that resulted in a third
paper (Paper III) by Johnsson (2011). Table 1 demonstrates which paper contributed with data to which Rq.

Table 2: Relation between conducted case studies, papers and RQ’s.

<table>
<thead>
<tr>
<th>Research question</th>
<th>Contribution from Paper to RQ answer within this paper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paper I Case study 1</td>
</tr>
<tr>
<td>Rq1</td>
<td>X</td>
</tr>
<tr>
<td>Rq2</td>
<td>X</td>
</tr>
<tr>
<td>Rq3</td>
<td></td>
</tr>
<tr>
<td>Rq4</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Table demonstrates Case study 1 and the numbers of respondents and data collection occasions.

<table>
<thead>
<tr>
<th>Study 1 Case study 1</th>
<th>No of resp.</th>
<th>Total no of open ended verbal questions</th>
<th>Total no of audit statements</th>
<th>Total no of open ended written questions</th>
<th>Total no of workshops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper I</td>
<td>21</td>
<td>840</td>
<td>840</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Paper II</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>1170</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 4: Table demonstrates case studies 2-5 and the numbers of respondents and data collection occasions.

<table>
<thead>
<tr>
<th>Study 2 Case study 2-5</th>
<th>No of resp.</th>
<th>Total no of open ended verbal questions</th>
<th>Total hours of observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper III</td>
<td>4</td>
<td>224</td>
<td>~8</td>
</tr>
</tbody>
</table>

Qualitative methods have been used except for case study 1 for which both quantitative and qualitative methods as documentation, interviews, direct observation, participant-observation were used in accordance with Yin (2009). The data have been analyzed using thematic analysis according to Boyatzis (1998). One way to express thematic analysis is to liken it to translation from one language to another, in this case from qualitative information to more understandable quantitative information. To be able to use thematic analysis, Boyatzis sees the need for a number of underlying competences to recognize patterns, openness, flexibility and knowledge in the specific research area. This kind of competence could be developed to increase the theoretical sensitivity of a researcher, the capacity to recognize what is important, give it meaning and conceptualize the observations. The thematic analysis is performed in four steps; (1) Sensing themes, identifying codable moments (2) Making it reliable, encoding codable moments recognized. (3) Developing codes (4) Interpreting the information according to theories (Boyatzis, 1998).
5 Findings

As mentioned in the introduction, this is the forth paper from a research study conducted at two Swedish SMEs where conclusions from the two cases studies, presented in three different papers, have contributed to answer the RQ within this paper.

Table 5: Table demonstrates conclusions used as data to answer RQ

<table>
<thead>
<tr>
<th>Paper</th>
<th>Author</th>
<th>Conclusions</th>
<th>Contribution to RQ</th>
</tr>
</thead>
</table>
| I     | Karlsson & Johnsson (2010) | - Respondents didn’t understand questions or areas for which the questions were asked.  
- An interview complementary to an audit is a useful tool to obtain a better understanding of the results from the audit.  
- The spontaneous answering scale that was identified from the interviews made it possible to compare individual answers with others and thereby reveal knowledge gaps within the statement areas.  
- The audit indicate if respondents are working in a way that supports innovation rather than to what extent that behaviour is implemented throughout the organization, which suggests that the respondents concerned know what is done but are not participants in that work. E.g. A respondent is able to score an audit statement without being able to describe how the statement is performed (or even what), suggests that the respondent knows what is done but is not part of that work. | Rq1, Rq2 |
| II    | Johnsson & Karlsson (2011) | - Innovation-related knowledge gaps divided in organizational and individual gaps.  
- Individual gaps are characterized by differences between individuals, regardless of what positions these individuals hold, the organizational innovation structure and innovation management.  
- A kind of incubation time of approximately 6 month, from resistance to understanding, appeared in all three teams  
- Many innovation-gaps can be identified and that they seem to have a potential negative impact on innovation performance by fragmenting the innovative capabilities of an organization.  
- Managers with a total innovation perspective could use gap-analysis as an integrated, on-going part of continuous innovation management rather than attempt to identify predefined gaps.  
- A company-specific and continuous gap-analysis could be an effective way for total innovation-oriented managers to maintain a holistic focus on balanced innovation. Focus on factors with a critical impact on innovation performance is suggested. | Rq2 |
| III   | Johnsson (2011) | - All respondents gave descriptive answers to all answers, e.g. define innovation and describe how innovation was executed at the company.  
- Communication was active and frequently within all departments. Untapped innovation capacity was identified in both job- and private-related situations such as conversations, phone-calls, e-mails and breaks for coffee or lunch, suitable for sharing experience, contacting suppliers/customers/users, networking, searching for opportunities/solutions, constituting a part of a multifunctional innovation network, without negative effects to the overall working-situation.  
- Three ways of communication: information in-put (where the participants were informed by another person), information out-put (where the participant took the initiative to inform another person) and “spontaneously” (where conversations begin spontaneously at e.g. coffee breaks).  
- Communication via e-mails, conversations and phone-calls were identified in 32% of the 267 documented work-activities, being appropriate as work-activities when | Rq1, Rq3, Rq4 |
Conclusion

Innovation-related knowledge, knowledge gaps, information flow and awareness are important aspects in the forthcoming innovation work of a newly-formed innovation team and its emergence. Innovation knowledge and information flow, in which communication is the key factor (Backström et al, 2011; Cohen and Levinthal, 1990; Hallgren, 2009; Johannessen and Olsen, 2011; Kihlbom, 2005; Lundin and Söderholm, 1995; Wehlan, et al 2011; Zuidema and Kleiner, 1994) enables the continuance of the innovation work but having innovation knowledge and the ability to communicate is not sufficient. The team must also be able to handle innovation-related knowledge gaps (knowledge gap) between members of the innovation team and other employees and to utilize divergences in e.g. competences (Backström and Olson, 2010; Kelly, 2005; Smart et al, 2007; Zuidema and Kleiner, 1994). Innovation-related information flow is also related to awareness and readiness in order to capture opportunities (Billet, 2001; Ellström et al, 2007; Schweder and Sullivan, 1993; Trott, 2012) when they appear as affordances (Norman, 1999). In order to arrange an organization within which an innovation team can exist and perform innovation work, all (organization, innovation team and members) must support the innovation team, where it, in order to improve its skills must practice.

An innovation team is appropriate in an organization using or intending to use a post-industrial work system because such organizations are more mature in their thinking with respect to employees and autonomy (Backström and Olson, 2010; Trott, 2012). Management must also provide the members of an innovation team with time and relevant resources to perform innovation-related work for several reasons; the innovation team needs time to learn to trust each other, to learn from each others knowledge, to mature as a team, to learn and practice innovation management and to study the innovation team’s progress from their work. Management also needs time to become accustomed to the feeling of uncertainty associated with innovation work. Top management must encourage, trust, support and show guidelines for an innovation team, set boundaries but not limitations, and to allow time to the organization to all these innovation work. Management must also exercise patience and view the innovation team as an investment which will require time to give visible results. The management should communicate all information that might be of importance to an innovation team as there may be gaps in highly relevant information. One can keep in mind that the larger the project, the greater the risk of incorrect communication (Johannessen and Olsen, 2011).

The innovation team should be multifunctional as divergence in e.g. skills and knowledge is positive for the dynamic of the team (Backström and Olson, 2010: Kelly, 2005: Smart et al, 2007). Divergence also prevents groupthinking that might be the cause of incorrect decisions too early in a project (Backström and Olson, 2010; Olsson et al, 2010; Isaksen and Ekvall, 2010). Divergences in a network are also positive as they make it easier to find relevant competence when needed (Olsson et al, 2010). Convergence is driven by the interest of the members in uniting as a team, in learning from each other and in exchanging knowledge and information according to Lubaktin et al (2001). As a team matures over time in accordance with the process of convergence and divergence, the members will reach a phase of interdependence in which they really benefit from each other’s knowledge, but there’s also a challenge to contain the divergences in the team to avoid groupthinking. A similar phenomena called reciprocal learning might appear, i.e. the members sharing knowledge without intending to take advantage of the others knowledge. Reciprocal learning is usually associated with two or more organizations beginning a joint venture (Lubaktin et al, 2001), but I see the individuals in a newly-formed innovation team as being in a similar situation. The process begins when the members learn to trust each other and then learn to learn from each other. If the members reach this latter phase they can create completely new knowledge.

The members of an innovation team should participate willingly for the team to function satisfactorily (Nerkar et al, 1996: Hallgren, 2009: Hoegl et al, 2003: Xu et al, 2006). In forming a team, preferable a maximum of six persons (Dew and Hearn, 2009), key persons in their departments should be selected, starting from a convener or innovation coach who can share leadership with the team as it mature. It is also important to choose members with the right personality. They should be committed, positive to new influences and new knowledge, and enjoy working together in a team. One person who does not fulfill these criteria can have a negative effect on the work of the entire team (LePine et al, 2011) This research shows that the participating innovation teams’ innovation knowledge needs improvement.
before conscious innovation work can be conducted where training and learning is an important factor for successful results. The ability to achieve innovation readiness (Ellström, 2007) in order to detect affordances needs some practice, where affordances appear in the information flow when people are aware of what is happening and have the ability to interpret the situation from an innovation point of view (Norman, 1999). The information flow continues, partly within the organization, partly outside the organization, partly during working hours and partly during non-working hours. This means that affordances might appear anywhere as e.g. at a workplace, in the supermarket while shopping, in contact with a supplier or at a meeting with the innovation team. I believe management by its innovation strategy can influence the mind of the members' in an innovation team to consciously and unconsciously search for affordances.

Figure 3: Innovation Team Model. The figure demonstrates how an innovation team is related to its members and innovation aspects in different situations.

A description of the Innovation Team Model (ITM) above would be: The innovation team is at the center but would not exist without employees wishing to participate and the team’s survival depends on the progress of the convergence-divergence process as the team matures. The members of the innovation team develop rules applicable within the team, each finding a suitable working method. As the members’ knowledge of innovation knowledge increases, they can begin gathering and spreading information in their daily work, at their workplaces or in other environments. In time, they can acquire sufficient innovation knowledge to be able to develop readiness capabilities and observe affordance in different situations. The readiness may include the ability to detect affordance for which another member of the innovation team has stimulated or asked for, or as cognition stimuli when a member adopts the idea of another to develop a new idea.
6. Contribution

This research contributes on the prior research of innovation teams. A deeper understanding of newly formed innovation teams before innovation work is begun is provided and a model (ITM) describing the conditions regarding innovation aspects is suggested. The case studies conducted provide a holistic picture where one can see that a newly formed innovation team is in a very complicated situation, and relates not only to the individual members, but also to the team, its context and network within and outside the organization. One conclusion made from this research, not being expressed clearly enough in prior research, is that one cannot expect a newly formed team to manage innovation before it has emerged into an innovation team and developed innovation related knowledge, learned to utilize from innovation related knowledge gaps and information flow, and being able to be aware of innovation related opportunities.

Future research is suggested on creating and studying the emergence the newly formed innovation teams. In doing so, guidelines to start up the innovation team could be developed and the ITM used to describe its current and forthcoming situation, which could be adjusted according to new knowledge.

7. Practical implications

Suggestions, suitable for both established companies or consultants, to practical implication of this research is when planning and starting up new innovation teams, helping it to understand the complexity of team dynamics and the connection between top management and innovation team members. Positive output might be a first step towards (an even more) sustainable innovation system and innovative organization.

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Creating High Performing Innovation Teams
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Abstract: This research focus on how to create high performing innovation teams to meet the need of faster ways of conducting innovation work. By addressing the well-known problems as e.g. lack of innovation related knowledge and group dynamic problems, a conceptual process is suggested based on a theoretical framework is developed within this research. The CIT-process (Creating high performing Innovation Teams) is a five-step-process that guide an organisation from top management to the innovation project kick-off. On a holistic level, this research contributes to prior research by bringing research on innovation teams and high performing teams together, being organised in accordance with innovative organisations, and to become a pre-stage to established group dynamic processes. Practical implication and future research is suggested.

Keywords: “high performing; innovation team; group process; teamwork; multi-functional; X-functional; product development”
1. Introduction and scope of research

The background to this research is based on the assumption that there’s a need of innovation teams that have the ability to conduct innovation work agile and fast within established companies, which is based on two reasons; first, innovation is a key driver of economic growth and social development, i.e. from national innovation systems to underpinning regional growth strategies, and for organizational performance and competitiveness (Clark, 2012). To stay competitive organizations must continuously innovate both their products (including services, processes, organisations, systems etcetera) to meet the rapidly changing environment (Brennan and Dooley, 2005; Dobni, 2006; Tidd and Bessant, 2013) and to carefully manage their innovation processes (Dooley et al, 2000), and research show that the time for product life cycles has become shorter over time (Barczak et al, 2009); second, teams as such have had positive effects on innovation work for centuries (e.g. Frostenson, 1997; Zuidema and Kleiner, 1994) and several terms of these teams have emerged over time, e.g. multi-functional innovation team, X-functional innovation team and new product development teams (NPD-teams). All of them have numerous of positive effects based on the teams’ performance, e.g. decreased time to market (Highsmith, 2009), increased job satisfaction, less job stress, less time pressure (Cordero et al, 1998; McGreevy, 2006b), contribution to improved quality and productivity (McGreevy, 2006a), higher quality in shorter time (Edmondson and Nembhard, 2009), and they enable knowledge sharing, develop trust and overcome organizational barriers (Horth and Vehar, 2012; Love and Roper, 2008).

As seen above, there is an interest of increased speed of innovation work to meet the rapidly market changes and shorter product life cycles. As a result of that, innovation processes have emerged over time, from stage gates into cyclic innovation processes that are based on collaboration and iteration. Since some time ago, it is established that a clear user and customer should be in focus (e.g. Berkhourt et al, 2006; Dobni, 2006), where the aim is to interact with customers, co-suppliers and internal/external service providers, to explore technological opportunities, to build customer knowledge, to build networks; to co-develop with customers and partners to understand, visualize, and deliver value propositions. Four specific phases in the innovation process is suggested by Tidd and Bessant (2013); Search-Select-Implement-Capture, where these core activities are do not take place in isolation but are influenced by a set of contextual factors, which can be classified under the headings of innovation strategy, innovative organization and innovation linkages.

In extension to the innovation processes, research suggests several ways to practice innovation work. One way is The Innovation Cube suggested by (Narasimhalu, 2005) that is used to navigate through drivers, triggers and enablers for innovation to detect new opportunities and to define what innovation to aim for depending on circumstances and environment. Ten steps steps when conducting redesign is suggested by Smith et al (2012) i.e.; choose target product, identify needs, choose reference products, identify components, build a component factor table, determine component factor weights, extract key components, identify conflicts, apply design principles, and verify results. Open innovation is suggested in all of the cyclic processes, but there are both advantages and risks with the open innovation processes to consider. The benefit are that they are faster and the potential risks are e.g. lack of coordination, mistrust and collaboration problems. The challenge for management in the open innovation process is to find out the appropriate methods and practices for the utilization of external knowledge resources (Bergman et al, 2009) where collaborate networks are one way to practice open innovation (Eschenbächer et al, 2011).

Even though the innovation processes are visualized in several steps or phases, the operational work can be divided in two phases. In the early innovation phase are the ideas in focus (i.e. creative processes) and in the later phase is the implementation (i.e. developing and marketing processes) in focus (Amabile et al, 1996; Eschenbächer et al, 2011). Another practical approach to execute innovation work is to fail fast, i.e. to do mistakes early and learn from that. Instead fall forward, learn from mistakes (Adkins, 2010; Tahirsylaj, 2012). Due to the level of abstractness in innovation work, the visual design to envision processes acts as a knowledge agent in terms of ‘knowledge integrator’ and ‘knowledge broker’ to support innovation (Bertola and Teixeira, 2003).

However, both creativity and innovation processes are complex and are dependent on both individual and group effort from a divergence and convergence perspective (Backström et al, 2011; Haner, 2005). The complex situation of innovation teams are also pointed out by Johnsson (2014), who claims that newly formed innovation teams hardly can handle all the complex work that they have to conduct without a proper set up when being created, i.e. a newly formed innovation team need to e.g. know how the innovation processes works, how to be creative when identifying new opportunities, how to execute the practical innovation work, and also handle the group dynamic process.

To summarize the background; there is a need of increased speed of innovation work for organizations to stay competitive and to meet the rapidly changing environment; innovation teams are proved to be a successful way of working as they generate great results; and there are well-researched innovation processes and practical tools for the innovation teams to use. If the innovation team is successful, it will become a part of, and contribute to increased innovation efficiency and by that become a high performing innovation team. Again, the light is put on the innovation teams, where there may be a problem as they are supposed to conduct the practical work and the becoming members may not be aware of the forthcoming complexity. This is why this research focuses on gaining more knowledge of the deliberate creation of innovation teams with purpose to conduct innovation work in a high performing way, i.e. the creation of high performing innovation teams.

The research within this paper is presented in six sections; first, the introduction where the scope of this research is presented; second, a literature review where the research gap is identified and a research question is stated; third, the research design is demonstrated, including demonstrating of how he data was collected and
analysed; fourth: the theoretical framework; fifth, a conceptual step-by-step process of how to create high performing innovation teams; sixth, a discussion that motivates the process; and finally, the conclusion is presented, and here one can find the research’s limitations and suggested further research.

2. Literature Review and Research Question

This second section demonstrates a timeline of relevant research connected to the creation of high performing innovation teams and innovation teams to demonstrate were and how the research focus has developed over time, followed by a clarification of the research gap and a research question.

2.1. High performing-, and Innovation teams

Research on groups and teams has been conducted for a long time, but the focus have rather been on groups or teams that have conducted innovation work, or that innovation has been the result of team work. Farris (1972) revealed that the setting of members in scientific groups affected the innovative performance. The group members within study were conducted R&D work, but they separated their work in a collegial way in three stages; a suggestion stage; a proposal stage; and a solution stage to get input and support for in e.g. technical and administrative matters. Farris found that high innovative groups used supervisors for evolution of original ideas rather than input for original ideas, and groups with high influence of supervision were best for problem solving. Further on, Farris suggests that the supervisor himself don't necessarily have to be innovative himself, as it may decrease the group’s innovative performance, but the supervisor should support by encouraging the group to think through their technical problems and be an active part in the group, seeking original ideas from outside the group to spare the group from wasting energy on information collection, but not impose his own ideas on them.

In the 1980’s, Self-Directed Work Groups (SDWG) was developed as a result of the buzzword Employee empowerment at the time and had various names, e.g. self-managed teams, high-performance teams, super-teams or cross-functional teams (Zuidema and Kleiner, 1994). The teams were consisting of between 3-30 employees, but most often 6-10 employees and the idea was that groups were created to manage themselves to work on a specific work task. They were intended to have more flexible structures, to be cost effective, overcome the build in bureaucratic, to speed up product innovation, to cut through hierarchical decision-making procedures and quickly respond to changes in working conditions. The teams were created of 6-10 employees, they were X-functional to bring employees together from different departments to solve problems, e.g. product development teams concentrated on innovation and development of cycles for new products. The benefits with this setting according to the team members were that they improved team involvement, morale and the sense of ownership of the team’s goal, but mistrust of managers, conflicts between team members and stress syndromes caused from unfamiliarity with new situations was not unusual. Management thought that improved quality, productivity and morale were the best outcomes. The suggested strategies for successful SWDGs were that top management needed to believe in the way of working, and that the manager of the team should act like a coach or facilitator to develop consensus in the team. However, that required not only a change in attitude in overall as well, but also appropriate training for employees and management in new tools and to overcome fear-factors and build trust.

High-performing work teams in general was claimed, in the lens of the Big Five criteria, to be most effective and best performing when being based on personal diversity (Neuman et al, 1999). The teams, that consisted of four people, within the research was trained in all functions within the department and the personalities of agreeableness, conscientiousness, and openness to experience were valid predictors for effectiveness, and team members on the traits of extraversion and emotional stability improved the prediction of performance. Further on, Neuman et al suggests that the team members in a high innovation team would need additional traits as e.g. creativity.

In a study regarding NPD and integration of other departments within the development work, Gomes et al (2003) comes to the conclusion that early integration with marketing in the NPD process is beneficial. The higher the degree of interaction between R&D and marketing in the stages of budgeting, planning and scheduling, the more collaborative are the behaviors and attitudes of the people involved in NPD projects, which may lead to overcome internal differences and other inbuilt barriers.

The impact of shared vision into the innovation process are suggested as one main antecedent to effective team innovation by Pearce and Ensley (2004), where they created teams based on managers or internal customers that were selected from interviews and questionnaires within a company. All participants were given at least 20hours of training before the work begun. The conclusion of the study was that a shared vision highly contributed to innovation efficiency. In addition, team potency, teamwork behavior, altruistic behavior, and courtesy behavior all increased within the study.

West et al (2004) suggests that an innovative team could be developed within an organization in twelve steps. The first step is to identify the task, followed by identifying external demands, selecting the team members with focus on skills and diversity, securing organizational rewards, create a learning and development climate, develop climate for innovation in the organization, establish norms for innovation, encourage reflexitivity in teams (i.e. make them stop working for a while and reflect of the situation), ensure that the team leader style is appropriate with innovation, manage conflict constructively and aim for bridging and collaboration between competencies.

In a longitude project between 2006-2010, an external innovation driver had positive effects on both the innovation project and the learning regarding innovation management within the participating innovation teams according to (Johnsson et al, 2010). The teams were created on a multifunctional basis, but the activities
slowly decreased and completely stopped shortly after the project in two out of three participating companies due to lack of innovation related knowledge regarding how to manage innovation.

Innovation Steering groups (IS-groups) were created by Hallgren (2009), where he organized multifunctional IS-groups that consisted of seven employees from ‘all levels’. Top management was excluded to avoid their influence in the teams’ decisions. The set up was that top management ensured their commitment to the IS-group, then Hallgren taught the IS-group to manage innovation by “learning by doing”, and encouraged the rest of the company to be involved in the innovation project. The results from the innovation project were overall positive, where the main reasons for positive results were directed to the external innovation driver (Hallgren himself) and that he stimulated high-involvement among the employees by having the group to choose an incremental idea by themselves. However, the IS-groups lack of performance due to lack of innovation related knowledge gaps caused problems not only to the teams but on managerial level as well (Karlsson et al, 2010). Even though the innovation teams’ showed positive effects in terms of learning, there were mistrust to managers, conflicts between team members and stress from unfamiliarity with new situations (Johnsson and Karlsson, 2011a).

In a review of antecedents of innovation team conducted by Hülsheger et al (2009), were two classes of antecedents identified as important to an innovation team and its performance; team input- and process variables and methodological moderator variables. The most influential factor for innovation was goal interdependence, regarding team diversity it was found that job-related diversity had was more important than personal diversity, as is was slightly positive for innovation and had greater impact on performance than personal background. In fact, personal diversity showed a slight negative relationship to innovation. Leadership were demonstrated to play an important role in organizing the potential of job-relevant diversity, i.e. to stir up innovation by encouraging their different kind of knowledge, skills, and capabilities, and to help them to value and use their different viewpoints and engage in elaboration and integration of opposing viewpoints. The team’s size may affect the performance in two ways as found by Hülsheger et al, if a team becomes too large it will suffer from social loafing, but if a large team has relevant knowledge, skills and abilities it can handle difficult tasks, which may be the case in innovation projects. Team processes, including vision, external communication, support for innovation, task orientation, and internal communication have strong correlation to innovation, which means that managers and team leaders should strive for supporting these by showing commitment and engagement. To foster innovation in on the workplace, internal and external communication is especially important.

In times where portfolios are increasingly incremental at the same time as cycle times drop dramatically, Barczak et al (2009) conducted a study on NPD practices in order to identify what differ the best companies from the rest. To start with, they conclude that innovation processes are every company’s properties, but the best companies spend more effort in market research, engineering – R&D – design, technology and team support. The suggested areas of where a company can improve its work are; idea management, in where formal processes are recommended; NPD project leadership and training; to support organizational mechanisms and processes in place for managing collaborations with other firms; giving individuals from multiple functions the ability to work together as a team; and support for team leaders from functional and senior managers.

Employee Driven Innovation (EDI) was a result of the insight that human capital within a company has become increasingly important (Kesting and Ulhøj, 2010). The main idea with EDI is based on the assumption that employees at all levels have unrevealed capabilities for innovation, and that these underutilized resources can be recognized and exploited to benefit both the organization and the employee. One major positive effect from EDI was that the employees’ felt more motivated to the work, but even though it was found that innovation processes could emerge from shop floor to management, the team members’ decided to take action and outside their ordinary routines. A similar concept to EDI, is Employees Driven Innovation in regular Team (EDIT), which was developed by Kristiansen and Bloch-Poulsen (2010). The difference is that the team members could be anyone in the organization regardless of educational background or current employment, which in fact is confirmed by Kleinknecht (1987). Another distinct difference from EDI was the researchers assisted the teams and its members. But instead of cooperating, the team members were actively looking for shortcomings and pitfalls, they were questioning project agendas and complaining over long meetings, work overload and expressing scepticism. The researchers tried to solve these problems with other, separated meetings to the ordinary team meetings, in where project planning was conducted.

Nakata and Im (2010) stressed the question if cross-functional integration in NPD-teams is improving new product performance, and if that’s the case, what are the ways of strengthening the integration. They found out, by letting high-tech companies assessing the results of teams with divergent functions, that cross-functional integration generated greater customer satisfaction, technological advancement and overall performance. They found that internal factors as social cohesion and superordinate identity, and external factors as market-oriented reward system, formalization of planning, and managerial encouragement to take risks are positively related with integration in NPD teams.

The only identified article within this literature review that addresses the creation of high performing innovation teams is an academic course for teaching technological entrepreneurs how agile teamwork is conducted Marion et al (2012). The course is aiming for students that want to learn how to enter the market fast with limited recourses. The course includes creation of multifunctional teams, where technical engineers are working together with industrial design students. The program follows a structure where teams are created based on Meyer Briggs’ personality trait classification, where type of engineer, background and experience
determine in what team students will belong to. The students have no influence in this process, where usually 5-7 members are forming a team together. A project manager is designated and the team gets their scope to work on. The team has weekly meetings to review project deliverables and team progress, course work and assignments. In the end of the course the team presents a concept, prototype, and technology to a panel of industry experts and angel investors. Two main success factors are identified within this course; first, the engineering- and visualization-students are cooperating; second, the students use a very experimental bases approach.

Recent research of Im et al (2013) have connected the two parts of innovation work, i.e. creativity and implementation as defined by Amabile et al (1996) to explore the antecedents and consequences of creativity in product innovation teams. They concluded that antecedents to product innovation teams, i.e. cross-functional teams, are social cohesion of both on internal- and external dynamics as they have positive impact on both new products and marketing programs. Whereas the internal dynamics are defined as the emotional factors, i.e. to know one another, to be aware of the same kinds of opportunities, to have access to the same kinds of resources, and share the same kinds of perceptions. The external dynamics are known as the organisational design and structure. In similarity of prior research, Im et al support top management support and encouragement to build the meaningfulness dimensions and to take risks, but one of the key management tasks is to remove barriers for communication to avoid conflicts and when it comes to development teams it’s suggested that a kick-off may be important to build team identity.

Recent research of Johnson (2014) suggests the Innovation Team Model (ITM), where the complexity of the innovation team and its context is demonstrated to better understand the situation of a newly formed innovation team before innovation work has begun. The difference to prior research of innovation team is that ITM focuses on the highly complex situation an innovation team, with inexperienced team members, will meet when they start conducting its innovation work, i.e. the management of innovation related knowledge, innovation related knowledge gaps, innovation related information flow and innovation awareness. In consistent with prior research, the innovation team is created differently that multifunctional teams performs better than individuals. One of the team members is suggested to be a convener to distribute the leadership to the other team members. The suggested steps in ITM are that the convener carefully choses the other team members based on their skills and personality.

2.2 The research gap

The literature review reveal an increased understanding of that teams have positive effects for companies' development of products. One can also understand that multifunctional teams are more efficient than other teams, and one can detect an increased interested of what kind of members the innovation team should consist of. There’s also a clear research focus on what factors that antecedents innovation work within companies. Quite recent, there has been an interest of creating innovation teams where employees from all levels within a company can contribute to innovation work, and even though it has had positive results there has been obvious problems in the teams as well. One identified problem in present research on innovation teams (IS-groups and EDITs) is mistrust to managers, conflicts between members and stress syndrome (Johnson and Karlsson, 2011a; Kristiansen and Bloch-Poulzen, 2010 Johnson and Karlsson, 2011a;) which is interesting as that problem was observed already in the work with SWDGs in the 1980’s (Zuidema and Kleiner 1994). Other recent problems related to innovation teams are that team members complain over long meetings, work overload and express skeptic attitude (Kristiansen and Bloch-Poulzen, 2010). Even though research clearly show that the team leader should know about the group process (Adkins 2010, Hallgren, 2009; West et al, 2004) there has been problems related to group dynamic problems causing the innovation project to struggle, i.e. wasting valuable time and energy. One reason might be that there isn’t time to create these kinds of teams in a proper way (Edmondson, 2012), but when reviewing the structured ways of creating innovation teams there’s a lack of focus on how to prevent the problems that arise when the group develops.

Now, it has been proved that multifunctional teams are more effective for e.g. NPD (e.g. Nakata and Im, 2010), and it’s stated that the cycle for innovation work is dropping dramatically (Barczak et al, 2009), but lack of innovation related knowledge have resulted in poor performance several times (Hallgren, 2009; Johnson et al 2010; Kesting and Ulhøj, 2010). Recent research has started to focus on these problems in terms of exploring the complex situation of innovation teams and how they may be created differently (Im et al, 2013; Johnson, 2014; Marion et al, 2012). However, when putting the light on processes in how to create high performing innovation teams within the context of a company or organisation there is no articles to be found, but there are two articles that deliberately demonstrate the creation of the innovation teams; West et al (2004) have developed a twelve-step-way to develop innovative teams within an organisation; and Johnson (2014) have developed a model that demonstrate the creation of innovation teams in a few steps within an organisation. The third identified article is Marion et al’s (2012) demonstration of a course that teaches technological entrepreneurs in how agile teamwork is conducted and executed.

Out of the literature review one can understand that research has stepwise come closer to the core of the creation of high performing innovation teams, but there is still no explicit process demonstrated in how to do so. Prior research focus either on innovation teams or high performing teams, not putting these aspects together to create high performing innovation teams. Another problem within the literature review is that groups and teams seems to be confused to be the same thing, but they’re not according to Wheelen (2013). It takes approximately 6-8 months of teamwork for a group to become a high performing team. However, only 15% reach that level and as many as 80-90% of the teams have performance problems within the emergence process. The problem is even higher for teams based on diverse members, which makes the creative of high performing innovation teams a delicate task to fulfil as innovation itself if highly complex.
To clarify the research gap, this research focuses on the pre-stage of innovation teams’ emergence process, i.e. to generate knowledge in how to create innovation teams in a way so they can enter the high performing phase right from the beginning, high performing innovation teams.

The contribution of this research would be to build on prior research in the way that the knowledge of how to create high performing innovation teams can speed up following innovation processes and by that contribute to increased innovation efficiency, i.e. the total time for development, implementation and the magnitude of the innovation as stated by Pearce and Ensley (2004).

2.3 Research question
Based on the introduction and problem identification, a research question has emerged and been is used within this research: What would a conceptual process that demonstrates how to create a high performing innovation teams look like?

The aim of this research is to generate new knowledge, to be demonstrated as a conceptual process, of how to stepwise create high performing innovation teams that don't waste time or energy on conflicts or other non-valuable actions.

3. Research Method

3.1 Research design
This research is inspired of the DRM approach (Blessing and Chakrabarti, 2009) in which the work has been conducted in the first two phases of the DRM model, i.e. the Research clarification in where the research problem is defined and a research question is stated, followed by the Descriptive Study-I in where understanding is provided, for which this study is demonstrated as a process describing how to create high performing innovation teams. When following two steps in the DRM model is not a part of this research, but are suggested steps to take further on.

This research was conducted in a systematic way, where the first step was to explore prior research of high performing innovation teams to understand the research area and the academic problem. The conclusion was that prior research focused on either innovation teams or on high performing teams, i.e. the focus were mainly on; the performance of teams’ work, where innovation were a plausible output; creating climate to stimulate innovation where teams and teamwork were highly supported ingredients; and the teams’ members in terms of personalities and skills to perform as effective as possible, that could generate innovative output. However, research was not focusing on creating high performing innovation teams in specific even though researchers agree on the need of faster ways to conduct innovation work.

Based on the RQ, that was stated as a result of the literature review, a theoretical framework was developed that covers the organisational-, team-, and individual aspects related to innovation, which also include team creation, group dynamics and psychology, and change management. To collect data for the theoretical framework, the database search engine Summon was used, which covers relevant research of this topic and is used in scholar worldwide.

Finally, a conceptual process on how to create high performing innovation teams was developed and demonstrated step by step. In doing so, the data was first organized in an organization-, team- and individual perspective, and then clustered into themes by searching for patterns and connections relevant when creating innovation team (Boyatzis, 1998). This resulted in three main areas; management, including top management and middle management; team leadership; and team members; The second step was to identify phases, specific factors, processes and sub processes relating to each other within the identified themes, which was used to develop a structure of a new process and theory (Blessing and Chakrabarti, 2009; Boyatzis, 1998; Langely, 1999). This resulted in a five-step process, the CIT-process (Creating high performing Innovation Teams), that on a conceptual basis demonstrates how to create high performing innovation teams.

During the development of the CIT-process, it was in accordance with current innovation processes (e.g. Andersson, 1996; Johnsson, 2009; Tidd and Bessant, 2013) subject for discussions with stakeholders as e.g. researchers, practitioners, SMEs and large industrial companies to get feedback on its academic relevance and potential on both future research and practical applicability.

4 Theoretical framework
The theoretical framework demonstrated below reflect relevant research to be used when answering the RQ within this research.

4.1 Top management and management
To establish teamwork without strong commitment by the top management will not work, and to start a teamwork initiative and then abandon it is likely to be seriously damaging the spirit of innovation initiative (McGreery, 2006a). The leadership within an organisation also reflects if the organisation is innovative or not (Ahmed, 1998), where highly innovative organizations are characteristic in four ways; first, top management promotes innovation by committing both financial support and personal interest; second, top management ensures that realistic assessments of the market for planned innovations are made and is close to the end users to accurately assess potential demands; third, top management ensures that innovation projects get necessary support from all levels in organization; fourth, top management ensures that structured methodology/systems.
are set in place so that every potential innovation goes through a careful screening process prior to actual implementation. Another way to identify if an organization is innovative or not is to use system theory (Backström et al., 2011), where system theory can be used to understand an organization from its work system. At one end of the spectrum is the industrial work system, which is stable and non-innovative. In this type of organization innovation activities must be organized in a parallel organization e.g. R&D departments or innovation projects. The characteristics of an industrial work system are specialization, standardization, centralization and mechanization, which support stability and discourage changes and deviations. At the other end of the spectrum is the post-industrial work system that is innovative in itself, with characteristics such as decentralization, diversity and generalization, which are supporting change.

Top management, i.e. management that make the strategic planning of the company should promote innovation by committing both financial support and personal interest, and ensure that realistic assessments of the market for planned innovations are made and close to the end users to accurately assess potential demands. The top management should also ensure that innovation projects get necessary support from all levels in organization and that structured methodology/systems are set and ensure that middle management in all levels are committed to the use of teamwork (Ahmed, 1998; West et al., 2004). Another task for the management in general is to encourage risk taking (West et al., 2004) and encourage learning from mistakes rather than establishing blame (Aagard and Gersten, 2011).

Research shows that it can take 6 month for the top management to understand the purpose of innovation work (Johnson and Karlsson, 2011a) where actions as e.g. starting to implement new ways of working, empower people, rewarding employees for taking action, making difficult decisions related to employees, processes, and structure are important (Dobni, 2006; West et al., 2004). But, if one wants to change a company to become an innovative organization the agreement of top managements is essential (Hayton, 2003; Hayton and Kelly, 2006; Ribiero-Soriano and Urbano, 2010; Ün et al., 2010) or the change will never last (Gamatese and Hallowell, 2011; Kihlbom, 2005; McGreevy, 2006a). However, even though top management agrees on starting the organizational transformation and time is required for people to acquire their own understanding of aims and visions (Kihlbom, 2005). One solution is to start with a pilot project to demonstrate the benefits of teamwork, to provide a pool of “champions” to spread the word and flag up potential mistakes that can be corrected as the project is expanded (McGreevy, 2006a).

Empowerment is one of the most effective ways for an organization to innovate (Ahmed, 1998, Brown, 2005, West et al., 2004) and to develop an organization towards an innovative organization (Ahmed, 1998; O’Reilly and Pfeffer, 2000; Vandenberg, 1999; Xu et al., 2006). To accomplish empowerment there are four actions suggested to address to support and to prevent the “fear of looking foolish” or “we have never done things that way before,” establish a meaningful “actions” boundary, showing how far employees can develop ideas; second, define risk tolerance and show the level of risk within which it is safe for the employee to experiment. The employee can then find space and time in which to perform innovation work; third, structure involvement by designing the organization to achieve involvement as the beginning of innovation requires an impulse; fourth, accountability is needed as new processes are put in place which requires an updated definition of responsibilities (Ahmed, 1998). Increased autonomy together with training in diagnostic and problem solving techniques allows teams to take more responsibility for its actions, which can lead towards innovations. Further on, teams that develop their own recommendations for improvements or solutions to problems are much more likely to implement them successfully, and this might help them to see even wider implication of ideas they may have for changes or improvements (McGreevy, 2006a).

4.2 Team leadership
As innovation processes have changed from linear innovation processes to cyclic innovation processes over time, the requirements of an innovation manager’s skills have also changed (Adams et al., 2006). In the past, innovation work was most often managed by engineers caused by the focus of technical development (Christensen, 1997), but in order to handle the cyclic innovation processes a new way of leading innovation projects is required where the main differences are the multifunctional approach with both internal and external linkages (Trott, 2012). By that the need for holistic understanding increases with more process-oriented work and the delegation to the individuals’ to take responsibility for his/her own relation to innovation projects, but to accomplish that the individuals must require a certain level of information and skills to act autonomously and simultaneously (Backström et al., 2011).

Innovation is closely related to change, and to prevent change resistance free access to information is needed (e.g. Aronson, 1999; Kihlbom, 2005). To accomplish a free flow of information regarding innovation related knowledge, an innovation driver is suggested to support the team with its learning progress and communication with management (Hallgren, 2009; Johnson and Karlsson et al., 2010), which could be useful in newly formed innovation teams as research show that they have problems to understand and to utilize from new innovation related information for some time (Johnson, 2011; Johnson and Karlsson, 2011a; Karlsson et al., 2010). Still, the team needs clear leadership, associated with clear team objectives, high level of participating, commitment to excellence and support for innovation (McGreevy, 2006b; West et al., 2004). To accomplish that, the leader should influence and encourage team members to move from self-interest of work into seeing themselves as one unit by relying on charisma and the ability to raise inspiring visions of the future. If the team is encouraged in this way they could handle setbacks better and is more open to take extra effort in work and taking risks in developing innovative solutions. On the other hand research say it’s too complex to plan, manage and control an innovation project for one single person (Trott, 2012).

It is pointed out by McGreevy (2006b) that the influence and usefulness of team leaders come from, not the delivery of traditional supervisory and control methods, but from their ability to lead from the front and in
training, coaching and counselling their team members to high standards of performance. It is also suggested that the first step when choosing team leaders is to decide the type of leadership to be adopted, where three ways of leadership are distinguished. The team leader is a working team member with the main responsibility for direct liaison with management, and the team operates without a designated leader inside or outside the team, i.e. the self-managed team. The type of selected leadership will determine the needed training needs. Organizations that choose to have a team leader operating from outside the team may select from e.g. existing supervisors or operatives and train them to fulfill the new role. Team leaders working within the team will need full leadership training. Teams that have no designated leader will need on-going training for team members to help them manage group- dynamics, conflicts and decision-making (McGreevy, 2006b). Another perspective on leadership is that teams with little formal training normally meets and often exceeds expectations, but problem solving teams are more effective if participants feel ease with one another and are supported by a trained facilitator that helps the team to reach its objectives by making members look at the situation from different perspectives. (Nanda and Singh, 2009).

4.3 Team members

Multi-functional teams are based on the knowledge that a team performs better than individuals and that divergences in knowledge stimulate the creation of new ideas (Backström and Olson, 2010; Hallgren, 2009; O’Reily and Pfeffer, 2000; Smart et al, 2007; Vandenberg, et al, 1999; Xu et al, 2006). A multi-functional innovation team is built on the principle that divergences in competence strengthen the team by avoiding internal competition (Hallgren, 2009) and divergence prevent group thinking (Backström and Olson, 2010; Isaksen and Ekvall, 2010), but at the same time the members should be driven by convergence which means that the team members want to contribute to the team’s work and want to build on each others knowledge (Backström et al, 2011). The convergence and divergence follows a jigsaw proceeding, where norms are developed. New knowledge is created by blending knowledge and joint discovery and to accomplish interdependence every member should have a piece of the entire knowledge, a goal important for every member to reach and a specific task for which every member can focus on according to their specialty (Lubaktin et al, 2001).

It is of importance that the team is capable of doing their job for which they are selected to do. This clearly implies that the membership should include people able to contribute towards the completion of the task, i.e. specific expertise, knowledge or experience are vital but equally it is important that the members of the team also have the skills necessary to operate within the team if the team is to work and at least one member of the team will need leadership skills and be able to run team meetings and group activities McGreevy (2006b). Further on, the innovation team members should be individuals who are able to perform on both individual and collaborative level (Feng et al, 2009) and are dedicated, trusted and positive in their role as members of the innovation team (Hallgren, 2009; Pearson, 2002; Xu et al, 2006) as the personalities of the members are crucial to the survival of the team. “By pulling together the right people with the right combination of skills and training and giving them time to build trust, companies can accomplish big things” (Edmondson, 2012), meaning that team members who are knowledgeable and confident, with a high tolerance for ambiguity, who are also self disciplined and persistent are likely to be more innovative than others as they can handle uncertainty and avoid problems of getting stuck in mental barriers (West et al, 2004). One way of gather a team is to focus on the team member’s roles (Belbin, 1993), where eight terms of acting is identified and of importance; Coordinator, plant (i.e. those who think up the ideas), monitor-evaluator, resource investigator (RI), teamworker, implementer, shaper, specialist and completer finisher. Belbin points out that imperfect people can make perfect teams and the roles, skills and contributions of individual members of a team are complementary. He also points out the importance of having these personalities working together as some of them do not or difficult to combine in the same team. E.g. a team consisting of workers would have no practical use if there were no completer finishers bringing the ideas into practice.

Another way to search for personalities, is to use the Big Five or the Five-Factor Model (Barrick and Mount, 1991) that consists of; Conscientiousness, is the degree of a persons tendency to be dependable, organized, reliable, ambitious, hardworking and preserving; Agreeableness is reflecting the tendency of a person to be helpful, friendly, warm and cooperative; Extraversion is the proclivity of a person to be sociable, enthusiastic and optimistic; Emotional stability refers to the tendency of a person to be calm, secure and steady; Openness to experience refers to the nature of a person as curious, imaginative, broad-minded and sophisticated. LePine et al (2011) have tested the Big Five and came to the conclusion that the relative importance of the five dimensions depends on the task the team is intended to perform and becomes more important to consider if the work becomes interdependent. It is important to remember, when beginning the design of an innovation team that a single person with a negative approach to cooperation or new influences can spoil the work of the entire team. One person with low levels of agreeableness, conscientiousness or emotionally stability could potentially harm the performance of the entire team. Members of the team should have these characters to a high degree except for extraversion where its variation is to prefer to avoid conflicts regarding leader roles. A team with these personality characteristics is most likely to help and motivate a member that is underperforming in specific tasks, as long as there are visible results. If the feeling is that the performance is not improving they might try to expel him/her from the team. This reaction is natural but would probably raise the level of criticism and emotional conflict instead of increasing the team’s effectiveness. The key is to staff a team with individual-level of behaviours that are considering critical to the team’s overall performance (LePine et al, 2011).

The number of members affects a team in several ways. A small number of physical connections will stabilize
the team and increase the level of novelty which the team can handle as they have considerable potential to be flexible, agile and creative (Backström et al., 2011; Hemphälä and Magnusson, 2012; Hoegl, 2005). Creative teams of six members are best performing and producing qualitative ideas, and the reason is that the members could be divided in equal pairs. Three pairs perform better than a group of six members when solving the same problem, the explanation is that a small group of two members doesn’t suffer from e.g. social loafing or production blocks (Dew and Hearn, 2009). The number of members also affects group productivity, research show that groups of 3-8 members are significantly more productive, creative and developmentally than groups with 9 members and more. The size of groups is a crucial factor for group development and productivity where smaller groups are much faster to pass through the different stages to come into work (Wheelan, 2009). The problem with too many members in a team is that communication becomes complicated. The number of connections increases a lot for every new member, e.g. a team of four members has 6 links but there is 45 links between members in a team of ten people, which complicates the communication (Hoegl, 2005).

4.4 Creating teams

Groups and teams are often confused as one generic term, but they are not, as described above. As soon as a group is created they start their maturation and emergence process, i.e. the group members form rules and organizational structure (Backström et al., 2011). There are generally a few phases to pass before a group becomes a team (Buijs, 2007; Tuckmann and Jensen, 1977; Wheelan, 2013). Tuckmann and Jensen (1977) suggest a four-stage process in which the members in a group’s first stage are engaged in boundary work; The second stage is characterized by conflicts and resistance; In the third stage are norms developed by the members; The fourth stage is where the group’s energy is focused on the group’s task and its performance. When the team’s task is completed the team terminates, which could be considered as a fifth stage. Wheelan (2013) suggests that the team emergence process is a four-stage process; the first stage is characterized by the members’ dependency on each other and focus is to be included in the group where the members pay more attention to each other rather on the tasks they are supposed to perform; the second stage is characterized by conflicts and norms are developed with purpose to develop a climate in which the individuals can feel safe to express any kind of idea or issue; the third stage can be reached if the members manage to get through the second stage. In this stage the members begin to trust each other and try hard to strengthen the connection to each other’s work; In the fourth stage, the group is finally transformed into a high performing team, but only 15% of all teams in stage three enter this stage. This stage is characterized by teamwork in which the members chose to accept responsibility for different tasks, with increased chances for innovative output as a result.

Another way of creating teams is suggested by Adkins (2010) where she points out three levels of importance; first, the teams should be based on ground rules such as commitment to set a project goal, openness to each other, respect to the other members’, courage to be open and focus on the job; second, the team members should keep communication flowing, focus on simplicity, give and expect concrete feedback, and to have encourage to change directions late in the project; third, the team should be self-organized, empowered to take own decisions, believe that they can solve any problem, be committed to team success and trust each others.

Yet another approach when creating teams is suggested by McGreevy (2006a) in five steps; the first task when creating teams is to gather information of what teamwork is and how it affects the organization; second, make sure that top management is committed to the teamwork approach and ensuring that middle management follows the same track, third, plan for change of culture and management structure; fourth, select team members and develop the team. The team members should have the management’s permission and encouragement to participate in the team, and they should according to McGreevy (2006b) be selected across the organisation such as sales, marketing, purchasing personnel and finance to foster a collaborative climate rather than a competitive approach.

5. Creating high performing innovation teams – A conceptual process.

Based on the theoretical framework a process in five steps is suggested when aiming for creating high performing innovation teams. The approach of the CIT-process (Creating high performing Innovation Teams) is to be similar to a guideline, where the purpose is to ease organisations’ effort in creating innovation teams that not suffer from group emergence related problems or innovation related knowledge problems. If this is the first time an organisation use the CIT-process it can benefit from being assisted by a knowledgeable facilitator in the suggested steps, where the facilitator can be an internal or external person who have the ability to teach the methodology in an inspiring and supportive way. The reason is that the CIT-process may differ a lot from the organisation’s ordinary way of conducting innovation and thereby fall back into old tracks when the new path is new and unknown.

5.1 The CIT-process

- Secure top managements’ and managements’ commitment.
- Identify an innovation team convener.
- Prepare (prime) the convener.
- Gather innovation team members.
- Innovation project kick-off.
First, secure top managements’ and managements’ commitment. This step is crucial if one wants the becoming innovation work to be official, otherwise one can skip this step and create an “under radar innovation team” that conduct skunk work. But, as research claim that companies need to become more innovative in their approach, it’s worth the effort to get top management and management aligned in the mind set of agile innovation work. In this first step, top management and management need information of how the innovation work will be conducted by the innovation teams, i.e. to inform the CIT-process step by step in terms. One hurdle to pass in this initial step is to convince top management and management that unknown factors are a part of the usual innovation work to handle, and another hurdle may be to see innovation work as investments instead of risks. Depending on where the organisation is, i.e. to post-industrial or to industrial scale, the time for top management to see the benefits of high performing innovation teams vary, and one shouldn't be surprised if it takes months to come to the agreement of setting up a pilot project to start with. Some argue that pilots are used to dismiss a new idea/process later on, other actually use pilots for real evaluations and improvements. To gain the feeling of ownership and control for top management and management, they can point out strategic important directions to work on, which also helps the creation of high performing innovation team as it much easier to find appropriate team members;

Second, identify an innovation team convener. The management, together with the facilitator if needed, makes the selection of convener. This second step is related to team leadership, but the convener is not to lead the team but to ensure that the innovation team is leading itself. If the convener can contribute to the innovation work it’s a nice add on, but not crucial for the selection. It’s more important that convener has the ability to see the benefit of the innovation organisation work in the same way as top management and management, and have the ability to steer an innovation project to the goal together with the becoming team members who is not yet selected. The convener’s role is to create a small organisation that is build on convergence and divergence, in where the becoming members can feel that they become one unit and share leadership as a team. There’s no problem for a manager in the high performing innovation team, all the becoming innovation team members, not just the convener, will have expertise within their area and they will by that lead any part of the innovation project that relate to their expertise. Together, the team will take a unite ownership and management responsibility for the progress. The main task for the convener is to focus on the working environment and secure that the team works together on consensus, helping and supporting each other in the becoming challenging innovation work. In this work, as for the previous work, patience is important. It takes time to find the right person and time to secure this person’s manager’s support for participating in the high performing innovation team. One can assume that at least 10% working time is needed, in some parts of the coming innovation project even more time is needed;

Third, prepare or prime the convener. As soon as the convener is identified and has accepted the challenge to create the becoming high performing innovation team, the previous work conducted with top management and management to build confidence in the forthcoming innovation work starts over again with convener in focus. The purpose of priming the convener is to prepare him/her for group process problems, cyclic innovation processes and to feel secure when the innovation project suddenly finds new ways towards the goal, which is not yet fully defined. Another task that the convener must prepare for is the challenges of transferring the way of conducting innovation work in an autonomous innovation team where shared leadership is the key. Here, the facilitator can support with in-depth knowledge concerning how to think when choosing team members based on multi-functionality, how to conduct agile innovation work with guidelines and tools for the different steps in the innovation process, and how to communicate the need of individuals’ responsibility and importance of commitment. As remembered, the convener only has an innovation direction to aim for, and based on that the convener starts to think of possible team members, how to conduct a kick-off and how to get the group to become a team instantly. In this part of the priming, it’s important to focus on the convener’s self-confidence, the reason is that the more input he/she gets, the more complex is the situation to master;

Fourth, gather innovation team members. This steps is one of the most critical ones, as one of the ground rules is that the high performing innovation team are build on team members’ trust to each other, trust in the sense that e.g. work agreed on becomes executed and delivered in time, and that the commitment one feel in the beginning to something new doesn't fade away. Therefore, the convener must carefully choose team members that fit the purpose, and the convener shouldn't be surprised if this takes one or a couple of month to accomplish. One reason is that, if a person is invited and that person accepts the invitation, he/she should not be terminated from team. Here, the previous process with explaining the overall methodology is a now the convener’s tool when inviting team members to be the core of the high performing innovation team. As mentioned, a high performing innovation team is based on multi-functionality, where at least one member should have connection to the organisation’s market. The other members’ functions depend on the innovation project, but in total the team is preferable not bigger than 4-6 core members including the convener. When searching for team members the convener should define what core competences that could be essential to the innovation project, and choose invite members in accordance to that. The thing is to identify key persons within these specific areas that want to participate and are open minded to new ways of working. The reason is that key persons are trusted, they have self-confidence, they have established network and can easily connect to new networks when needed, and can get help with specific tasks in the innovation project. Two critical aspects regarding time to think of when inviting the key persons; first, the key person must have available time to work in the innovation team, i.e. real time available, not “I-can-get-it-done-somewhow-time”; second, the key person’s manager must approve that the invited person can work in the innovation project. Both of these aspects may be a problem later on if not taken care of in a serious way. Otherwise, the effect may be that the innovation project starts but suddenly no one is doing the practical work. The high performing innovation team is not suppose to do all the work by themselves, but to involve colleagues on temporary basis that conduct specific tasks along the innovation project. So, acquired time to ask for is about 10% for each members, but the situation for the team members will be the same as for the convener, i.e. there will be occasions where less or more time is needed;
Fifth, is the innovation project kick-off. This is the final step of preparation and the first step in the practical innovation work. This is the time where the high performing innovation team is officially created and kicked off. Again, the overall methodology is explained to the team members, including the expected problems from group emergence and how agile innovation work is conducted. The reason is to demonstrate that there will be tough situations to handle but they are already covered for. The team members may not have met each other before, which is one challenge to handle, therefore the team starts with establishing ground rules, expectations and to set a goal for the innovation project. Here, the facilitator can help by supporting with in-depth knowledge in group dynamics, team building exercises to provide the first hands-on tools to get the practical innovation work going. By this work, the team members have been pruned in a similar way as the convener, manager and top management, i.e. the methodologies of why the innovation team is created in the way it is have been approved in all levels and by the individuals concerned. And by this work, the innovation team may be ready to start in a high performing mode without waste of time and energy, i.e. a high performing innovation team may have been created.

6. Discussion and conclusion

6.1. Creating high performing Innovation Teams (the CIT-process)

As demonstrated above, the suggested CIT-process is step-by-step process that begins with the top management and ends with a innovation project kick off. Below the CIT-process is discussed from the perspective of the theoretical framework.

6.1.1. Securing top managements’ and managements’ commitment

The CIT-process starts with the approval of top management (Dobni, 2006; McGreevey, 2006b) or management that can make a decision of creating a high performing innovation team. This first step requires patience as top management might need several months to adopt a new mind-set, or the wanted commitment is easily changed for mistrust (Johnsson and Karlsson, 2011b) and would delay the CIT-process. In accordance with Backström et al (2011) the organisation itself must be mature enough to embrace new ways of working or this moment easily enters a catch-22-moment based on the uncertainty connected to innovation work. To set up a project team to conduct an ordinary project is far different from creating a team with purpose to create innovative results because the context is much more complex in terms of e.g. acquired innovation related knowledge (Johnsson, 2014). The creation of a high performing innovation team is equal to change, i.e. the organisation has to change to some degree to be able to conduct innovation work in a new way, and the new innovation team need back-up and support from its management (Gamatese and Hallowell, 2011; Hayton, 2003; Hayton and Kelly, 2006; Khilmbom, 2005; Ribiero-Soriano and Urbano, 2010; Un et al, 2010; West et al, 2003) space and empowerment (Ahmed, 1998; Backström et al, 2011; 1998, Brown, 2005, West et al, 2004) to become high performing. Management need to

The top management should ensure that innovation projects get necessary support from all levels in organization and that structured methodology/systems are set and ensure that middle management in all levels are committed to the use of teamwork (Ahmed, 1998; West et al, 2004). Another task for the management in general is to encourage risk taking (West et al, 2004) and encourage learning from mistakes rather than establishing blame (Aagard and Gertsen, 2011).

Even though empowerment and autonomy is required for successful teamwork, its also suggested that management provide a newly formed innovation team with a direction of innovation work (Hallgren, 2009, Tidd and Bessant, 2013). However, the innovation team must feel freedom to conduct the innovation work in a way that is not too structured.

6.1.2. Identify innovation team convener

Except for the commitment of top management and middle management of all levels, the team leadership has a central role in the high performing innovation team. Prior research shows that an innovation team leader must be well experienced from group processes and able to encourage team members to mature into a team-feeling (Hallgren, 2009; West et al, 2004), and that involving inexperienced employees in innovation work is good for innovation in an overall and long term perspective (Bessant, 2003; Xu et al, 2006). Despite that, innovation teams created in that way have demonstrated group development related problems and innovation related knowledge problems (Hallgren, 2009; Johnsson, 2011; Johnsson et al, 2010; Kesting and Ulhøj, 2010; Kristiansen and Bloch-Poulsen, 2010). External innovation drivers have been successful for the innovation project performance (Johnsson et al, 2010; Hallgren, 2009) but the learning aspects have not been fulfilled to enable the innovation teams to work on their own. To meet these problems, the CIT-process suggests that the innovation team leader or innovation team manager is replaced for an innovation team convener (convener).

The person suitable to become a convener is a person that understands the importance of group processes (Hallgren, 2009; West et al, 2004) and plan for shared leadership (Adams, 1996, Backström et al, 2011, Trott, 2012). The convener should also have the ability to understand and set up a innovation teamwork environment (Johnsson, 2014) where the team members are motivated and have self-confident (West et al, 2004), not feeling threatened of being excluded of the team (Wheelan, 2013), and the convener him-herself must e.g. be participating, supporting and letting team members to make own decisions (Backström et al, 2011; Byrne et al, 2009; West et al, 2004), striving the members to freely contribute to innovation (Dobni, 2006; Hallgren, 2009; Pearson, 2002; Xu et al, 2006) and understands the positive and critical effects of a broad representation of functions (Kelly, 2005). On an organisation perspective, the innovation convener also have support from an
innovative organisation theory in the way that modern highly innovative organisation are build upon consensus and shared leadership (Laloux, 2014).

6.1.3. Prepare (prime) the convener.
To avoid group process problems demonstrated by e.g. Tuckmann and Jensen (1977) and Wheelan (2013) and experienced in prior research above, the main idea of the CIT-process is to aim for shared leadership already when planning for creating a high performing innovation team. In accordance to this, the convener should be educated in innovation management in general, in the basics of innovation teams, how to select team members and to get commitment from their managers, group dynamic perspective and how to manage the innovation model in practice. But, the convener must also be supported by his/her managers and get time to use a “learning by doing”-approach (Hallgren, 2009; Johnsson et al, 2010) to overcome problems (O’Reilly and Pfeffer, 2000; von Hippel and Tyre, 1995) to acquire their own understanding of aims and visions (Kihlbom, 2005).

The preparation and education should be provided by a person with experience from all these areas (Hallgren, 2009; Johnsson, 2014; Johnsson et al, 2010; Nanda and Singh, 2009) and the suggestion within the CIT-process is that this person act like a facilitator to the convener and the innovation team until they are able to manage by themselves, i.e. innovation work differs from ordinary work activities in that way that innovation work has the purpose of contributing to something new. Innovation models are well described in several schematic models during the last decades (Andersson, 1996; Baxter, 2002; Johnsson, 2009; Michanek and Breiler, 2004; Ottsossen, 1999 Tidd and Bessant, 2009), and further on described for practitioners in literature (Adair, 2004; Utterback et al., 2006; Johansson, 2005; Johnsson, 2009; Kelly, 2001; King and Anderson, 2002) but not handling the potential of releasing untapped innovation capacity from ordinary employees’ work-activities, and this is here the facilitator is suggested to support the convener and the innovation team with practical advice (Hallgren, 2009; Johnsson et al, 2010) in accordance with a blended learning approach.

6.1.4. Gather innovation team members.
The first assignment of the convener is to identify the team members and their managers to get the approval for spending time in the forthcoming innovation work (Hallgren, 2009). When selecting members, the Big Five criteria are of importance to have in mind, i.e. to have members that are e.g. organized, reliable, ambitious, hardworking, helpful, cooperative, sociable, enthusiastic, optimistic, calm, stable, curious, imaginative, broad-minded, sophisticated. Further on, the persons should be positive to new influences and new knowledge, and enjoy working together in a team. LePine et al, who have conducted research based on the Big Five developed by Barrick and Mount (1991) come to the conclusion that the selection of team members must be taken seriously, as one person who does not satisfy these criteria can have a negative effect on the work of the entire team and further on ruin the project (LePine et al, 2011). If the innovation team feels that the performance is not improving caused by some person or persons, a natural reaction is to try to exclude him/her/them from the team. Instead, the innovation team should focus on helping that person to increase the team’s effectiveness (LePine et al, 2011; Wheelan, 2009).

The becoming members’ participation by free will is of importance (Hallgren, 2009; Hoegl et al, 2003; Nerkar et al, 1996; Xu et al, 2006) and Hallgren (2009) suggests that the idea to be developed should be the attractor of team members, but one problem to be aware of is that most employees do not participate because of a perceived lack of time, resources and knowledge (Kesting and Ulhøj, 2010). However, it is also important that the ideas follow or align with the overall strategy of the organization). Prior research show that small teams are more effective than larger teams, where a suggested number of members are 3-8, but the best performing teams are 3-6 members (Dew and Hearn, 2009; Wheelan, 2009). Within the CIT-process I suggest that a team is ready to launch an innovation project when the convener has gathered another 2 or 3 members to participate in the innovation team as long as they have received some education or training in innovation management and have reached the readiness for learning (Hallgren, 2009; Tidd and Bessant, 2009) and leave a few places to be used for temporary members. More than 6 members would probably cause social loafing (Aronson, 1999; Clark, 2003; Dew and Hearn, 2009; Wheelan, 2009). Members of the team should have characters according to the Big Five except for extraversion where its variation is to prefer to avoid conflicts regarding leader roles according to LePine et al (2011) but the CIT-process follow the research of innovation models (Andersson, 1996; Baxter, 2002; Johnsson, 2009; Michanek and Breiler, 2004; Ottsossen, 1999; Tidd and Bessant, 2009, 2013) where both an external and an internal perspective are of importance. By external perspective I mean active connections with e.g. end users, customers and suppliers and by internal perspective I mean connections with other departments and an internal network containing relevant competences. The CIT-process also builds on shared leadership (Backström et al, 2011, Trott, 2012) why I believe that extraversion is a positive character for all members of the innovation team.

The innovation team should be multifunctional where divergence and convergence should work as attractors of the members (Lubaktin et al, 2001). Divergence in e.g. skills and knowledge is positive for the dynamic of the group. It prevents groupthink, which in many cases are the cause of incorrect decisions early in projects, and divergences in a network are also positive as they make it easier to find relevant competence when needed (Isaksen and Ekvall, 2010; Olsson et al, 2010).

In accordance with LePine et al (2011) the innovation team members should be open to learn new methodologies, but as the members are in a process of divergence and convergence the individuals need to have reached the readiness for learning (Billett, 2001; Ellström et al, 2007). The process of achieving learning readiness is dependent on the individuals and organizational wish to engage in this kind of work (Ellström et al, 2007), in this case, innovation work. This relates to the ability of being aware of innovation affordances, i.e.
opportunities to innovation in everyday work or other situations. Norman (1999) claims that affordances are available everywhere at all times, but it has to be detected. Affordances can be visible or perceived in a physical product or be invisible in a situation, e.g. at a workplace, in the supermarket while shopping, in contact with a supplier or at a meeting with the innovation team. The ability to achieve innovation readiness in order to detect affordances needs some practice why the convener has to identify members with open mind of learning related skills.

6.1.5 Innovation project kick-off

As claimed above, innovation is about change. In the case of innovation, it is most often connected to changing established working routines. In the same way as it is suggested to prepare the convener to establish a good start, the CIT-process suggests that the entire innovation team start with a kick-off where the members can unite and start their development process (Amabile et al, 1996). Actually, in the CIT-process the group development process starts at the same time as the convener invite the team members to join the team and being prepared to the project in overall. This case the start up as the members can start to get to know each other before the kick-off (Edmondson, 2012; Nanda and Singh, 2009). On the kick-off, the main focus is to establish a team formation based on the unique situation of the innovation teams (Olsson, 2010; Wheelan, 2013), meaning that they should set the agenda, set goals, find ways to start work and to communicate together, to meet and to relate to each other, and the most important thing is that all members actively agree on what they decide on (Adkins, 2010; Backström, 2011). The role of the convener at the kick-off is to build trust and establish a safe environment (Kihlbom et al, 2005; Kihlbom and Karlsson, 2011b, Lubaktin, 2001), which could be achieved by being honest in limitations and uncertainties, ensuring no hidden agendas, acknowledge ideas, create space for communication without filtering information between management and members. Another important part at the kick-off is to be explicit in the group dynamic process problems that might appear and how to handle it. By doing so every member is prepared in what might come, which makes future situations easier to detect, to handle and sort out (Wheelan, 2013). To support the convener at the kick-off, the facilitator play on important role of preparing the team in the same way the convener was prepared (Hallgren, 2009; Kihlbom, 2005; Nanda and Singh, 2009).

Time is required for involved people to develop their own understanding of what is going on and to understand what will come (Kihlbom, 2005), to emerge as a team and develop order parameters (Backström and Olson, 2010). Once in a while it can be valuable to remind top managers that the team members need time to both understand innovation work and to develop the team, especially as research show that even e.g. top management needs around 6 months to understand the content of starting a change towards an innovative organization (Karlsson et al, 2010) and 6-8 month to develop a high performing team (Wheelan, 2013).

Learning begins in the individual, continuing as group learning, performed via a dialog and discussions between the individuals. The final step is a system thinking that is shared by all concerned (Kihlbom, 2005). When interpreting this into the CIT-process, one can see introduction of the top mangers, managers, convener and the gathering of team members as individual learning. The group learning starts at the kick-off and system thinking is achieved when all members reach the critical level of understanding.

6.2. The CIT-process as a pre-stage to group processes

As suggested in the previous section, the CIT-process is a step-by-step process that starts on the top management level and ends with a kick-off. When looking on the CIT-process from that perspective, it could be seen as a pre-stage to established group dynamic processes as the group starts with a forming stage and hopefully reach a team stage (Buijs, 2007; Tuckmann and Jensen, 1977, or preferable a high performing stage; Wheeler, 2013). Even though time is needed to prime and prepare the involved people, which may take months of work, one benefit is that its’ only affecting the convener, i.e. one person, and not the entire team that consists of e.g. 4-6 people. Another benefit is that there will be commitment from the team members already from the kick-off, and they can start forming norms and discuss plausible issues that may cause conflicts from the very first day of the innovation project. That prepares the team for possible problems that may occur in the forthcoming work, and by that save time and energy.

6.3. Conclusion

The CIT-process is a conceptual process that step-by-step guides an organization to create high performing innovation team. It’s developed from established research in accordance with the DRM-approach’ first two stages, i.e. an RQ is stated on a literature review and understanding is provided in terms of a process, which is discussed from a perspective of a theoretical framework. On a theoretical level, the CIT-process is guidance to organisations that aim for increased efficiency when developing new products (services, processes etcetera) as it may reduce time and energy for an innovation team to become high performing.

The message of the suggested CIT-process is that one should not hope for an innovation team to reach the high performing stage, nor to focus on tools to use to rescue innovation teams already in problem. Instead, one should carefully plan and prepare for a high performing innovation team to be created in the first place. This is suggested to be done by addressing plausible group process problems and challenging uncertainty in innovation work, prime and prepare involved people as top management, management and team members, aim for shared leadership when involving the convener and team members all the way to kick-off and beyond, secure support from an experienced innovation facilitator that can remind the convener and team members of the group development challenges and planned uncertainty along the innovation project when needed.
6.4. Contribution to prior research

This research contributes to prior research in several ways. On a holistic level it contributes to group dynamic processes by suggesting a pre-stage to already established theories, but from an innovation perspective that is. It also contributes to theories of innovation teams as it suggests new ways of organising the team. However, to be more specific, there are four main contributions to highlight; first, prior research focus on either innovation teams or high performing teams. The contribution of this research is that it connects these two branches together, which resulted in a conceptual methodology of how to create, not “just” any innovation teams, but high performing innovation teams; second, prior research suggests that an innovation team consists of the team leader or an innovation driver to ensure that the progress is ensured, the consequences are that the innovation team suffer from lack of innovation related knowledge. This research contributes by suggesting a set up based on an innovative organisation structure, where the innovation team is leading itself based on a shared leadership among the innovation team’s members; third, prior research conducted on innovation teams reveal problems connected to performance caused by lack of innovation related knowledge. This research contributes by suggesting a convener, and a facilitator if needed, to ensure that the innovation related knowledge is provided to the team members. The facilitator ensure that that top management and management is provided with adequate innovation related knowledge; fourth, prior research conducted on innovation teams demonstrate problems connected to group emergence problems. As demonstrated in the introduction, a lot of research of innovation teams and group development has been conducted, but not focusing on the part when creating high performing innovation teams as this research have done. The contribution of this research is suggestions of how to prevent the first most problematic and struggling stages a newly formed innovation team has to handle. The key element here is to enter the high performing stage faster and more easy than before, where the suggested way is to secure the innovation project by ensuring commitment from all levels in the company, to carefully choose a convener, invite team members that ensure their buy-in and to provide an understanding of the group dynamic process.

6.5. Practical application

The conclusion of the CIT-process is that an innovation team’s forthcoming success could be planned for in advance by properly preparing for a high performing innovation team already on the drawing table. When focusing on providing solutions to already known group process problems before the innovation team is gathered, as described above, the team have the potential to skip the first challenging part of the group process and start in the team-, or even better, in the high performing phase. This would probably save a lot of time, money, energy and effort for all involved persons and parties.

6.6 Limitations of research and suggested future research

This suggested CIT-process is based on a theoretical framework developed on the base that there is a lack of knowledge in how to meet organisations increasingly need for faster way of conducting innovation work. And, even thought collected data involves research and best practice regarding innovation teams and group dynamic processes there are limitations as the CIT-process has not been validated through practical tests yet. The CIT-process is designed to be applicable on organisations as e.g. SMEs or large companies that aim for developing a more agile way of conducting innovation work. The suggestions for future research is to create case studies where the CIT-process could be studied. The research focus would e.g. be how a facilitator affects the innovation team, the innovation team’s development process and the team’s performance. Measurable indicators would be to measure cost, time and intangible results and values from innovation projects, and to compare those results to how the company usually plan and conducts similar innovation projects. Of course, a study regarding if an innovation team created in accordance with the CIT-process will be high performing or not is highly suggested.

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Innovation Enablers for Innovation Teams – A Review

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Abstract. This review consolidates research on innovation enablers for innovation teams, defined within this research as factors that enable a cross-functional team within an organization to conduct innovation work, to identify and provide a deeper understanding of what factors that enable innovation teams to conduct innovation work, which means that this research cover three areas to provide a holistic picture; the organizational context; the team itself; and the individuals within the innovation team. A systematic database search was conducted where 208 relevant articles were identified and analysed in a thematic way. 20 innovation enablers related to innovation teams were identified; Awareness; Capabilities; Climate; Collaboration; Culture; Dedication; Economy; Education; Empowerment; Entrepreneurship; Human resource; Incentives; Knowledge; Knowledge management; Management; Mind set; Need; Processes; Strategy; and Time.

This review contributes to prior research by means of providing a deeper understanding of what key factors that enable innovation work for innovation teams. Suggestions of both academic and practical use of identified innovation enablers are included in this review, and future research is suggested.

Keywords. innovation, innovation management, innovation enabler, NPD

1 Introduction

Innovation is needed for companies that want to stay longer in business (Dobni, 2006; Patterson, 2009) where established companies most often have the economic resources required to conduct innovation work (López-Fernández et al, 2011). But, most often they need to reframe their organizations to support innovation (Tidd and Bessant, 2013), where innovation teams are a suggested way of creating small units within the company or organisation to conduct innovation work (Johnsson, 2014; Yu, 2010; West et al, 2004). This builds on at least two reasons; first, teams are known as e.g. effective, creative and agile (Backström and Olson, 2010: Dew and Hearn, 2009; Wheelan 2013; Zuidema and Kleiner, 1994); second, multifunctional and cross-functional teams perform better than single persons (Arranz and Arroyabe, 2012). The reason is that the broad range of knowledge within a multifunctional team stimulates the creation of new ideas and increases the spread of knowledge and favour creative performance (Ahmed, 1998b: Backström and Olson, 2010: Kelly, 2005: Smart et al, 2007).

1.1 Aim, focus and expected use of knowledge from this research

The aim of this research is to conduct a literature review to identify key factors that enable an innovation team to conduct innovation work within an organisation, i.e. innovation enablers for innovation teams. The innovation team is by that affected by the organisational context (Guzzo and Dickson, 1996; Hackman, 1990), and as the team consists of individuals there are factors affecting both the team and its members (Backström and Olson, 2010; Wheelan, 2013). To conclude the context, innovation team is related to three areas; the organisational context including management; the team itself; and the individuals within in the team.

By conducting a review of innovation enablers with the specific focus on innovation teams the contribution to prior research would be to build on already existing knowledge in the same area, and to provide a holistic understanding of what factors that enable an innovation team to conduct innovation work out of an organizational-, team- and individual-perspective. Practitioners and industry can utilize from this research when creating new innovation teams or when guiding and coaching already existing ones.

1.2 Definitions of terms used within this review

Innovation enabler is defined within this review to be factors that enable an innovation team to conduct innovation work within an organization, where the definition builds on the definitions of innovation, innovation work and innovation teams.

An innovation is said to be an “implementation of a new or significantly improved product (or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005. p.46). West et al (2004) claims innovation to be the application of ideas in practice where someone have to be beneficial. Andersson (1996), Lans (1997) and VINNOVA (the Swedish governmental agency for innovation systems) state almost the same as West et al.,
but claims that their value has to be created. I build on these prior definitions and define innovation within this review as something new that is developed and successfully implemented on the market (including value creation), whether it is an external or internal market. To make this happen it requires all work that is necessary to implement the developed idea on the market (Andersson, 1996; Baxter, 2002; Johnsson, 2009; Michanek and Breiler, 2004; Ottosson, 1999; Tidd and Bessant, 2013), which in this context is defined as innovation work.

Innovation team within this review is defined from a combination of the definitions of innovation and team. A group and a team is not the same. A group is defined as a complex social system of two or more people embedded in an organization (Hoegl, 2005) striving towards common goals and a structure to fulfill the goal (Wheelan, 2013). The members in a group may not yet have “found each other” (Backström and Olson, 2010) and have not yet developed efficient ways of working together (Wheelan, 2013) and they may not perceive oneself or other members as in a team according to Hoegl (2005). A team is a social system of people embedded in an organization, whose members perceive themselves as such and are perceived as members by others (Hoegl, 2005; Wheelan 2013). To become a team, a group has to emerge through a number of stages where one of the main task is to have a common goal to reach (Tuckmann and Jensen, 1977; Wheelan, 2013) but as the emergence process is out of focus for this review and the team-status is the term team is used regardless of its current status. Therefore, the definition of an innovation team is a team with purpose to conduct innovation work within an organization. However, within the research conducted, the term group is included to not accidently exclude any relevant articles.

1.3 Why enablers and not barriers?
Is an innovation enabler the opposite of an innovation barrier? Research shows that e.g. financial constraints and limited budget, resistance to change, no time for innovation work (Hassainen and Dale, 2012; Orcutt and AlKadri, 2009;) or bureaucracy (Adams et al 2006; Amabile 1998; Backström and Olson, 2010) (López-Fernández et al, 2011) are seen as barriers to innovation. On the other hand, in the way that innovation is defined one can understand that it is a complex situation to handle and one could expect problems (barriers) to appear along the process. Problems can in some cases even be seen as a positive to innovation work as it requires creative solutions, which might lead to completely new solutions (Johnsson, 2009). Two methodologies to apply to innovation work is suggested by Ottosson (1999); the first methodology is to deliberately aim to solve 80% of a work task and leave the remaining 20% to be solved later on. This mean that problems of different kind can be left to solved at a better time or when new knowledge concerning the work task is generated, the second methodology is to compare innovation work to running water. As running water passes rocks or other obstacles “without problem” one can use the same metaphor when conducting innovation work. Chose another path if there’re obstacles in the way. The bottom line is: Don’t let problems, barriers, hinders, roadblock or whatever term you like to use stop you from reaching the goal, “just take another path”. My conclusion is that barriers to innovation is just a part of the innovation team to handle and to get solutions to whenever they appear. For that reason this review is focusing on innovation enablers only. When you are aware of what you are looking for its more easy to find it (Billet, 2001; Cohen and Levinthal 1990; Ellström, 2007).

1.4 Research Question
What innovation enablers enable innovation teams innovation work?

2 Methodology

2.1 Research design
The research design of this review is based on a three-stage procedure; first, planning, i.e. to develop a plan for conducting the review, including developing aim with review, protocol and criteria for search, select and analyse of results; second, execution, i.e. to develop keywords, conduct review and analyse the results; and third, reporting, i.e. to suggest academically and practical use of the results of the review (Tranfield et al.’s, 2003).

2.2 Planning the review.
The planning of this review was conducted by defining the aim of the review and the terms of innovation, innovation team, innovation enabler and choice of “enabler or barrier” to review. This was followed by developing protocol describing how to relate to the results from databases. The aim of the review was to identify both explicit and implicit innovation enablers for innovation teams. The selection of articles from databases was not based on identifying specified keywords alone, but also on interpretations of titles and abstracts in accordance with Schon (1991) and Royatzis (1998) to identify innovation enablers.

2.3 Execution
Keyword development.
The keywords were developed with a starting point from “innovation enablers”. Synonyms to “enablers” were identified using Microsoft Word’s (version 2011, 14.4.6) tool for suggesting synonyms, followed by
identifying new synonyms to the synonyms by using the same tool. This process was iterative where one synonym led to another one. No reflection of whatever the synonyms were likely to be used or not in research were taken. When the synonym tool couldn’t suggest any more synonyms, the keywords were rephrased to cover a broader area, e.g. “innovation enablers” and “enablers for innovation”. In total 47 keywords to cover “innovation enablers” was identified. The search-engine Summon was used to test and clarify what keywords to be used in the following full-scale search, which resulted in an adjusted list of keywords, containing 24 keywords.

Table 1. The table demonstrates the synonyms to “innovation enablers” that were used as keywords in the database search.

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<th>Keyword [innovation enabler]</th>
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<td>“innovation enablers”</td>
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<td>“boosting innovation”</td>
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<td>“supporting innovation”</td>
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<td>24</td>
<td>“enabling innovation”</td>
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</table>

As the context of innovation teams include the perspective of the organization, the team and the members of the team, a list of 27 keywords based on synonyms to organization, management, innovation team and individuals was developed.

Table 2. The table demonstrates the synonyms to the perspective of organisation, innovation team and individuals that were used as keywords in the database search.

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<td>&quot;grassroot&quot;</td>
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As the keywords were developed from an iterative process, an adjusted list of 10 keywords regarding the perspective emerged from the number of hits when conducting the research in the database.

**2.4 Database search**

The data base search engine Summon was used but limited to only search for full text online only, scholarly/Journal only and English language only. The research areas of business, economics, education, engineering, science and social sciences have been included in this review. The reason for using these research areas is that innovation is a multidisciplinary area (as clarified in the definition of innovation). Another reason is that academic and industry interest of innovation teams’ work are connected to outcomes as e.g. performance and learning that are connected to selected research areas.

All keywords in Table 1, Table 2 and Table 3 were used individually and in combinations in a four ways as demonstrated in Table 4.
2.5 Analyse of results

A two-step-process was used to reduce the 2396 title hits to 208 relevant articles. The first step was to identify relevant articles where a title-selection methodology was used, where the three selection criteria was used; first, the explicit terms “innovation team” or “innovation group” or words that could be interpreted as such was a part of the title, or that the article was an already conducted review regarding innovation enablers; second, there should also be explicit innovation enablers or indicate that there’re explicit innovation enablers presented in article; third, there should be an organization-, team (or group), or individual- perspective within article. This first step reduced the number of relevant articles to 377 articles.

In the second step the abstracts were read based on the criteria that there should be indications of that the author(s) had put content to the innovation enabler, i.e. the innovation enabler should described in a way that it could be understandable and become useful to an innovation team’s innovation work. This step resulted in 208 remaining articles that were read and thematically analysed to identify innovation enablers. The focus was to identify key words within the identified articles that could be interpreted to be an innovation enabler, where in some cases the authors demonstrated one key-, or main- innovation enabler in a explicit way, in some other cases one main innovation enabler consisted of sub enablers. In total, 46 articles contributed with data to several innovation enablers. The identified key words were used to cluster them into themes. In total, 20 innovation enablers were identified and are presented in the following chapter, where each and one of them contains a description of its importance to innovation and how they could be applied in operational work, which is of relevance to an innovation team.

3 Results

Based on the thematic analysis, 20 innovation enablers were identified and are demonstrated in alphabetical in this section.

Awareness

A companies success relies on maintaining the awareness of what is happening outside the company if one wants to develop new products for new lines of business (Logman, 2007; West et al, 2004), where reflection is pointed out as a key factor to innovation. When it comes to detect new opportunities, awareness of customers’ perception of value is of importance as it requires a focus on benefits and cost drivers, which could be used as impulse for innovation (Chari, 2011; Logman, 2007) and according to West et al (2004) it requires awareness and knowledge to identify suitable work tasks and to choose the right tool to use according to what kind of innovation opportunity one is looking for, e.g. to identify existing opportunities. Different tools as e.g. lateral thinking, metaphoric thinking, positive thinking, association trigger, capturing, interpreting dreams, pattern recognition or bleu ocean strategies give different results (Tan, 2013). Park (2005) comes to the conclusion that awareness of opportunities comes from an interaction between three individual components: the entrepreneur, which includes institutionalization alertness and knowledge development, embracing risk, driving growth and market driven innovation culture; the knowledge and experience within the firm, which includes new markets, customer requirements and technology expertise; and technology, which includes external technology providers.

Vaghely (2008) explains that opportunity recognition is divided in two streams; cognitive psychology, where patterns detected from impressions are compared to the environment; and social constructionism or developmental psychology where a trial-and-error-mentality is used to build knowledge. Both these streams are combined as a key to innovation in hands of entrepreneurs or companies. Nicolaou et al (2009) claim that opportunity recognition is correlated with heritability and environmental factors, and Farris and Lane (2005) claim that opportunity identification as a skill can be learned.

Capabilities

Capability refers, in a short description, to the deployment and reconfiguration of resources to improve productivity and achieve strategic goals, e.g. strategic innovation goals (Camisón and Villar-Lópe, 2012; Kindström et al, 2012) which is closely related to innovation and further on to an organization’s performance (Yesil et al, 2013), and skills that supports innovation could be trained or influenced by external factors (Bharadwaj and Menon, 2000). Technical capabilities is seen to be very important to innovation (Bossink, 2004; Manley, 2006; Cetindamar et al., 2009) as it refer to the ability to perform any relevant technical function or volume activity within the firm, including the ability to develop new products and processes, and to the

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When a combination of keywords did not generate any hit the spelling was controlled and adjusted if needed. The keywords were used crosswise in Summon as demonstrated in Table 4, which generated 2396 hits.
operate facilities effectively (Camisón and Villar-López, 2012). In this perspective, Cetindamar et al. (2009) point this to be a matter of technology management where different capabilities are required along a six-step process, starting from strategy and ending in a developed product on the market. The task for technology management is to adjust tools and activities according to process and capabilities required. From a knowledge management perspective, Cepeda and Vera (2007) suggests that managers put more attention to identify important knowledge and knowledge gaps concerning capabilities, followed by filling the identified gaps with new knowledge, resulting in improved capabilities. When handling capabilities strategically, Majumdar (1999) points out the risk with downsizing companies as a result will be that competences and capabilities will be lost in the company, affecting innovation in a negative way.

On the other hand, Camisón and Villar-López (2012) claims that non-technical capabilities (organizational capabilities) are equally important as it refer to capabilities of implementation of new methodologies, processes and establish knowledge of best practice. And by that, personality traits for innovation becomes important, e.g. attraction to complexity, high energy, independence of judgment, intuition, self-confidence and ability to accommodate opposites. Further on, intelligence, knowledge, eagerness to learn, inquisitiveness, diversity, risk-taking and a strong desire to fulfill goals are also important (Nanda and Singh, 2009).

**Climate**

A climate refers to the manner of working together that the team has evolved based on their shared perception of policies, practices and procedures (Anderson and West, 1998). Climate is less stable than culture and can be seen as an expression of culture at a specific time. Companies that create a positive climate for innovation do much better at product innovation (Cooper, 2013; Kianto 2011; Nybakk et al., 2011). An organizations’ creativity comes from employees, where the climate becomes important as it can motivate employees to be creative. An innovative climate is one key component to an innovative company, and all companies, no matter size, can benefit economically from such climate (Nybakk et al., 2011).

Prior research agrees on that there are several aspects that are included in an innovative climate. However, there are some differences in how they are expressed and how many aspects they consider important when defining an innovative climate. Ekvall (1996) suggests ten factors that demonstrate a creative climate within an organization; Challenge/motivation; Freedom; Idea support; Liveliness/dynamism; Playfulness/humour; Debates; Trust/openness; Conflicts; Risk taking; and idea time. On the other hand, Watkins and Marsick (1996) demonstrate seven factors that contribute to innovation: Continuous learning; Dialogue and inquiry; Team learning; Embedded systems; Empowerment; System connections; and leadership. Ismail (2005) conducted a study where these factors were compared and the result was that Watkins and Marsick’s factors made more significant contributions in explaining innovation than Ekvall’s factors did. A few years later, Crespell and Hansen (2008), develops and validates six factors associated with innovation climate; Supervisor encouragement; Team cohesion; Challenge; Autonomy; Openness to innovation; and availability of resources. (Balsamo et al., 2008) evaluates an organizational climate for innovation, by using the VIPAT tool, referring to nine variables; Challenges and Involvement; Freedom; Trust and Openness; Idea Time; Playfulness/Humor; Absentee of Conflicts; Idea Support; Debates; Risk taking.

Similar or same factors as above are suggested by other researchers; Autonomy (Bright and Godwin, 2010; Cooper 2005; Crespell and Hansen 2008); Empowerment (Harborne 2003; Denti and Hemlin, 2008); Space for innovation (Harborne, 2003; Leavy, 2005; Weiss et al, 2011); Self-confident to share ideas with others (Johnstone et al, 2011); Leadership supporting internal and external networking e.g. cross-boundary, team-work or customer relationships (Balsamo et al, 2008; Cooper, 2005; Johnstone et al, 2011, West et al, 2004); Provide recognition for those who innovate (Gamatase and Hallowell 2011); Trust to other team members (Nanda and Singh, 2009); Involving people in innovation projects (Cooper 2005; Harborne, 2003); Accept different settings for innovation project (Harborne, 2003) and creating a learning and development climate in the organization (West et al, 2004). Further on, Cooper (2005) suggests leadership to be with respect to boundary management, resource setting and support, and all favoured a model for good leadership around “management as service rather than seniority”, “hands-off “management on a day-to-day basis, being relaxed, taking time to listen and being supporting in discussions with other people.

Except for all the factors presented above, group potency is found to be important to the innovative climate, i.e. “this team believes it can become unusually good at producing high quality work” and “this team feels it can solve any problem it encounters” (Gil et al, 2005), but it is assumed that leaders generally have a significant influence in creating a climate where they e.g. act as role models, support ideas and participate in work (Denti and Hemlin, 2012).

**Collaboration**

Competition is replaced for co-operation when aiming for adding industry value (Hine and Ryan, 1999). Both short- and long-term collaboration or cooperation can result in innovations as a result of being more open to new ways of thinking and doing Smith et al. (2008), where innovation teams are affected in two ways, internal and external collaboration. But, important to remember is that it may take a long time to build a good relation, but it takes very little time to destroy one if doing it wrong (Bush and Frohman 1991) as collaboration builds on social interaction between individuals (Adamides and Karacapilidis, 2006). In addition to these areas, free and open communication and information flow are combining these two areas (Balsamo et al. 2008; Bossink,
Cross-functional work, as internal collaboration, saves not only time and money, but it also increases production and process improvements, where intangible results such as improved team-work, communication and involvement within and across groups can be seen immediately (Balsamo et al., 2008). But, cross-functional teams are dependent on factors such as open and collaborative organizational culture, participatory management style, input from sales (Cooper, 2005) and employees open to discuss and implement new ideas within their teams (Morgan et al., 2004; Smith et al., 2008). The characteristics of their work are an overlap of design and construction phases (Bossink, 2004; Gamatese and Hallowell, 2011), making team boundaries more permeable (Aagaard and Gertsen, 2011; West et al., 2004), and being interacting between the involved parties, between various departments, and between the employees involved in the innovation process (Nanda and Singh, 2009; Panesar and Markeset (2008; Salge et al., 2012). On the individual level the co-operation depends on four basic attributes of the potential team members; First, clearly defined and specific specialization of every-one of the members different profession; Second, the team members’ clear and visible beliefs and practice of interdependence together with some uniting attributes, e.g. their shared project; Third, the members capacity to tolerate differences, and to find them enriching, hence a critical source of interdependence; Forth, the team members’ capacity to use methodologies supporting their co-operation (Matjaz*, et al., 2006).

External collaboration that affects innovation teams was clustered into six groups: First, users, i.e. to interact with end-, lead- or extreme users to gather knowledge of the users’ true environment (Ross et al. 2012; Yu, 2010); second, customers, i.e. to discover customer needs, understand customer behavior, markets opportunities (Bush and Frohman, 1991; Cooper, 2005; Coviello and Joseph, 2012; Kodama, 2000; Morgan et al., 2004; Panesar and Markeset, 2008; Yu, 2010) and involve customer in development process (Bossink, 2004; Coviello and Joseph, 2012). The benefits from incorporation of customers’ ideas is a more quick and efficient way than using the traditional R&D approaches (Romero and Molina, 2011) and customers as a source of innovation is significantly linked to higher levels of innovative sales (Laursen, 2011), but the co-creators should be rewarded to send signals that their input are appreciated (Romero and Molina 2011). Cheng et al (2012) come the conclusion that customer involvement is not as important in new service development as in new product development, maybe because companies lack of knowledge in building prototypes; third, suppliers, i.e. to keep knowledge of new technology updated (Yu, 2010), new innovative applications (Bossink, 2004; Coviello and Joseph, 2012). The benefits from incorporation of suppliers’ ideas is a more quick and efficient way than using the traditional R&D approaches (Romero and Molina, 2011) and customers as a source of innovation is significantly linked to higher levels of innovative sales (Laursen, 2011), but the collaboration needs flexibility and sharing of ideas from both parties to support innovation (Mooi and Frambach, 2012); fourth, networking, i.e. to collaborate and share knowledge with experts (Hurmelinna-Luukkanen, 2011; Mele et al., 2012). In practice, this means to collaborate with experts and join business networks (Ross et al. 2012), participate in conferences and courses (Jenssen and Nybakk, 2009). The benefits from networks are increased information flow (Hemlin and Olsson, 2011; López-Fernández et al., 2011); productive innovative climate (Cooper, 2005) and accumulated management know-how and intangible assets such as brand image and prestige (López-Fernández et al., 2011); fifth, partners, i.e. strategic alliances and long-term relationships are used for sustainable innovation results (Bossink, 2004), where partnership with universities increases competitive advantages (Aagaard and Gertsen, 2011; Morgan et al., 2004). Further on, Birkinshaw et al (2007) idealize that it could be of value to seek new networks, for partnerid with strategic and unusual partners when aiming for discontinues innovations, but the key questions to ask regarding the plausible innovative performance is how much a company has to learn and how well a it is able to learn from its partner(s) (Sampson, 2007). Diversity in technology capabilities between partners is required for innovation, but not too big divergence as they may have problems to learn from each others (Sampson, 2007). When creating a R&D network, (Mansikkamäki et al., 2007), suggests the involved parties to have “the right attitude”, respectful confrontation of other parties, excellent communication skills, a strong will to work together, and there is found that top management’s interaction with external R&D is positively related to product innovation (Jenssen and Nybakk, 2009). As a complement to alliances, (Noke et al., 2008); suggests dailiances to companies with slow innovation processes with no strings attached and no commitments other than ordinary business agreements, where they can benefit from learning’s and increase disruptive innovation capacities; sixth, Competitors, i.e. to strengthen creativity, learning and knowledge stock, and innovation capabilities (Bucic, 2012; Morgan et al., 2004). Collaboration with competitors is suggested by Ritala and Hurmelinna-luukkanen (2009) as well but they believe that IPR issues should be considered before entering any collaboration of this kind. On the other side, research show that companies tend to overestimate the risk of losing intellectual property while underestimating the benefits of exchanging ideas with external partners (Stempfle, 2011).

Culture
Culture is defined as a set of shared values, norms, and knowledge within a firm (Crespell and Hansen, 2008; Hauser, 1998; Nanda and Singh, 2009) that are partly conscious and partly subconscious but very hard to change (Hauser, 1998). The culture influences the behaviour of members within the company as it is the deepest level of basic values, assumptions and beliefs, which are shared by the members and are established by

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actions, especially from leaders and managers (Chen et al., 2012) such as hiring individuals with a range of abilities and interests, a variety of backgrounds and personalities and involve peers heavily in the selection process (Leavy; 2005; Stempfel (2011). A strong culture ensure that everyone in the organization is on the same track (Nanda and Singh, 2009) and plays an important role for a firm’s innovativeness (Hauser, 1998), where the culture has different roles in the innovation work e.g. when searching for and choosing problems to solve, when generating suggested solutions and when implementing the final solution (Hauser, 1998), and Hardakker (1998) found that an innovative culture contributed to make NPD faster to market.

Aagaard and Gertsen (2011) claims that tolerance for failure within an organization is to be one key factor for innovative culture, but Johannessen and Olsen (2011) highlight the importance of communication capabilities as one of the major factors when building a culture for innovation, where the benefits are the temporary mindset in innovation projects becomes stationary and well familiar. Other researchers highlight multiple factors as a complex system that all together contributes to an innovative culture. Factors as e.g. leadership, strategy, risk-taking, empowerment, autonomy, internal and external communication and collaboration, organizational structure or learning, trust are identified as enablers for an innovative culture, which also can be seen as enablers for an innovative climate (Balsamo et al., 2008; Claver et al, (1998; Denti and Hemlin, 2012; Donate and Guadamillas, 2011; Hauser (1998; Leavy, 2005; McGurk and Baren, 2012; Morgan et al., 2004; Smith et al., 2008; Steele and Murray; 2004).

**Dedication**

Companies with a motivated workforce are able to recognize and solve current problems and bring solutions to the marketplace faster than their competitors (Hauschildt and Kirchman, 2001; McGurk and Baron, 2012; Yang et al, 2011). Employees’ motivation is a balance of not being bored caused by too little space for challenging work, or the opposite that may cause a feeling of not having control Nanda and Singh, 2009. Motivation usually comes from three sources; first, extrinsic factors, i.e. motivation that comes from outside a person and includes e.g. feedback or rewards for creative ideas (Fairbank and Williams, 2001) but the most commonly used extrinsic motivator is money (Bright and Godwin, 2010. Extrinsic motivation does not necessarily make employees passionate about their work and hence may hinder creativity in the long run (Amabile et al., 1996; Amabile, 1998; Amabile and Gryskevicz, 1989; Ahmed, 1998b; second, intrinsic factors, i.e. motivation that comes from a deep interest and involvement in the work, where the key is that employees are motivated by their interest and satisfaction in the work itself, and not by external pressures (Amabile and Kramer, 2012; Bright and Godwin, 2010; Kathleen, 2012; Kayabasi et al., 2013). Some degree of pressure within the work environment has a positive influence on motivation as well, i.e. if it is perceived as arising from the urgent, intellectually challenging nature of the problem itself (Amabile, 1988); third, relational factors, i.e. motivation comes from doing a work because it provides value to others. Practical ways of getting buy-in, i.e. to engage and commit employees into innovation, and thereby put in free time in work activities, is to embrace the uncertainty which is embedded in innovation work (Kathleen, 2012; Newton, 1998)), to provide a long-term compensation plan, job security and timely feedback on performance (Manso, 2011), to educate employees in skills they can utilize from on their free time (Evans and Waite, 2010; Newton, 1998).

**Economy**

Economy as innovation enabler is discussed in prior research in different ways, where economy becomes almost equal to what an organization invest in an innovation project in terms of resources as e.g. time, knowledge, financial resources, human resources (Panayides; 2006; Smith et al., 2008), and these resources are important not only for functional support, but also to show that the innovation project is valuable to the organization (Nanda and Singh, 2009).

The difference between small and large companies are huge in many aspects, small companies can be more agile and entrepreneurial in their innovation work but large companies have most often more financial resources to spend on innovation work (López-Fernández et al, 2011) as e.g. creating a customer or supplier involvement. However, there are a need of leadership that wants to invest in risky innovation projects (Cooper, 2013), where research suggest that managers should not only support the technological or non-technological side of innovation (Camisón and Villar-López, 2012) but also support the development of creating client relationship in order to increase its innovativeness capability. This done by showing commitment from top management, encourage development and implementation of new ideas and processes rewarding creativity that can occur anywhere in the organization (Panayides, 2006).

As mentioned above, the need of economy is demonstrated in multiple dimensions. A dedicated budget and time can lead to technical innovation in a faster way if it’s combined with autonomy, but there’s also a need of technical problem-solving ability that is achieved through cognitive resources and problem solving capacity West et al. (2004). Another perspective of the needs of financial resources are that they are needed up to a certain point or creativity will be limited as a result of being too occupied of seeking for financial resources, but financial resources above this point also have a negative impact of creativity (Nanda and Singh, 2009. Ross et al. (2012) suggest that a one could make a small investment to create a proof of concept that might lead to larger investments from investors.
Education
Highly innovative organizations create and maintain a learning environment by keeping the knowledge and skills of the employees up to date (Tan, 2013). Organizations with high learning orientation tend to utilize from e.g. knowledge and mistakes to generate new ideas and developing innovations Smith et al. (2008). Training or education is directly related to identifying opportunities of innovation, and has become a tool for improvement of human resources of companies (Bozeman, 2000), how innovation processes are handled and to plan for uncertainty (Cobo, 2013). Education in innovation skills has been developed for decades, including focus on practical skills as: Problem identification, sketching, problem solving, decision making, production; Communication skills; and Team skills. One important learning according to Petty (1983) was that the best result are not in engineering courses as the, most often, tight timetable decrease creativity, but design projects with strong industrial interaction has positive effects creativity. The technological development with the Internet and web-based technology offered a movement from face-to-face sessions towards online learning and blended learning, which led to rapid education but also new pedagogical skills to tackle complexity and information overload from the Internet (Anghern and Nabeth, 1997; Chou and Chou, 2011). Despite the technical development, current research points out the increased focus on soft skills, i.e. non-technical skills such as e.g. creativity problem solving (Nanda and Singh, 2009), collaboration critical thinking, contextual learning, searching, synthesizing information, self-direction and creativity (Cobo, 2013) and to practice opportunity identification, e.g. find ideal system on imaginary basis, use unexpected resources, find contractions within a system, trim some elements in an existing product, add another purpose of a product (Tan, 2013). An effective learning model is to strive for shared mental models by working with reflection and experimentation (Gieskes and Van der Heijden, 2004) and to supply educational environments including course development, collaborative learning and evaluation (Chou and Chou, 2011). However, lack of time to learn (Timmermans et al, 2011), bad preparation as e.g. a poorly structured agenda, poor time keeping or employees lack of interest to learn can significantly reduce the efficiency and effectiveness of sessions (Nanda and Singh, 2009; Evans and Waite, 2010).

Empowerment
The literature supports the view that employees who are empowered and autonomous have a greater degree of control over their work. This degree of control means that employees feel comfortable in their role to be innovative in their own work environment (Bright and Godwin, 2010; Brown, 2005; Cooper 2005; Cresspell and Hansen 2008; Smith et al, 2008). Empowering to innovate is one of the most effective ways to mobilize the energies of people to be creative (Harborne 2003; Denti and Hemlin, 2008; Nanda and Singh, 2009) and have the possibility to adopt opportunities and faster than others (Manley, 2006). Combined with leadership support and commitment, empowerment gives people freedom to take responsibility for innovation (Nanda and Singh, 2009; Smith et al, 2008), where transformational leadership was positively related to innovative behaviour and transactional leadership was negatively related to innovative behaviour. (Denti and Hemlin, 2012). Freedom as a core value in stimulating creativity is manifested in autonomy, empowerment and decision-making. A balance between operational and strategic autonomy leads to innovation. Employees should be given autonomy concerning the process but not necessarily the ends. Autonomy around the process fosters creativity because it strengthens the employees’ sense of ownership over a project or a situation (Nanda and Singh, 2009).

Entre-/intrapreneurship
Entrepreneurial and intrapreneurial behaviours have positive effects on innovation within a company and contribute to a sustaining innovation system (Dalohoun et al., 2009). Significant characters are that these people are opportunity driven (Ardichvili et al., 2000; Dalohoun et al., 2009; Morris et al., 2006; Rigtering and Weitzel, 2013), takes risks (Baucus et al., 2008; Chen, 2007; Rigtering and Weitzel, 2013); don't stop for obstacles (Lukes, 2012), breaking rules and standard operating procedures (Baucus et al., 2008).

However, entrepreneurs and intrapreneurs do not wait for opportunities to be found, they are made or recognized (Ardichvili et al., 2000; Dalohoun et al., 2009; Rigtering and Weitzel, 2013). Even though entrepreneurs and intrapreneurs are challenging management and rules, management must be aware of this and support that behavior (Baucus et al., 2008; Lukes, 2012; Vale and Addison, 2002) and provide freedom “within a framework” to detect opportunities and act proactive (Chen, 2007; Lumpkin and Dess, 2001), or these people may find another job (Morris et al., 2006).

Human recourse
Some researchers claim that human resources are the most important resource and key factors of innovative organizations as human beings are involved in the whole innovation process, and when encouraging and motivating them the company may utilize from the great resource of knowledge (Kayabasi et al., 2013; López-Fernández et al., 2011; Steele and Murray, 2004). The benefits are better performance and better understanding of the market orientation, resulting in unique offerings and have indirect effect on customer value (Paladino, 2007).

Innovative organizations make strategic choices based on their human resources, and the agility and ability to
organizations must explicitly strive towards the attraction, development and retention of creative talent, where many innovation champions must be identified, recruited, developed, trained, encouraged and acknowledged throughout the organization (Chadwick and Dabu, 2009), including managerial and non-managerial personnel (Searle and Ball, 2003), and to ensure that this is developed in both vertical and horizontal levels within the organization and to partners (Estrada et al, 2013). But companies should also employ people who don’t seem to fit and are prepared to take risks with purpose to disturb the status quo (Nanda and Singh, 2009; Steele and Murray, 2004). To some workers, self-managed teams may be seen as desirable grants of autonomy or another way for management to “speed up” scheme (Chadwick and Dabu, 2009), but it is likely that training or team motivation have to be designed in a specific way as these teams may work more independently than the rest of firm’s functional areas (Donate and Guadamillas, 2011).

Incentives
Building an economic model of innovation that does justice to the various aspects is, quite obviously, an impossible task (Overvest and Veldman, 2008), and incentives is a highly debated area where research shows both positive and negative effects on motivation for innovation. Incentives include both financial compensation and nonfinancial intrinsic and extrinsic incentives, but they have different effects on innovation (Chen et al, 2012), where the structure of a firm’s HRM system itself functions as a nonfinancial motivation and compensation may help to shape employee behaviours (Chadwick and Dabu, 2009). Innovative companies rely on personalized intrinsic rewards, where less innovative companies place almost exclusive emphasis on extrinsic awards (Nanda and Singh, 2009). Extrinsic incentives have negative effects on innovation as they affect peoples' behaviour to become risk-averse and expecting to be compensated for every action they take (Chen et al, 2012; Nanda and Singh, 2009), overinvesting in projects (Inderst and Klein, 2007; Inderst, 2009) and manipulate bonuses (Holthausen et al., 1994). But extrinsic incentives can be highly motivated if they are carefully combined with strict wage rules (Hau cap and Wey, 2004), support company goals, fair and understandable, related with performance and expected behaviour and supporting creativity and personal initiative (Lukes, 2012). If employees are rewarded for success only, they will go for the “low hanging fruits” and pursue incremental innovation that is almost certain to produce results (Stempfle, 2011), and best effects of incentives are the ones that are connected to performance and not activities (Sheikh, 2012). Prizes awards as incentive have been used for motivating individuals, groups, and communities to accomplish diverse types of goals but established companies tend to not participate in them because of different uncertainty and that resources spend on competition doesn’t match the prize (Kay, 2011). Extrinsic rewards are claimed to be more motivating to innovation than extrinsic rewards, referring to job security, tolerance for early failure and timely feedback on performance (Manso, 2011; Nanda and Singh, 2009; Stempfle, 2011), having control in the small part in which they are closely involved (Cooper 2005).

When rewards are based on group effort it supports team spirit and create the climate in which individuals and teams cooperate and help each other with new ideas (Drake et al, 2001; Lukes, 2012,) but when employees face tournament incentives they tend to maximize their own profits, resulting in lower firm profit (Drake et al, 2001).

Short-term incentives are associated with incremental innovation and long-term incentives are associated with radical innovation, and companies use both system when designing compensation systems (Cabrales et al, 2008). However, long-term incentives have positive effects on innovation (Fu, 2012) and companies that focus on long-term incentives are more successful (Lerner and Wulf, 2007) where e.g. ownership in IP (Liu, 2013) or stock bonuses (Chen et al, 2012; Sheikh, 2012, Manso, 2011) are commonly used incentives.

Knowledge
Appropriate knowledge for innovation has become more and more important (Francois et al., 2002). Intangible assets are the lifeblood of knowledge-intensive industries where the new value added is disproportionally based on specialized, non-repetitious activities recognized as central to sustain the competitiveness of firms and innovation systems (Kramer et al., 2011), and has become one of the most strategically resources for successful innovation as a result of the increased knowledge-based competition (Bucic, 2012). Organizational knowledge emerge when sense making, knowledge creation and decision making are connected to each other, and when applying a deliberate and frequently flow of information to glue the three areas together the result is e.g. innovation (Choo, 2001). However, employees need to be trained and educated before they can have a positive impact on the innovation process (Smith et al, 2008), but there is also a need of competence when hiring qualified personnel to participate in innovative projects (Francois et al., 2002) and use knowledge in an appropriate way, as knowledge itself doesn't generate any value (Hung et al., 2010). One practical way of using knowledge is to focus on the different stakeholders’ changing interests during an innovation project, by knowing the nature of interests and perceptions of the involved parties at a certain critical point leads to possible ways of engagement which in turn may help creating a satisfying outcome of the innovation process (Weisenfeld, 2003). Another way of using knowledge is to bridging diverse knowledge of members in a multifunctional team so it doesn't become too large gaps (Jablokow and Booth, 2006).

Knowledge networks require direct and intense interaction between individuals with relevant knowledge and
expertise, enabled within the structure of a socially embedded network. Tacit knowledge is often referred to as the ‘know-how’ that individuals acquire through experience or learned from behaviour in a collective context and is more slowly transferred through boundaries than explicit knowledge. Despite the understanding of interactive learning as core of innovation, tacit knowledge is often so embedded within the individual that they may be unaware of its importance (Dooley et al., 2013). The input perspective is dependent on the individual and enterprise’s ability to know where to acquire the tacit knowledge, as well as the enterprise’s ability to support this. A key knowledge action is therefore to obtain tacit knowledge from people who are not necessarily only employees (internal to the enterprise), but can also be sources external to the enterprise, such as clients, suppliers or competitors. The output perspective is dependent on the individual’s ability to convert the conveyed tacit knowledge into his or her own tacit knowledge. The key knowledge action is therefore to transform tacit into new tacit knowledge through sharing. This is only possible through frequent occurrences of face to face contact between parties, which is dependent on geographical and social closeness. There is also a need for intensive communication in the short term, but also in the long term (Esterhuizen et al., 2012). The key to obtaining a long-term competitive advantage is not to be found in the administration of existing knowledge, but in the ability to constantly generate new knowledge. The process of generating knowledge can be categorised into four different knowledge creation processes as identified by Nonaka and Takeuchi (1995): socialization, externalization, combination and internalization. The literature provides a strong basis for the argument that knowledge management and more specifically knowledge creation processes could be used to improve an enterprise’s innovation capability maturity (Esterhuizen et al., 2012).

Knowledge management

Knowledge management (KM) is defined as the formalized approach of managing the creation, transfer, retention, and utilization of an enterprise’s explicit and tacit knowledge assets (Amalia and Nugroho, 2011; Cepeda and Vera 2007; Palacios et al, 2009; Plessis, 2007), and refers to intellectual capital (Masoulas, 1998; Plessis, 2007) which e.g. includes human capital, structural capital, relational capital (Gaimon and Bailey, 2013; Mentzas, 2004). KM also includes innovation capital which serve the purpose of increasing process management skills, facilitating collaboration and assisting in building competencies (Plessis, 2007; Shang et al, 2009) where important areas to bring into the innovation capital of KM (i.e. innovation processes) are search, capture, articulate, contextualise, apply, evaluate, support and re-innovate (Tranfield et al, 2003). Organizations with well developed knowledge management practices and behaviors are more innovative (Kamhawi, 2012; Liao and Wu, 2010), they are more competitive and earn more money (Loan, 2006; McGurk and Baron, 2012) where a well developed KM strategy is pointed out as one reason for that (Lopez-Nicolás and Merono-Cerdán, 2011).

KM is built on two dimensions according to Palacios et al, 2009: principles and practices. Principles, referring to a higher level of research that is more abstract or related to ideas and practices refer to tools and techniques to be used (Rogers, 1998) for meaningful learning, e.g. customer knowledge management to collect valuable information of the customers (Coviello and Joseph, 2012; Gibbert et al, 2002; Hidalgo and Albors, 2008; Johannessen, 2008; McGurk and Baron, 2012), to establish measurement tools for performance (Chourides et al., 2003) and identify gaps organisations’ internal and external knowledge by focusing on people, process and technology (Maqsood and Finegan, 2009).

Both exploration and exploitation has significant effect on innovation, where leaders play an important role in establishing organizational conditions and infrastructure that facilitates KM (Donate and Guadamillas, 2011), such as ICT (Cormican and O’Sullivan, 2000; Lopez-Nicolás and Merono-Cerdán, 2011; Smith et al, 2008), where one way of reducing costly slack in e.g. production and to provide slack to create innovation is to combine TQM with KM (Honarpour et al, 2012). In extend, KM must also be adjusted the company’s size, where small companies turn to their network outside to manage innovation challenges and large companies find ways to make their organizations (ell) smaller by creating project-based units (Andriopoulos and Lewis, 2010). This aligns with agile organizations that have the ability to constantly sense competitive opportunities and threats and respond through innovative solutions in form of e.g. new products, processes by having the ability to quickly arrange the required knowledge and assets to innovate to react to changing environment (Kamhawi, 2012)

Effective KM also contributes to organizational learning, which is a bridge between knowledge management and organizational innovation (Liao and Wu, 2010). The most competitive organizations are the ones that have the ability to learn to learn, i.e. to incorporating learning processes and knowledge creation into everyday operations and management were much of the learning takes place from tacit to explicit forms (Heffner and Sharif, 2008). As knowledge has been created it must also be shared to become useful to the organization (McAdam, 2000), and this is enabled thorough strategy and leadership, corporate culture, people, and information technology (Yesil et al, 2013) and how knowledge flows in, across and out of the organization (McGurk and Baron, 2012).

Management

Organizations need to continuously innovate to remain competitive (Brennan and Dooley, 2005; Dobni, 2006; Dooley et al, 2000). Management innovation is also required, where the drivers are strength of competition, threat of market entry and speed of technological change (Hecker and Ganter, 2013). Techniques to speed
management innovation up is to conscious sell the importance of management innovation to the organization, questioning, problem-solving culture, expose employees to many different types of environments and different countries of operation if available, Build a capacity for low-risk experimentation to increase the chance to be implemented without crippling the functioning of the whole organization, use external change agents to explore new ideas, be and act like a serial management innovator (Birkinshaw and Mol, 2006). There is also a need of overcoming managers’ mental models that will reject disruptive innovation. These managers’ strategies are build on rewarding incrementalism; ignoring the positive aspects of disruptive innovations; focusing on historical perceptions of success; creating perceptions of success with high effort; and holding beliefs in the face of disconfirming information (Lettice and Thomond, 2008). But, there is also a need of adjusting the organization’s management in accordance to its stage in the organization’s life cycle. Factors that stimulate innovation at some point during an organization’s development actually hinder it in another. E.g. in late stage firms, incentives and innovation is quite high correlated and centralized leadership may contribute to innovativeness in a firm’s early stages but not in later stages (Koberg et al, 1996). An organization’s management is often required to make difficult decisions concerning which innovations to implement and how to allocate limited resources (Dooley et al, 2000) and the leadership has to be diffused in the organization both in the vertical and horizontal dimensions to stimulate innovation.

Innovations as such need a medium or long-term perspective to become implemented, which requires a strong commitment, which is related to managerial stability (Longo, 2007). Well known barriers to innovation are culture and access to skilled employees and managerial staff (Clark, 2012; Parolin et al, 2013) where managers play an important role to develop conditions to start cooperation between functions and organizations to make them more competitive (Parolin et al, 2013).

Ongoing commitment of top management and the middle management is the main key according to Longo (2007) and Taylor and Helfat (2009) argue that middle management is the link to economic-, structural-, social-, and cognitive activities, which are the corner stones for strategic innovation. Top and middle management have different roles to play, where top management is expected to establish and communicate broad goals and to commit middle management to these principles who should plan and implement the entire innovation process. This requires a broad portfolio of skills and competences, e.g. health care planning, organization, behavior awareness, as well as negotiation and persuasion capabilities which makes the presence of a middle management team in charge of the entire issue, sufficiently solid and integrated. To change an organization takes a long time (6–10 years) and the worst hurdles are in the second phase, after the first enthusiasm has waned and this is why commitment is the key (Longo, 2007).

A formally structured young firm is less innovative than an informal one, but formalization in older organizations had no negative impact on innovation. (Martinou et al, 2006). A flat, networked structure that facilitates communication and encourages cross-functional group operations represents the most advantageous style. But, it is important that the management demonstrates leadership and encourages personnel to operate effectively as teams (Dooley et al, 2000) that support divergence and convergence (Adamides and Karacapilidis, 2006) but also have the opportunity to work individually in the early phases as this spur innovation (Černe et al, 2013). Structures also include the implementation of efficient innovation processes that feed the organization with ideas to be implemented to remain competitive (Brennan and Dooley, 2005). In such processes, internal and external networks, together with customers, competitors and consultants provide important sources of new ideas that can have an influence on the introduction of these practices (Mol and Birkinshaw, 2009; O’Brien and Smith, 1995), and managers can structure its organization to affect innovation on a continuous basis by include strategic focus and vision, training and education (De Jong and Vermeulen, 2003).

Strategic management is defined as a process that links strategic planning, implementation, and measurement in a continuous cycle of learning, building competencies, and achieving desired change (Olsen and Haslett, 2002). To create value by optimizing innovation processes in networks has become a highly interesting on a managerial level as it creates new products on short-term and on long term it generates intangible values as e.g. technology leadership and a secured position on the market (Eschenbuecher and Graser, 2011). When starting up new joint innovation projects one strategy may be to not put too much attention to details in contracts as it kills innovation, but to secure the collaboration some kind of agreement is providing trust to such innovation work (Paasi et al, 2010). Another practical strategy to apply is to utilize from the SMEs approach to the internet, where internetization management enables small companies to respond to the changing environment in an agile way (Abouzeedan et al, 2013).

The age of top management affects the motivation to invest in innovation in different ways. Younger managers are most often trained in new technology and they have time to wait for pay off. This makes young managers willing to invest in innovation based on new technology. Older top managers are less willing to invest in innovation as they are in the end of their career and are more worried about the short-term response to a project and do not invest in long-term projects, i.e. innovation projects. On the other hand, older top management have more experience, probable longer education and bigger networks than younger managers, which may motivate them to invest in innovation (Ahuja et al, 2008).

Transformational leadership has important effects on creativity at both individual and organizational levels,
and transformational leadership influences employees' creativity through psychological empowerment (Gumusluoglu and Ilsev, 2009). Management should broaden their understanding of individuals' need for autonomy and structure for motivation and commitment (Mansfeld et al, 2010), and ensure co-workers that they will not be punished for failure (De Jong and Vermeulen, 2003).

Further on, leaders of complex organizations should help the organization develop appropriate structure, innovation, and fitness. They should also support flexible thinking and act like symbols and enable useful behaviors (Marion and Uhl-bien, 2002). When aiming for radical innovation the management must support capabilities and skills in three different phases; discovery, where the needed capabilities are about create, recognize, elaborate, and articulate identified opportunities. Needed operational skills in the discovery phase are exploratory, conceptualization skills in terms of technical, scientific discovery and external hunting for opportunities; Incubation, where the needed capabilities involves developing business plans out of the identifies opportunities, and the skills required are experimentation in order to build and test prototypes, and to create a market for the proposals; And acceleration, where the needed capabilities concern activities to ramp up the untried business to a point where it can stand on its own. Acceleration work is about exploitation rather than experimentation, that why the needed skills are about managing high-growth business and activities are to invest and build infrastructure and processes for e.g. manufacturing, order delivery, customer contact, and support. (O’Connor and DeMartino, 1997)

High degrees of management support in projects have positive effects on speed to market, team learning from team crises and team anxiety. The processes regarding product development and commercialization were faster, and idea generation was efficient executed. However, low degree of management support in projects didn’t affect the project in the opposite way, but team anxiety has been found to influence the capabilities in the product development stage regardless of low or high level of management support. This means that management could encourage team members to turn stressors into high performance. Low level of encouragement is beneficial for team learning, and high level of encouragement speed up the product development process. Management could support and help team members to overcome problems they face by giving direct help when needed. When teams are in crisis or anxiety they need high level of emotional support and encouragement from management to solve problems and speed up the development process and to launch the product successfully (Akgün et al, 2007).

An effective leader of an innovative workforce needs to foster both exploration and exploitation, and has to be capable of flexibly switching between the three elements of ambidextrous leadership; to foster exploration by applying open leader behaviors, which includes encouraging doing things differently, exploring and experimenting, giving room for independent thinking and acting, and supporting attempts to challenge established approaches; To foster exploitation by applying closed leader behaviors, which builds on activities to reduce variances. Typical activities are to set specific guidelines, and monitoring goal achievement; To have the temporal flexibility to switch between exploration and exploitation as the situation requires. (Rosing et al, 2011). Further, management must consider to what extent the organization is mature enough to conduct exploration work. If there are too much tension within the organization, the development phase should be performed in external test facilities but this requires experienced project managers that can handle ambidextrous management (Hollen et al, 2013). Management need to, in addition to the ambidextrous leadership, manage the creation and facilitation of knowledge creation in innovation projects. When top management increases its formal control they stress explicit knowledge, which may lead to the risk of missing the vital interplay between tacit and explicit knowledge needed for knowledge creation, which in turn may reduce the overall capacity for knowledge creation and ultimately innovation (Richtnér and Åhlström, 2010).

The balance of autonomy, recognition system number of projects and slack are argued to affect the outcomes of innovation. Too much autonomy leads to lack of focus, and too little operational autonomy created a sense of rigidity. Extrinsic rewards can actually misdirect worker energy while intrinsic rewards can unleash worker energy in a creative endeavor. Try to minimize the number of major projects each person is assigned to, or they will likely get lost as one cannot except people to do anything else but to step from the top of each pile to the next. It is shown that not only is slack important for technological innovations, but it must also be provided continuously over the organization’s life cycle, including future expectations (Judge et al, 1997).

But, the mix of exploring and exploiting (ambidexterity) innovation is of essence, whereas a first-mover strategy can hinder strategic innovations and a follower strategy could enhance strategic innovations if the knowledge is transformed into new developed knowledge that could be commercial purposes (Gebauer et al, 2012). The conflict lies in aiming for being first and being best. Innovativeness is usually related with being first and by that referring to exploratory innovation, where exploitative innovation is closely linked to improvements aiming at being best (Kollmann and Stöckmann, 2010). However, when planning for ambidextrous innovation work, one should consider that resource orientation, i.e. distinct resources and capabilities improve innovation performance while market orientation performance tends to result in incremental improvements (Ford and Paladino, 2013), but if a company only concentrates its organizational capabilities, it does not succeed in terms of stability and sustainability (Kask, 2011). In addition, strategic ambidexterity suggests that an entrepreneurial orientation is of extra importance. The reason is that risk taking, innovativeness, pro-activeness, competitive aggressiveness, and autonomy, stimulates exploratory innovation, whereas only pro-activeness and competitive aggressiveness facilitate exploitative innovation (Kollmann and Stöckmann, 2010). Another dimension to strategically plan for ambidexterity is the timing of additional
innovative activity. The longer it takes for a company to launch new innovative activities, the lower its innovation performance will be, which of course is beneficial for “fast companies” over “slow companies” (Kuckertz et al, 2010). On an overall perspective, organizations need strategies that embrace portfolio management that include budgets for big and risky projects, scoring models instead of financial models, incorporate step-wise investment, seeking for data confirmation not connected to ordinary gates and launch risky projects through alternative processes (Cooper, 2013).

Mind set

People deal with the uncertainty and risk on a daily basis, but the perspective of whatever uncertainty or risk is dangerous or is needed to be avoided or eliminated are personal. The perceptions of these perspectives are powerful determinants for the tolerance of risk and uncertainty, both collectively and individually, but they are constructed which makes risk and uncertainty neither objective nor subjective. Communication, based on experience, is commonly used to explore what affect a certain risk or uncertainty will have in a specific situation, where this may result in creative solutions. Because of their subjective nature, however, perceptions of risk and uncertainty are bound to the particular experience of an individual or of a group of people (Anderson, 2011). When a person is slightly biased in a pro-innovation way it may have a considerable performance advantage in many circumstances, for instance, in medium to highly complex, constant environments, when long-term considerations matter, and when firms search locally. But, a pro-innovation bias that is too distinct will make the search process inefficient and result in an exploration trap. (Baumann and Martignoni, 2011). One risk that employees fear is to make fools out of themselves, and this relates to the organizations tolerance of trying out ideas that may fail which makes employees to not be willing to try and innovate or to engage in activities that is apart from their day-to-day work. This may be overcome by spelling out the risk and what consequences an initiative will have (Nanda and Singh, 2009). Innovation is a highly sophisticated knowledge and cognitive process. One of the key insights of an ‘enabling approach to innovation’ is that it starts with a process of deeply observing, investigating and understanding the object of innovation and its systemic context. But, to succeed one must be active in the process of seeking the newness (Peschl and Fundneider, 2012).

A positive attitude has influences on innovation as well, where a humorous atmosphere and actively celebrating success and verification stories of success throughout the organization are motivating to employees and team work (Nanda and Singh, 2009). In extension, playing at work may stretch network boundaries to both individuals and digital equipment (Brooks and Bowker, 2011).

Creation of self-efficacy may increase ones motivation, which creates bigger eagerness to pursue individual ideas as a more effective use of cognitive resources, which have positive effect on innovative behaviour and climate (Denti and Hemlin, 2012). The same is true when building up a “we-can-do-it”-mind-set (Gil et al, 2005). "The self-efficacy can be build through positive feedback on conducted work, even though the work itself was average the positive feedback resulted in greater creativity and problem solution skills. As a result, personal initiative is taken in terms of individual and team engagement in work tasks beyond their work contract, but successful team work is characteristic by trust, vision, aim for excellence, participative safety, and support for innovation are likely to attain high levels of innovation (Denti and Hemlin, 2012; Kianto, 2011). However, innovation is the art of individual who triumph over the status quo, which includes asking questions, tech oneself new skills, taking action, adapt and collaborate, and believe in strong results and outcomes (Nanda and Singh, 2009). To make this happen the individual must have the willingness to conduct these activities (López-Fernández et al, 2011) and this is fostered by the organization’s culture (Smith et al. 2008).

Need

The need of innovating is clearly described from research for centuries. Without new ideas that are implemented into innovations the organization will be terminated in the long run (Dobni, 2006). This need of new innovation projects where one challenge is to understand and identify unmet needs, which is suggested to be made in two ways by Farris and Lane (2005). First, to identify significant macro changes in the larger environment to frame the big picture. Second, identify concrete opportunities by a designed macro environmental change. As soon as an unmet need is identified it must be improved to become a business opportunity and to identify core benefit and target market. From an R&D perspective, to maximize an R&D innovation contribution it has to match the companies wants and needs as well as the context and customers (Bingham (2003).

Process

The cyclic innovation model, which is based on collaboration and iteration, has emerged from linear processes over time. Now, there is a clear user and customer focus (Berkhout et al, 2006; Dobni, 2006). The aim of these processes are to; Interact with customers, co-suppliers and internal service providers, and to explore technological opportunities; Build customer knowledge, understanding the entire system including networks; and to interact and co-develop with customers and partners to understand, visualize, and deliver value propositions. Four specific phases in the innovation process is suggested by Bessant (2005); Search-Select-Implement-Learning. But, these core activities do not take place in isolation but are influenced by a set of contextual factors, which can be classified under the headings of innovation strategy, innovative organization
and innovation linkages. In highly innovative companies, ideas come from everywhere in the organization. Most of these companies possess early feasibility tests for ideas where they are tested. The evaluations are generally to identify innovative modifications to the existing ideas and to make sure that new ideas do not repeat mistakes made in the past. The reason is to ensure that knowledge and learning are not lost and to check its effectiveness. The potential and disadvantages of the ideas are clearly defined. Evaluating ideas in a way that optimizes creativity is delicate as it can both increase and harm creativity, self-confidence and performance (Nanda and Singh, 2009).

In extension to the innovation processes, several ways have emerged in how to execute these. The Innovation Cube is suggested by (Narasimhalu, 2005) to navigate through drivers, triggers and enablers for innovation to detect new opportunities and to define what innovation to aim for depending on circumstances and environment. Smith et al (2012) suggests ten steps when conducting redesign; choose target product, identify needs, choose reference products, identify components, build a component factor table, determine component factor weights, extract key components, identify conflicts, apply design principles, and verify results. Open innovation is suggested in all of the cyclic processes, but open innovation processes have both advantages and risks. The benefits are that they are faster and the potential risks are e.g. lack of coordination, mistrust and collaboration problems. The challenge for the management in the open innovation process is to find out the appropriate methods and practices for the utilization of external knowledge resources (Bergman et al, 2009) where collaborate networks are one way to practice open innovation (Eschenbächler et al, 2011).

The operational work can be divided in two phases. In the early innovation phase are the ideas in focus and in the later phase is the implementation in focus, this is also where the financial risks are highest (Eschenbächler et al, 2011). Another practical approach to execute innovation work is to fail fast, i.e. to do mistakes early and learn from that and try not to avoid failure. Instead, fall forward. Seven steps are suggested; First, decide what success and failure would look like before you launch initiative; Second, convert assumptions into knowledge; Third, be quick about it – fail fast; Fourth, contain the downside risk – fail cheaply; Fifth, limit uncertainty; Sixth, build a culture that celebrates intelligent failure; and seventh, codify and share what you learned (Tahirsylaj, 2012). The fast failure methodology is well known in software development and known as e.g. Scrum, which is an agile way of working (Adkins, 2010). Due to the level of abstractness in innovation work, the visual design to envision processes acts as a knowledge agent in terms of ‘knowledge integrator’ and ‘knowledge broker’ to support innovation (Bertola and Teixeira, 2003), technology is often used in a supportive role to ease various stages and remove the fuzziness of the innovation process (Smith et al, 2008), and rapid prototyping is used to speed up the actual innovation work, as rapid prototyping is beneficial for testing and evaluating ideas in early stages (Vashishtha et al, 2011). Both creativity and innovation processes are complex and are dependent on both individual and group effort from a divergence and convergence perspective (Haner, 2005), but the most critical part in innovation work is finance, another critical part is that partnership have been badly affected due to institutional and regulatory factors, namely a lack of clear laws and rules regarding intellectual property according to Chu and Andreassi (2011).

Strategy

Previous studies have shown that firms with an innovation strategy perform better, where innovation strategies consists of four dimensions; first, leadership priority for product innovation; second, leadership priority for process innovation; third, leadership priority for business-systems innovation; fourth, resource commitment to research and development to gain competitive advantage (Nybakk et al, 2011). These four dimensions are useful for providing new offerings or experiences that excite the customer, to stay ahead of – and outperforming competitors, when entering new market segments, when creating new businesses or building a product portfolio (Bowonder et al, 2010). Strategic innovation capacity is strengthened when managers deliberately install specific learning mechanisms on absorptive capacity, whereas knowledge recognition, assimilation and exploitation are key areas (Berghman et al, 2013).

On the operational and managerial level, a suggested strategy to apply is co-operation rather than competition. However the focus of the innovation work should be on the final market (Gibbert et al, 2002; Hine and Ryan, 1999). A company could develop innovative solutions on a local or a global market but the circumstances are not the same and must be treated in that way. This means that both primary and secondary environmental factors should be considered in strategic decision-making and in improvements to dynamic capabilities (Kask, 2011).

As firms move towards establishing closer relationships with their suppliers, partners, and even their competitors, a new paradigm of strategy, value creation, and organization design appears to be emerging. Competitive advantage is based on learning and absorbing new sources of knowledge, no matter where they may created and is a key driver that sustain competitive advantage (Lei, 2003). But, if an organization wants to achieve innovative goals these must be communicated and understood by all employees, making them able to contribute to the expected goal in their day-to-day work (Smith et al, 2008).

Time

Time has been discussed in two perspectives when developing innovative and competitive products. One perspective is to use time as a key component within the product itself, i.e. to save time by reducing steps in manufacturing processes or organizing sites strategically to reduce time for shipping of components or
products (Fields, 2006). Another perspective of time is time for innovation work. To create a creative milieu, which is important for innovation, there’s not only a need of information but also enough time to engage, process and to reflect on that information in all stages of a project (Anderson, 2011, 2013; Smith et al. 2008). E.g. available time for idea development or technical solutions is of essence for innovation work. The more time a designer spends on defining, framing and understanding the problem, the more likely it is that a creative result is achieved (Ross et al, 2012). However, management must show commitment by investing time and money to encourage development and implementation of new ideas and processes (Yesil et al, 2013) and at the same time not overload individuals with projects (Nanda and Singh, 2009. As an employee, one should know how much time and effort one can spend on a pet project, where some organizations allow e.g. 15% of the time to be spend on generating new ideas and working on favourite projects (Nanda and Singh, 2009.)

Table 5. The table demonstrates the identified innovation enablers and articles referring to them.

<table>
<thead>
<tr>
<th>#</th>
<th>Innovation enabler in articles</th>
<th>Articles referring to each innovation enabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collaboration</td>
<td>39</td>
</tr>
<tr>
<td>2</td>
<td>Management</td>
<td>37</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge management</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>Climate</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Incentives</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>Culture</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>Dedication</td>
<td>16</td>
</tr>
<tr>
<td>8</td>
<td>Processes</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>Education</td>
<td>11</td>
</tr>
<tr>
<td>10</td>
<td>Knowledge</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>Capabilities</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>Mind set</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Awareness</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Empowerment</td>
<td>9</td>
</tr>
<tr>
<td>15</td>
<td>Entre-/intrapreneurship</td>
<td>9</td>
</tr>
<tr>
<td>16</td>
<td>Human recourse</td>
<td>9</td>
</tr>
<tr>
<td>17</td>
<td>Strategy</td>
<td>9</td>
</tr>
<tr>
<td>18</td>
<td>Economy</td>
<td>8</td>
</tr>
<tr>
<td>19</td>
<td>Time</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>Need</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>297</td>
</tr>
</tbody>
</table>

Table 6. The table demonstrates a column chart of the identified innovation enablers and articles referring to them.
4 Conclusion and future work

The collected data were clustered into categories of innovation enablers that enable innovation team to conduct innovation work. Out of 208 identified articles were 46 of them contributing with data to more than one innovation enabler as seen in Table 5 and Table 6. In total were 20 innovation enablers detected. Significant results were that 39 articles referred to Collaboration as an innovation enabler and 3 articles referred to Need as an innovation enabler. As mentioned in the research design, only articles where the author(s) provided content to the innovation enabler were collected, i.e. if there wasn’t an explanation from which an action could be taken the article was rejected from this review. This revealed a complex picture where descriptions of the innovation enablers were overlapping and intervening each other, making them dependent of each other to some extent. E.g. Management as an innovation enabler is to one extent one of the most powerful ones as managers may terminate an innovation team to exist on an official basis, on the other hand Management is not important at all as an innovation team’s dedication may have the power to move mountains and keep on working despite of management’s approval or support. Another example is Climate where the researchers include factors as e.g. leadership, time for innovation etcetera and by that refers to Management. However, within this review, the thematic analysis have hade the focus on factors that enable innovation teams’ innovation work, and where the author put some content to the enabler.

However, this review focuses on innovation enablers from the innovation team’s point of view. Based on the results, a list of innovation enablers is suggested where the main keywords in each one of the innovation enablers are explicitly pointed out. Still, the innovation enablers may be intervened and depending on each other, but it provides an understanding and holistic overview of what factors that enable innovation teams to conduct innovation work.

Table 7. The table demonstrates the identified innovation enablers and keywords that describe their content.

<table>
<thead>
<tr>
<th>Innovation enablers [alphabetical order]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness (E.g. ability to “see” invisible or unrevealed innovation related opportunities.)</td>
</tr>
<tr>
<td>Capabilities (E.g. Skills related to manage or work in an innovation project)</td>
</tr>
<tr>
<td>Climate (E.g. OK to fail-, let’s try-, let’s do-mentality in work environment)</td>
</tr>
<tr>
<td>Collaboration (E.g. x-functional teams, collaboration between departments, suppliers and customers, open innovation, networks)</td>
</tr>
<tr>
<td>Culture (E.g. norms and invisible rules within the organization, “this is how we do here”-mentality)</td>
</tr>
<tr>
<td>Dedication (E.g. factors making one feel dedicated, motivated or stimulated to work in innovation projects.)</td>
</tr>
<tr>
<td>Economy (E.g. budget, non-monetary resources)</td>
</tr>
<tr>
<td>Education (E.g. innovation related training in theory- and practice.)</td>
</tr>
</tbody>
</table>
Empowerment (E.g. trust to take own decisions regarding resources to do, autonomy, interdependence)

Entre- / Intrapreneurship (E.g. doers that make things happen.)

Human resource (E.g. access to other colleagues that could contribute to innovation project, sharing competence and contributing to reduce bottlenecks.)

Incentives (E.g. monetary and non-monetary rewards.)

Knowledge (E.g. knowledge regarding innovation and expertise in innovation project topic.)

Knowledge management (E.g. knowledge in how to use knowledge or how to fill knowledge gaps related to the innovation project.)

Management (E.g. project managers, leadership, management support related to the innovation project.)

Mind-set (E.g. self-confidence "I can", contributing "I share", want-to develop company, pro-innovation bias "I like", free-will "I want to").

Need (E.g. explicit and clarified need to solve for customer, organization… The Why we should do this.)

Processes (E.g. innovation process, models and best practice that guides from idea to product on market.)

Strategy (E.g. directions in customer segment, areas, geographical markets, level of novelty on new products and technology to use or develop.)

Time (E.g. dedicated or allocated time to the innovation project)

The aim was to review the area of innovation enablers from the perspective of innovation teams, which led the research to include the organisational and members’ perspective of an innovation team as well. This research demonstrates that innovation enablers are difficult to separate as they are intervening each other. However, 20 different innovation enablers were identified as key factors on innovation teams’ innovation work; Awareness; Capabilities; Climate; Collaboration; Culture; Dedication; Economy; Education; Empowerment; Entre/intrapreneurship; Human resource; Incentives; Knowledge; Knowledge management; Management; Mind set; Need; Processes; Strategy; and Time.

Contribution to prior research
This research contributes to prior research by means of focusing on innovation enablers for innovation teams to conduct innovation work. The main contribution is to provide a holistic picture where the scattered research field is put together, including the context of the innovation team, i.e. the organisational- and team members’ perspective is included as well. It also contributes by not only reviewing the research and identify innovation enablers as a bullet list, but also by providing descriptions of what the innovation enabler is based on, which makes it usable for further research and practical application.

Practical applications of the results
Suggested practical use of the identified innovation enablers are e.g. to identify innovation team’s need when conducting innovation work by using the listed innovation enablers as a checklist, to fill gaps of important innovation enablers by identifying what enablers that are fulfilled or not, where Table 7 could be a practical template to use as a checklist or toolkit.

Limitations within this review
There are limitations within this review. As pointed out above, an innovation team is affected from three perspectives with direct impact on the innovation team. However, there are other factors as well, as e.g. policies, political directions or regional factors that affect an innovation team’s innovation work direct or indirect, but these aspects have been excluded from this review.

Suggested future research
This review demonstrates innovation enablers that enable innovation team to conduct innovation work. However, the review does not demonstrate to what degree they are enabling an innovation team to conduct innovation work or to what degree they are important to an innovation team. Based on this review one cannot claim that one innovation enabler is more important than another one, but one can understand what factors that most researchers are suggesting as factors that enable innovation teams’ innovation work.

Therefore, suggestions of future research are to study the importance of innovation enablers to identify to what degree they are important or not to innovation teams when conducting innovation work, to identify what innovation enablers that is relatively most important compared to the other ones, and to identify if the importance of innovation enablers vary from time to time within an on-going innovation project. The
contribution would be an even deeper understanding of innovation enablers in innovation work conducted by innovation teams.

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Important Innovation Enablers for Innovation Teams

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Abstract: This research aims to study if innovation enablers (Enablers), i.e. factors that enable innovation work, are important for innovation teams in ongoing innovation work and if lack of Enablers affects innovation projects negatively. The background to this study is that prior research states that numerous factors are important for innovation work, but there’s still knowledge to gain whatever these Enablers are perceived to be important by innovation teams. Data from three innovation teams ongoing innovation projects, supported by an external facilitator, were used within this study. The long-term qualitative study shows that all Enablers are important, but also that a facilitator is important. Lack of Enablers may cause negative effects on innovation projects, where nine enablers within this study were identified to be critical for avoiding project delays. Further research is suggested.

Keywords: Innovation enabler; Innovation team; Innovation group, Innovation management

1 Problem

Introduction
This research aims to study innovation enablers for innovation teams, i.e. factors that enable teams with the deliberately purpose to conduct innovation work. The background to this study is that previous research states that there’s a need of increased speed when innovating (Barczak et al, 2009; Chen et al, 2010; Menon et al, 2002), where X-functional innovation teams have become a suggested solution (Hallgren, 2009; Kesting and Ulhöj, 2010; Kristiansen and Bloch-Poulsen, 2010; Nakata and Im, 2010). However, even though innovation teams have been studied for centuries (e.g. Farris, 1972; Zuidema and Kleiner, 1994; Xu et al, 2006) and is seen as an effective way when developing new products (incl. services, processes etc.) problems as e.g. lack of performance and conflicts has been identified and found related to the team members’ inexperience and unfamiliarity to the very complex innovation work they’re supposed to conduct (Karlsson et al, 2010, Johnsson, 2014). For that reason, it is of interest to gain more knowledge of the factors that enable innovation teams to conduct innovation work.

2 Current understanding
Previous research on innovation enablers that affect innovation teams have been found in three perspectives; the organizational perspective (Aagard & Gertsen, 2011; Aiman-Smith et al, 2005; Denti and Hemlin, 2012; Gambatese and Hallowell, 2011; López-Fernández and Serrano-Bedina, 2011; Manley, 2006; Ross et al., 2012; Smith et al., 2008; West et al., 2004; Yu, 2010); the team perspective (Aiman-Smith et al., 2005; Denti and Hemlin, 2012; Denning, 2011; Gambatese and Hallowell, 2011; Kianto, 2011; West and Sacramento, 2012; West et al., 2004); and the individual perspectives (Denti and Hemlin, 2012; West et al., 2004). Recently, Johnsson (Forthcoming) revealed 20 innovation enablers with argument to be affecting innovation teams.

Even though previous research demonstrates innovation enablers that have emerged from empirical and theoretical analysis, none of these identified articles have empirical data from innovation teams in ongoing innovation projects. E.g. Aagard and Gertsen (2011) conducted a research of key enabler for front-end innovation in the pharmaceutical industry. Aiman-Smith et al (2005) developed the VIPAT tool (Value Innovation Potential Assessment Tool) based on empirical and theoretical data, pilots and validation. The identified areas of an innovation culture resulted in a 33 item questionnaire to identify the innovation culture within an organization. Innovation enabler within the construction industry was revealed by Bossink (2004).
He conducted a literature study and interviewed experts of construction innovation and then validated the enablers by studying construction projects. The construction industry was also studied by Gamatese and Hallowell (2011) to identify innovation enablers, where they studied on-going construction projects by conducting questionnaires and interviews of project personnel. Denning (2011) claims that management affect the innovation work by its actions and approach. Knowledge as such is considered to be important to innovation team, and the creation of knowledge in open innovation teams were studied by du Chantenier et al (2009) to increase the success rates of open innovation. Factors that facilitate innovation in work teams were studied by Kianto (2011) where he suggested social factors to have a great impact on the innovation outcomes. A study of factors that encourage innovation in hospitality firms was conducted by Lopez-Fernandez et al (2011) where they used data from a large survey consisting of 443 firms. West et al (2004) have developed a framework in how to develop innovation teams, West and Sacramento (2012) conducted a study of how the team climate affects the output from creativity and innovation work, and Johnsson’s (Forthcoming) suggested innovation enablers was based on a literature review including 208 articles. None of the studies have focused on innovation teams in on-going innovation projects.

Based on prior research, there is a need of more knowledge about innovation enablers for innovation teams. Therefore, this research aims to gain more knowledge of if innovation enablers are important to innovation teams in on-going innovation projects.

3 Research question
Two research questions have emerged from the literature review:
RQ: Are innovation enablers important for an innovation team in an on-going innovation project? If so, does lack of innovation enablers affect innovation teams’ performance negatively?

4 Research design
Three innovation teams (Teams) and their sponsor (Sponsor) in a large industrial company (Company) have participated within this longitude qualitative case study, where the innovation enablers (Enablers) suggested by Johnsson (Forthcoming), briefly demonstrated in Table 1 was used during the study.

The CIT-process (Johnsson, Forthcoming), which is a five-step process in how to create high performing innovation teams was used to create the three multifunctional innovation teams, briefly described as follow; first step is to secure top managements’ and managements’ commitment; second step is to identify an innovation team convener (Convener). That person’s first task is to gather an innovation team; third step is to prepare the Convener with instructions regarding innovation management and instructions in how to gather team members on a X-functional basis; fourth step is where the Convener gathers the innovation team members and get the team members’ managers’ approval to participate in the innovation project; the last step is to arrange a kick-off and launch the innovation project. The innovation process demonstrated by Tidd and Bessant (2013) was chosen for the Projects and consists of four phases; first, search for ideas; second, select idea to develop; third, implement and launch developed product (services etc.) on the market, and fourth, capture the value created along the process. However, the practical innovation work was executed in accordance with the Raft-model, which is a practitioner-based method regarding how to conduct agile innovation work (Johnsson, 2009; Johnsson et al, 2010).

Team A consisted of 4 members, Team B consisted of 4 members and Team C consisted of 7 members. The Teams’ only restrictions were to deliver innovative concepts that clearly demonstrated business opportunities and customer value. The approach of this research is action-based by means of that the researcher has influenced, advised and coached the Teams during the Projects, i.e. facilitated the Teams in their work and in the use of the innovation process, but the researcher carefully separated the complexity of participation and science in accordance with Gummesson (2000).

Table 1 The table demonstrate the innovation enablers from Johnsson’s (Forthcoming) review.

<table>
<thead>
<tr>
<th>Innovation enabler [alphabetical order]</th>
<th>Characteristics of innovation enabler.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>E.g. ability to “see” invisible or unrevealed innovation related opportunities.</td>
</tr>
<tr>
<td>Capabilities</td>
<td>E.g. skills related to manage or work in an innovation project.</td>
</tr>
<tr>
<td>Climate</td>
<td>E.g. OK to fail-, let’s try-, let’s do-mentality in work environment,</td>
</tr>
</tbody>
</table>
The research was conducted in two steps; First, data from Teams A’s on-going innovation project and the Sponsor were collected. Interviews, questionnaires and statement based questionnaires (Yin, 2013) were conducted every third month in the innovation project for one year, starting in the first phase and ending in the early steps of the third phase of the innovation process demonstrated by Tidd and Bessant (2013). In the questionnaires, the respondents assessed how important (1-7) each and one of the Enablers were to the Team, where 1 indicated not important and 7 very important. The statement-based questionnaire was based on 45 statements in which the Enablers were put in a context. E.g. “Employees who are invited to be a part of the innovation project feel proud”. “I have fun when working in the innovation project”. “We solve problems related to the innovation project in an effective way”. The respondents were also asked how easy the questions/statements were to understand (1-7), where 1 indicated not easy at all and 7 very easy to understand. Both audio-recorded structured and unstructured verbal interviews were conducted. Approximately one hour were spent at each occasion for data collection, where about 20–30 minutes were dedicated for interviews. In addition, team meetings were recorded once every third or fourth week and e-mail conversations were held between the Facilitator and the Convener in between. The data from the questionnaires and the statement-based questionnaires were charted and divided in two halves to detect deviations in how the respondents assessed the Enablers to be important or not. When listening on the audio-recorded interviews and team meeting the focus was on the respondents’ explicit and inexplicit comments and explanations that could be related to the Enablers (Boyatzis 1998; Yin, 2013). Relevant sections from the audio-recorded interviews were transcribed, where quotes were taken to demonstrate similarities and divergences between respondents; the second step was to analyse team meeting notes from the Projects conducted by Team B and C. Rich team meeting notes were taken by the Facilitator at every meeting, including reflections from the Team members and the Facilitator in the beginning and in the end of the meetings, notes regarding the Projects’ progress and the Facilitator’s advice for forthcoming work. The meetings were held approximately once every week for Team B during the 6 month innovation project, and once every second week for Team C during the 13 month long innovation project. The notes from the three teams were analysed in the light of the Enablers; where the focus was to identify problems and their underlying reasons, negative effects on the innovation projects and Enabler(s) related to these negative effects.

<table>
<thead>
<tr>
<th>Table 1, continuing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboration</strong></td>
</tr>
<tr>
<td><strong>Culture</strong></td>
</tr>
<tr>
<td><strong>Dedication</strong></td>
</tr>
<tr>
<td><strong>Economy</strong></td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td><strong>Empowerment</strong></td>
</tr>
<tr>
<td><strong>Entre- / Intrapreneurship</strong></td>
</tr>
<tr>
<td><strong>Human resource</strong></td>
</tr>
<tr>
<td><strong>Incentives</strong></td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
</tr>
<tr>
<td><strong>Knowledge management</strong></td>
</tr>
<tr>
<td><strong>Management</strong></td>
</tr>
<tr>
<td><strong>Mind-set</strong></td>
</tr>
<tr>
<td><strong>Need</strong></td>
</tr>
<tr>
<td><strong>Processes</strong></td>
</tr>
<tr>
<td><strong>Strategy</strong></td>
</tr>
<tr>
<td><strong>Time</strong></td>
</tr>
</tbody>
</table>
5 Findings
The findings from this study are presented below, first the findings regarding if innovation enablers are perceived to be important, followed by what affect lack of Enablers have on an innovation project.

Table 2 The table demonstrates what Enablers that are considered to be important.

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Phase in innovation process</th>
<th>Important Enablers according to the Team</th>
<th>Important Enablers according to the Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Search</td>
<td>All Enablers with comment on Incentives*</td>
<td>Didn’t participate at Kick off</td>
</tr>
<tr>
<td>#2</td>
<td>Select</td>
<td>All Enablers with comment on Incentives*</td>
<td>All Enablers but Education*</td>
</tr>
<tr>
<td>#3</td>
<td>Implement</td>
<td>All Enablers with comment on Incentives*</td>
<td>All Enablers but Education* and Incentives**</td>
</tr>
<tr>
<td>#4</td>
<td>Implement</td>
<td>All Enablers with comment on Incentives*</td>
<td>All Enablers but Climate***, Culture**** and Incentives**</td>
</tr>
<tr>
<td>#5</td>
<td>Implement</td>
<td>All Enablers with comment on Incentives*</td>
<td>All Enablers but Culture****, Education* and Management*****</td>
</tr>
</tbody>
</table>

Comments from the Team
*All participants’ explicitly state that intrinsic incentives are important and that extrinsic incentives are not important at all.
** The Sponsor explicitly states that intrinsic incentives are important and that extrinsic incentives are not important at all.
*** The Sponsor thinks the Climate has become less important. “They have united somehow”.
**** The Sponsor can see progress in the project despite of limited support in Culture. “The culture is a problem, but work is doable.”
***** The Sponsor thinks that the Team doesn’t need management.

Table 3 The table demonstrates problems identified within notes from Team A, effect on the innovation project and related Enabler(s).

<table>
<thead>
<tr>
<th>Team A</th>
<th>Problem</th>
<th>Reason to problem</th>
<th>Phase in innovation process</th>
<th>Team’s reflection on situation</th>
<th>Team’s solution</th>
<th>Negative effect on innovation project</th>
<th>Lack of Enabler(s) affecting the innovation project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal resources won’t attend at crucial workshop.</td>
<td>Up-coming vacation.</td>
<td>Search</td>
<td>Irritation, lack of Dedication.</td>
<td>Involve external expertise.</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Lack of team member’s participation</td>
<td>Work overload.</td>
<td>Search</td>
<td>Team conflict, lack of Dedication.</td>
<td>Discuss problem as a team.</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Budget not confirmed by management</td>
<td>Technical solution not decided.</td>
<td>Select</td>
<td>No worries. Lack of economy.</td>
<td>Solve problems as they arise.</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Layoffs #1.</td>
<td>Implement</td>
<td>Frustration, lack of Human resources.</td>
<td>Team works extra hours.</td>
<td>Delayed project.</td>
<td>Entreprenurship, Human resources, Collaboration, Knowledge management, Mind-set.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not looking for external help.</td>
<td>Loyal to colleagues in layoff #1.</td>
<td>Implement</td>
<td>Frustration, lack of Human resources.</td>
<td>Team works extra hours.</td>
<td>Delayed project.</td>
<td>Collaboration, Entreprenurship, Human resources, Knowledge management, Mind-set.</td>
</tr>
<tr>
<td></td>
<td>Not pushing for budget.</td>
<td>Budget constrains, risk for project exit.</td>
<td>Implement</td>
<td>Frustration, lack of Economy.</td>
<td>Team works extra hours.</td>
<td>Exhausted team members.</td>
<td>Economy, Human resources.</td>
</tr>
<tr>
<td></td>
<td>Grief.</td>
<td>Team</td>
<td>Implement</td>
<td>Continue</td>
<td>Re-considering</td>
<td>Delayed</td>
<td>Dedication, Mind-set.</td>
</tr>
</tbody>
</table>
Discussion and conclusion

There are nine main findings from this study; first, all Enablers were important according to the questionnaires and statement based questionnaires, with a clarification regarding Incentives, Education, Climate, Culture and Management. All the respondents stated that intrinsic incentives were the main driver and not monetary.
way of educating the Teams in practical innovation management, the Team handled Climate and Cultural issues in a way that these were not really a problem to the Teams performance, and that the Team didn’t need Management to conduct their work; second, lack of Enablers was affecting the innovation projects in different ways during the innovation projects. Significant effects due to lack of Enablers was that the innovation projects were delayed, and the Enablers related to this were Collaboration, Dedication, Economy, Entre/intrapreneurship, Human recourses, Knowledge, Knowledge management, Mind-set and Time. The Enablers that caused negative effect on the innovation projects most frequently were lack of Knowledge management and Time. I.e. the respondents didn’t how to handle certain situations in accordance to the innovation process, which is strongly connected to lack of Knowledge. In addition, the members lack of Time due to everyday work. The members were allowed to spend approximately 10% on the innovation projects. However, that they still had to do all work that they did before the innovation projects started which made the innovation project an extra burden. On the other hand, some problems that occurred in Team A in the early phases could be related to lack of Dedication and Economy, but they were solved without any negative effects on the innovation project. Which could be explained with increased project complexity as the innovation project emerges. Another explanation is that the Team possessed the situation thanks to their Mind-set and Entre/intrapreneurial skills. There were two Enablers that were explicitly stated in the team meetings as problems to the innovation teams’ performance, i.e. Human resources and Time. The Teams claimed these two Enablers to be the reason for being delayed. However, the notes reveal that that lack of these Enablers also could be explained by lack of e.g. Collaboration, Dedication, Entre-/intrapreneurial, Knowledge or Mind-set as which points to the conclusion of that the team was unaware of their needs; fourth, misinterpretation. Team A was affected by three big factors that the other Teams didn’t suffer from, i.e. major layoffs in two rounds, budget constrains and a team member’s death, which resulted in that the innovation project was delayed. Team and the Sponsor interpret these situations differently. The Sponsor was very disappointed on the Team’s lack of performance as the Team wasn't directly affected by the layoffs and first perceived that the delays were caused by the Team’s lack of dedication and passion but later on understood the Team’s reasons for their actions. From the Team’s perspective it wasn't lack of passion or dedication, they were putting the innovation project on hold because of lack of Time and work overload, as they had to do cover for the people in layoff as well. They didn't want to disturb the organization too much and in their opinion they were protecting the innovation project and keeping it alive by keeping a low profile. In fact they perceived themselves very dedicated and committed to the innovation project; fifth, loyalty to colleagues and internal political games. The Team was advised to gather external resources to solve the problem with lack of Time, but they refused to do that even though they had the budget to do so. The reason was loyalty to their colleagues that were going to lose their jobs. “This is not the time to go external” was stated at one Team meeting. The innovation project delays were also an affect of rumours within the company that further product exits were coming, where a political game was going on and the Team kept the innovation project under the radar (but not turning the innovation project into a skunk work) to protect it from being terminated; sixth; lack of entre-/intrapreneurship, despite the fact that the innovation project was delayed as an effect on factors described above, a series of action could have been conducted without conflicting the loyalty to colleagues to save time which also was suggested by the facilitator. As stated by the Team and the Sponsor, that lack of Time or Dedication was the reason for not taking action in the difficult times the Team faced could be referred to lack of entre-/intrapreneurship. This suggestion is based on the fact that the Team deliberately override internal norms to go for external resources to save time before the layoffs was known, which proved that the Team possessed entre-/intrapreneurship behavior within the Team; seventh, the facilitator. The facilitator was an external support to the Team who advised and commented the Team’s work but didn't participate in any activities, but who’s recommendations made the Team to try new ways of working and contributed to the innovation project’s survival; eighth, direct and indirect important innovation enablers. Deviations in what the respondents explicitly found to be important from questionnaires and what was identified from the Team meetings notes and interviews demonstrate that there are direct and indirect impact on the Teams’ performance, e.g. Collaboration directly affected the performance and Culture indirectly affected the performance; ninth, Team creation. In addition to the suggested Enablers there were unexpected external factors that seriously affected the Teams performance negatively, e.g. product exits, layoffs, death of a team member, members that changed jobs, lack of internal resources and everyday work overload. Despite all unexpected problems and lack of some innovation enablers none of the innovation project stopped, but they were slowed down and delayed. This finding relates to the creation of the innovation teams, where the Team members’ passion and loyalty for the Company and the innovation project are identified as key factors.

The conclusion is that all Enablers are important and that nine Enablers are critical for avoiding projects delays. Team members tend to blame all problems on lack of Time, Human resources or work overload, which may be true but these problems can easily be solved if being aware of other solutions. The Team members themselves seems to be a key factor for keeping the project going in tough times, i.e. the importance of
creating the innovation team should not be underestimated where the team members’ passion and loyalty to the innovation project and Company are key factors for not stopping projects.

6. Contribution
The academic contribution from this study is knowledge regarding that all the Enablers within this study were perceived to be important during the whole innovation project, and that lack of critical Enablers had negative affects on innovation projects. However, there were also found that innovation projects can be affected by external, unexpected factors and that Enablers affect an innovation team’s performance in a direct and indirect way. The teams’ members were considered to be key factors for keeping the projects going in tough times, and the facilitator was perceived to be important for advices in forthcoming activities.

Future research
As stated in the findings, all Enablers are important during an on-going innovation project and the Facilitator plays an important role. Therefore, further research regarding if the Enablers are equal important and what Enablers that are most important, and the Facilitator’s characteristics during an on-going innovation project is suggested. As this study is based on three innovation teams in an industrial context the validation is limited. Therefore, further studies regarding whatever the Enablers are important are suggested.

7. Practical implications
Innovation managers or innovation leaders can, by understanding that all the Enablers are important for an innovation team and its performance, plan to establish these when creating innovation teams and innovation projects. By knowing that lack of innovation enablers may delay innovation projects one can plan for instantly adjustments to meet the, sometimes inexplicitly expressed, current and forthcoming needs of innovation enablers. An innovation teams would benefit from a person that can interpret the current situation and relate to the Enablers that the team doesn’t have the ability to express by itself. And, by knowing that innovation team members’ passion for the innovation project and the company may keep the innovation project in progress, one should carefully select team members to new innovation teams.

References
Gummesson (2000)


Johnsson, M. (Forthcoming) Innovation enablers for innovation teams.


The importance of innovation enablers for innovation teams

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Abstract
This research aims to study the importance of innovation enablers (Enablers), i.e. factors that enable innovation work, for innovation teams in on-going innovation work and to identify which Enablers that are most important. Prior research states that Enablers are important for innovation work, but there’s still knowledge to gain regarding their relative importance. Data from three innovation teams, supported by an external facilitator, were used within this study. The long-term qualitative study demonstrates that the Enablers’ importance varies, but Collaboration, Dedication and Mind-set were the most important Enablers in general to overcome innovation project related problems. Further research is suggested.

Keywords: Innovation enabler, Innovation team, Innovation management

Purpose
This research aims to study the importance of innovation enablers, i.e. factors that enable teams with the deliberately purpose to conduct innovation work, in on-going innovation projects conducted by X-functional innovation teams (innovation teams). The reasons for studying innovation teams are that there’s a need of increased speed when innovating (Barczak et al, 2009; Chen et al, 2010; Menon et al, 2002), and X-functional innovation teams are a suggested solution for agile innovation work (e.g. Hallgren, 2009; Johnsson, 2014; Kesting and Ulhöj, 2010; Nakata and Im, 2010). Hence it’s of interest to gain more knowledge of factors that enable such work.

Prior research regarding innovation enablers has been conducted from different perspectives. Aiman-Smith et al (2005) studied enablers for an innovation culture within organizations, and developed an innovation potential assessment tool based on the eight areas they discovered from empirical and theoretical data, pilots and validation. West and Sacramento (2012) conducted a review on team climate and its’ affects on output from creativity and innovation work. Denning (2011) identified five transformations of management as enablers for innovation work. Knowledge as such is considered to be important to innovation teams, and the creation of knowledge in open innovation teams were studied by du Chantenier et al (2009) to increase the success rates of open innovation, and Kianto (2011) identified that social factors have a great impact on the innovation outcomes in knowledge worker teams.

Research of a more holistic character has identified that multiple enablers are required for innovation work. West et al (2004) have developed a framework in how to stepwise develop
innovation teams that focuses on team task, team composition, organizational context, and
team processes. A study of factors that encourage innovation in hospitality firms was
conducted by Lopez-Fernandez et al (2011), where four internal factors was identified; firm
size; membership in a business group e.g. franchise, management contract, or membership
association; willingness to change; and a sufficiently strong bureaucratic framework to
manage and institutionalize any innovations. Johnsson (Forthcoming) conducted a review to
identify innovation enablers that weren’t explicitly demonstrated in prior research but still
being important for innovation teams’ innovation work. He identified 20 innovation enablers
enclosing the organizational-, team-, and individual perspective, which were assessed to be
important in a study on innovation teams in on-going innovation projects in an industrial
context (Johnsson, 2016).

A few studies have focused on factors that enable innovation and also ranked them by
importance. Gamatese and Hallowell (2011) studied enablers in construction projects by
conducting questionnaires and interviews on project personnel. Identified important enablers
for innovation were climate, structure, time to explore ideas, face-to-face communication,
personal involvement of innovation champion, collaboration between team members and
repository for lessons learned, but the research identified four factors that were seen as most
important for enabling innovation on a project level; first, owner/client influence; second,
presence of an innovation champion; third, presence of lessons learned/knowledge
management system; fourth, upper management support for innovation; fifth, to which
extend R&D was supported. Aagard and Gertsen (2011) conducted a research of key
enablers for front-end innovation in the pharmaceutical industry. Six factors were identified
as most important from interviews with a mixture of respondents from strategic management
level to newly employed personnel with low experience; first, empowerment of employees
to learn and explore; second, explorative team culture tolerant of failure; third, targeted
knowledge sharing and collaboration with external partners; fourth, efficient cross
functional knowledge sharing and collaboration; fifth, front-end innovation as a flexible
learning process; sixth, an innovation strategy and goals guiding not dictating innovation.

Still, there’s little knowledge of the importance of innovation enablers by innovation teams
in on-going innovation projects, for which increased knowledge would gain both managerial
and operational practices when conducting innovation work and supporting innovation
teams. Previous research has focused on identifying factors that support innovation in one
way or the other, and there are sometimes suggestions regarding how to implement the
identified factors, but they tend to be demonstrated as a snapshot, or a summary of factors
that are important to innovation work in general. E.g. West et al (2004) and du Chantenier et
al (2009) discuss innovation teams from two different perspectives, where West et al suggest
how to create innovative teams and du Chantenier et al suggests solutions to overcome
challenges in open innovation teams. Kiinto (2011) have studied factors that facilitate
innovation in work groups but the teams were not asked to answer questions regarding if
they assessed these factors to be important to them, nor was the teams created to deliberately
conduct innovation work. Johnsson’s (2016) study regarding important innovation enablers
for innovation teams came to the conclusion that they were important but they weren’t
ranked by importance. Gamatese and Hallowell (2011) and Aagard and Gertsen (2011)
identified important factors that enable innovation and ranked these factors by importance.
However, the respondents were not members of innovation teams, the projects were not on-
going innovation projects and the studies did not focus on their relative importance in
different phases of the innovation projects.

It’s said that the most important asset for innovation work are the humans (Kayabasi et al.,
2013; López-Fernández et al, 2011; Steele and Murray, 2004). However, except for
Johnsson’s (2016), prior research hasn’t included the people that are conducting the practical innovation work, i.e. the members of the innovation teams. None of the identified research have demonstrated a picture that provide an understanding of innovation enablers in an on-going innovation project, therefore it’s easy to believe that prior research suggests that identified innovation enablers are equal important during an innovation project. For these reasons, increased knowledge regarding the importance of innovation enablers for innovation teams would contribute to prior research. In addition, practitioners, managers and becoming innovation team members would benefit from this research by better understanding the current and forthcoming need of innovation enablers in innovation projects.

The research question that emerged from the literature review is: Are any innovation enablers significant important for an innovation team in an on-going innovation project? If so, which are most important, and in what phase of the innovation process?

**Design/methodology/approach**

Data from three innovation teams (Teams) on-going innovation projects and their sponsor (Sponsor) in a large industrial company (Company) have been used within this longitude qualitative case study, where the innovation enablers (Enablers) suggested by Johnsson (Forthcoming) was used during the study, briefly demonstrated below;

- **Awareness** [1], i.e. ability to “see” invisible or unrevealed innovation related opportunities. This enabler is based on employees with capabilities to understand and detect new opportunities, including e.g. lateral- and metaphoric thinking, capturing- and interpreting dreams; **Capabilities** [2], i.e. skills related to manage or work in an innovation project, including both technical and non-technical capabilities. This also includes personality traits as e.g. attraction to complexity, high energy, independence of judgment, intuition, self-confidence, ability to accommodate opposites, intelligence, knowledge, eagerness to learn, inquisitiveness, risk-taking and a strong desire to fulfill goals are also important; **Climate** [3], i.e. OK to fail-, let’s try-, let’s do-mentality in work environment. A climate refers to the manner of working together for which the team has developed based on their shared perception of policies, practices and procedures. A climate is less stable than culture and can be seen as an expression of culture at a specific time; **Collaboration** [4], i.e. collaboration between individuals to create X-functional teams, networks, departments, suppliers, customers and competitors to conduct innovation work together. However, collaboration is dependent on both diversity and convergence where all parties must want to collaborate to be successful; **Culture** [5], i.e. norms and invisible rules within the organization, “this is how we do here”- mentality. Culture is hard to change as it is partly conscious and partly subconscious, where communication is one key to create a strong culture; **Dedication** [6], i.e. factors that makes one feel dedicated, motivated or stimulated to work in innovation projects. Motivation is usually coming from extrinsic-, intrinsic- and relational factors. Practical ways of getting buy-in is to embrace the uncertainty which is embedded in innovation work; **Economy** [7], i.e. budget or non-monetary resources that an organization invest in an innovation project; **Education** [8], i.e. innovation related training in theory- and practice to maintain the knowledge and skills up to date in e.g. communication, collaboration, sketching, problem solving and lateral thinking; **Empowerment** [9], i.e. trust to take own decisions regarding recourses to spend on tasks to do in the innovation project.; **Entre-/intrapreneurship** [10], i.e. doers that make things happen. Entrepreneurial and intrapreneurial behaviour has positive effects on innovation within a company and contribute to a sustaining innovation system. These people do not wait for opportunities to be found, they are made or recognized; **Human resources** [11]; i.e. access to colleagues that could contribute by sharing competence and contributing to reduce bottlenecks in the
innovation project; Incentives [12], i.e. monetary and non-monetary rewards, which could be both intrinsic or extrinsic. Examples of intrinsic incentives are e.g. recognition from managers and extrinsic incentives are e.g. bonuses or prizes; Knowledge [13], i.e. knowledge regarding innovation and expertise in a specific innovation project, including tacit knowledge as ‘know-how’; Knowledge management [14], i.e. knowledge in how to use knowledge or how to fill knowledge gaps related to the innovation project; Management [15], i.e. project managers, leadership, management support related to the innovation project. On-going commitment from top management and middle management is seen as one main key for innovation as they are the link to economic-, structural-, social-, and cognitive activities; Mind-set [16], i.e. individuals’ self-confidence, want to contribute, want-to develop its company, having pro-innovation bias, will to participate is essential to the innovation work performance. Need [17], i.e. an explicit and clarified need to solve for the company’s customer. “The Why we should do this”; Processes [18], i.e. innovation process, models and best practice that guides from idea to a product (including new processes, services etcetera) on market. The cyclic innovation processes is the standard of today when it comes to innovation work. Depending on who is demonstrating it, it has several stages, where the beginning is more of an abstract work, and the latter part is dedicated to implementing and launching on the market; Strategy [19], i.e. directions in where to aim for regarding the innovation work, such as e.g. customer segment, areas, geographical markets, level of novelty on new products and technology to use or develop; Time [20], i.e. dedicated or allocated time to spend on the innovation project. Time will then be used for defining, framing and understanding the problem, reflection, to avoid information overload, and to implement the knowledge into new solutions.

The three Teams were systematically created in accordance with the CIT-process (Johnsson, Forthcoming), which is a five-step process to create high performing innovation teams on a X-functional basis, briefly described as follow; first, secure top managements’ and managements’ commitment; second, identify an innovation team convener (Convener), who’s first task will be to identify members to the innovation team; third, prepare the Convener with instructions regarding innovation management and instructions in how to gather team members on a X-functional basis; fourth, the Convener gathers the innovation team members and ensure that the team members’ managers’ approve participation in the innovation project; the last step is to arrange a kick-off and launch the innovation project. The chosen innovation process for the Projects within this research relates to the innovation process demonstrated by Tidd and Bessant (2013) and consists of four phases; first, searching for ideas; second, selecting idea to develop; third, implementing and launching developed product (services etc.) on the market; and fourth, capturing the value created along the process. The practical innovation work was conducted in accordance with the Raft-model, which is a practitioner-based approach of how to manage agile innovation work (Johnsson, 2009; Johnsson et al, 2010).

Team A consisted of 4 members, Team B consisted of 4 members and Team C consisted of 7 members. The Teams’ missions were to deliver innovative concepts that clearly demonstrated business opportunities and customer value. The approach of this research is action-based by means of that the researcher has influenced, advised and coached the Teams during the project, i.e. facilitated the Teams in their work and in the use of the innovation process. However, the researcher carefully separated the complexity of participation and science in accordance with Gummesson (2000).

The research was conducted in two steps; first, data from Teams A’s on-going innovation project and the Sponsor were collected. Interviews, questionnaires, and statement based questionnaires (Yin, 2013) were used to collect data at four occasions in the on-going innovation project. The data collection started at the kick-off and the ended one year later.
At that time the innovation project was in the early steps of the third phase of the innovation process demonstrated by Tidd and Bessant (2013). In the questionnaires, the respondents ranked the relative importance of the Enablers (1-20) at that moment of the innovation project, where 1 indicated the most important and 20 the least important for the moment. The statement-based questionnaire was based on 45 statements in where the Enablers were put in a context. E.g. “I have enough time to do a good job in the innovation project”. “I would do a good job in the innovation project, even if the allocated time "on paper" would not be sufficient”. “I’m satisfied with my deliveries in the innovation project”. “The innovation team has got helpful innovation related advices from innovation management or affiliate persons”. The respondents were also asked how easy the questions/statements were to understand (1-7), where 1 indicated not easy at all- and 7 very easy to understand. Approximately one hour were spent at each occasion for data collection, where about 20-30 minutes were dedicated for structured and unstructured interviews. Team meetings were recorded and e-mail conversations were held between the Facilitator and the Convener between the meetings. The data from the questionnaires and the statement-based questionnaires were charted. When listening on the audio-recorded interviews and team meetings the focus was on the respondents’ explicit and inexplicit comments and explanations that could be related to the Enablers (Boyatzis 1998; Yin, 2013). Relevant sections from the audio-recorded interviews were transcribed, where quotes were taken to demonstrate similarities and divergences between respondents; in the second step the team meeting notes from the innovation projects conducted by Team B and C was analysed. Rich team meeting notes were taken by the Facilitator approximately once a week for Team B during the 6 month project, and once every second week for Team C during the 13 month long project. The notes include reflections from all members and the Facilitator in the beginning and in the end of the meeting, notes regarding the projects’ progress and advice for forthcoming work by the Facilitator. The notes from the three teams were analysed in the light of the Enablers; where the focus was to identify problems and their underlying reasons, and which Enabler(s) that were related to solve the identified problems.

Findings
The findings from this study are demonstrated below. First the findings regarding which Enablers’ that are most important in the different phases of the projects, followed by identified key Enablers that solved problems occurring during the innovation projects.

Table 1 – The table demonstrates the most important Enablers in different phases of the innovation process.

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Phase in innovation process</th>
<th>The most important Enablers according to the Team.</th>
<th>The most important Enablers according to the Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2**</td>
<td>Select</td>
<td>Dedication [6]</td>
<td>Culture [5]</td>
</tr>
</tbody>
</table>

* Interviews where the respondents were asked for “top of mind” innovation enablers.
** Questionnaires in where the respondents ranked the Enablers from most important to least important.
Table 2 – The table demonstrates problems identified from the notes from Team A, related Enablers, effect on the innovation project and key Enabler that solved the problem.

<table>
<thead>
<tr>
<th>Team A</th>
<th>Problem</th>
<th>Reason to problem</th>
<th>Phase in innovation process</th>
<th>Team’s reflection on situation</th>
<th>Team’s solution</th>
<th>Effect on project</th>
<th>Problem solved due to key Enabler in Team</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal resources won’t attend at crucial workshop.</td>
<td>Upcoming vacation</td>
<td>Search</td>
<td>Lack of commitment</td>
<td>External help.</td>
<td>Saving time and costs</td>
<td>[4, 10, 13, 14, 16]</td>
</tr>
<tr>
<td></td>
<td>Lack of team member’s participation</td>
<td>Work overload</td>
<td>Search</td>
<td>Bring member back.</td>
<td>Discuss problem as a team.</td>
<td>Committed Team</td>
<td>[13, 14]</td>
</tr>
<tr>
<td></td>
<td>Budget not confirmed by management.</td>
<td>Technical solution not set</td>
<td>Select</td>
<td>We’ll solve it.</td>
<td>Solve problems as they arise.</td>
<td>Self-confident Team</td>
<td>[10, 13, 14, 16]</td>
</tr>
<tr>
<td></td>
<td>Not supportive organization</td>
<td>New innovation process</td>
<td>Select</td>
<td>We’ll do it anyway</td>
<td>Keep on working</td>
<td>Saving time and costs</td>
<td>[16]</td>
</tr>
<tr>
<td></td>
<td>Lack of engineers for project tasks</td>
<td>Layoffs #1</td>
<td>Implement</td>
<td>Frustration</td>
<td>Team works extra hours</td>
<td>Slow, but progress</td>
<td>[10, 16]</td>
</tr>
<tr>
<td></td>
<td>Not looking for external help.</td>
<td>Loyal to colleagues in layoff #1</td>
<td>Implement</td>
<td>Frustration</td>
<td>Team works extra hours</td>
<td>Slow, but progress</td>
<td>[10, 16]</td>
</tr>
<tr>
<td></td>
<td>Not pushing for budget</td>
<td>Budget constrains, risk for project exit</td>
<td>Implement</td>
<td>Frustration</td>
<td>Team works extra hours</td>
<td>Survival in project portfolio</td>
<td>[10, 16]</td>
</tr>
<tr>
<td></td>
<td>Grief</td>
<td>Member’s death</td>
<td>Implement</td>
<td>Frustration</td>
<td>Continue project?</td>
<td>Reconsidering team actions</td>
<td>Delayed project</td>
</tr>
<tr>
<td></td>
<td>Not pushing for recourses.</td>
<td>Resource constraints due to layoffs #2, risk for project exit</td>
<td>Implement</td>
<td>Frustration</td>
<td>Wait for resources</td>
<td>Survival in project portfolio. Delayed project</td>
<td>[10, 16]</td>
</tr>
<tr>
<td></td>
<td>Not complaining over lack of time.</td>
<td>Work overload due to layoffs #2, risk for project exit</td>
<td>Implement</td>
<td>Frustration</td>
<td>Team works extra hours</td>
<td>Survival in project portfolio.</td>
<td>[10, 16]</td>
</tr>
<tr>
<td></td>
<td>Working under radar</td>
<td>Reorganization</td>
<td>Implement</td>
<td>Frustration</td>
<td>Team works extra hours</td>
<td>Slow, but progress</td>
<td>[10, 16]</td>
</tr>
</tbody>
</table>
### Table 3 – The table demonstrates problems identified from the notes from Team B, related Enablers, effect on the innovation project and key Enabler that solved the problem.

<table>
<thead>
<tr>
<th>Team B</th>
<th>Problem</th>
<th>Reason to problem</th>
<th>Phase in innovation process</th>
<th>Team’s reflection on situation</th>
<th>Team’s solution</th>
<th>Effect on project</th>
<th>Problem solved due to key Enabler in Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of member’s participation</td>
<td>Work overload</td>
<td>Search</td>
<td>Discussing problem</td>
<td>Keep on working</td>
<td>Committed Team</td>
<td>Slow progress. Needed information collected</td>
<td>[6]</td>
</tr>
<tr>
<td>Team wants to build physical things before needfinding.</td>
<td>Unfamiliar with innovation process</td>
<td>Search</td>
<td>Frustration</td>
<td>Follow process</td>
<td></td>
<td>Slow progress. Needed information collected</td>
<td>[6]</td>
</tr>
<tr>
<td>Solutions chosen too early.</td>
<td>One team member’s too biased</td>
<td>Select</td>
<td>Frustration</td>
<td>Discussing main problem</td>
<td></td>
<td>Work pace slow down</td>
<td>[6, 16]</td>
</tr>
<tr>
<td>Lack of competence in the team</td>
<td>Selected solution requires new expertise</td>
<td>Select</td>
<td>Enthusiasm</td>
<td>Search for competence</td>
<td></td>
<td>On time</td>
<td>[4, 14, 16]</td>
</tr>
<tr>
<td>Convener #1 leaves the Team</td>
<td>New job</td>
<td>Implement</td>
<td>Looking for new Convener</td>
<td>Team member step in as Convener</td>
<td></td>
<td>Project keeps on going</td>
<td>[6, 13, 14, 16]</td>
</tr>
<tr>
<td>Team on idle.</td>
<td>Vacation</td>
<td>Implement</td>
<td>Frustration</td>
<td>Focus on deadline</td>
<td></td>
<td>Project progress</td>
<td>[6, 16]</td>
</tr>
<tr>
<td>Tight time plan</td>
<td>Lots of actions to meet deadline</td>
<td>Implement</td>
<td>Focused on deadline</td>
<td>Focus on suppliers dedication</td>
<td></td>
<td>No negative effect on performance</td>
<td>[4, 6, 13, 14, 16]</td>
</tr>
<tr>
<td>Convener #2 leaves the Team</td>
<td>New job</td>
<td>Implement</td>
<td>Starts looking for new Convener</td>
<td>Convener #2 suggests new convener.</td>
<td></td>
<td>No negative effect on performance</td>
<td>[6, 13, 14, 16]</td>
</tr>
</tbody>
</table>

### Table 4 – The table demonstrates problems identified from the notes from Team C, related Enablers, effect on the innovation project and key Enabler that solved the problem.

<table>
<thead>
<tr>
<th>Team C</th>
<th>Problem</th>
<th>Reason to problem</th>
<th>Phase in innovation process</th>
<th>Team’s reflection on situation</th>
<th>Team’s solution</th>
<th>Effect on project</th>
<th>Problem solved due to key Enabler in Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>No clear direction for ideas</td>
<td>Open scope for project</td>
<td>Search</td>
<td>Confused by abstract thinking</td>
<td>Discussing what to do.</td>
<td></td>
<td>Slow start</td>
<td>[6]</td>
</tr>
<tr>
<td>Lack of time</td>
<td>Work overload</td>
<td>Search</td>
<td>Frustration</td>
<td>Discussing problem</td>
<td></td>
<td>No progress</td>
<td>[6]</td>
</tr>
<tr>
<td>No market connection in the team</td>
<td>Too homogenous team</td>
<td>Search</td>
<td>Frustration</td>
<td>Suggestions for solutions too early</td>
<td></td>
<td>Project delayed</td>
<td>[4]</td>
</tr>
<tr>
<td>No interviews with end users conducted</td>
<td>Lack of Time</td>
<td>Search</td>
<td>Frustration</td>
<td>Looking for resources and</td>
<td></td>
<td>Project delayed</td>
<td>[4]</td>
</tr>
<tr>
<td>Lack of market information</td>
<td>Lack of Time</td>
<td>Select</td>
<td>Eager to get going</td>
<td>Skipping parts in process</td>
<td>Project delayed</td>
<td>[4]</td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------</td>
<td>--------</td>
<td>--------------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Need of more meetings for finalizing concept presentation</td>
<td>More complex than expected</td>
<td>Implement</td>
<td>Positive mindset</td>
<td>Involving more personnel, working extra hours</td>
<td>Project delayed</td>
<td>[4, 6, 16]</td>
<td></td>
</tr>
</tbody>
</table>

**Discussion and conclusion**

The first part of this study indicates that significant important innovation enablers in general according to the innovation team are Dedication, Economy, Entre-/intrapreneurship, Mindset and Time. The Sponsor on the other hand found Capabilities, Climate, Culture, Dedication, Empowerment, Entre-/intrapreneurship, Mind-set and Need to be significant important innovation enablers in general. The top three most important innovation enablers according to the Team varied in different phases of the innovation process; first phase: Dedication, Economy Mind-set; second phase: Time, Entre-/intrapreneurship, Dedication; third phase: Time, Entre-/intrapreneurship, Dedication. There were some similarities between the Team and the Sponsor, e.g. they both found Dedication, Entre-/intrapreneurship and Mind-set to be significant important. The major different was that the Sponsor focused on the culture and climate in the first phases and focused more on the individuals in the latter phases of the innovation project, and Time wasn’t significant important at any time according to the Sponsor. The Team on the other hand focused on individual and practical aspects all the time, as e.g. Dedication and Time.

The second part of the study provides a different picture of which Enablers that are most important for the Teams’ progress in the projects. The interviews and notes confirms that the Enablers’ importance vary depending on work tasks and phase of the innovation process. In overall, the most important Enablers to overcome innovation project related problems within this study were; first, Collaboration, Dedication and Mind-set; second, Knowledge management; third, Entre-/intrapreneurship and Knowledge. When studying the Enablers’ importance in the different phases of the innovation process a more nuanced picture appears within this study; The two most important Enablers in the Search-phase were Collaboration and Dedication, followed by Entre-/intrapreneurship, Knowledge, Knowledge management and Mind-set; The three most important Enablers in the Select-phase were Collaboration, Knowledge management and Mind-set, followed by Entre-/intrapreneurship and Knowledge; The two most important Enablers in the Implement-phase were Dedication and Mind-set. The second most important Enablers were Collaboration, followed by Entre-/intrapreneurship, Knowledge and Knowledge management.

The most frequent discussed issues on the Team meetings were associated to Dedication and Time, where Time was related to e.g. work overload, downsizings and suppliers’ lack of time. Dedication was related to lack of commitment and accountability from team members. But, Dedication was also the solution for time-issues, i.e. when the team members were dedicated enough they somehow put in some extra hours to keep the project going even though it was tough times and work overload. Collaboration was the Enabler that brought new energy to the projects and speed up the working pace. Mind-set was the enabler that kept the Team looking for new ways of working and focus on the goal even though problems frequently occurred.

To conclude, the most important Enablers were identified but their importance varies depending on phase in the innovation process and what kind of problems that occurs. A
handful number of Enablers were significant important for problem solving, these Enablers are suggested to be in focus when selecting team members for future innovation teams. The Facilitator played an important role to support the Teams with advice and directions to consider in accordance with the innovation process.

Relevance/contribution
This study highlights the relative importance of Enablers in on-going innovation projects. The study demonstrates that the Enablers’ relative importance varies in innovation projects. Even though Dedication and Mind-set are the two Enablers that are seen as the most important ones in overall within this study, the deviations in what the respondents identified as important and what was important to solve upcoming problems in practice is important to highlight. This demonstrates that dedicated individuals with positive attitude for innovation work within innovation teams are essential for their overall performance, which contributes to the research regarding how innovation teams are created. This knowledge can be used when developing theoretical models and future research on innovation enablers. The findings from this study didn't align with the findings of Gamatese and Hallowell (2011) and Aagard and Gertsen (2011) except for Collaboration that was found to be significant important in all studies. The deviations may have its explanation in the research design, as this study’s data are from on-going innovation projects and the respondents were all team members or sponsor to the practical innovation work. Though, the findings of Gamatese and Hallowell’s, and Aagard and Gertsen’s aligned to the Sponsor’s responses in the way that culture and climate was identified as important which indicates that respondents that are not practical involved in the innovation work respond from a more holistic perspective.

From a managerial standpoint this knowledge could be used when creating new innovation teams, teaching/training e.g. innovation coaches and innovation teams to plan for/foresight up-coming actions and innovation enablers within an innovation project. Innovation enablers are suggested to be continuously evaluated as their importance varies in an innovation project.

Future research
As stated above, there are significant important Enablers, the Enablers’ importance varies during on-going innovation projects and the Facilitator plays an important role to the Teams’ performance in on-going innovation projects. Further research regarding the identified Enablers importance for innovation team members is suggested, as the identified Enablers were related to the team and the individuals themselves. In addition, further research regarding the facilitator’s presence and involvement in innovation projects, the innovation team learning aspect when being supported by a facilitator and the innovation team creating process related to the identified important Enablers is also suggested. As this study is based on three innovation teams in an industrial context, further studies is suggested to build large-scale validation of these results.

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Appended Paper I
Submitted to journal for publication, in review round 1.

The innovation facilitator, characteristics and importance for innovation teams
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Abstract: This research develops the understanding of the innovation facilitator’s (facilitator) role for inexperienced innovation teams in an industrial context. Qualitative data was collected from X-functional Innovation teams’ members and their sponsor to identify requirements of a facilitator. Forty characteristics were identified and charted in an innovation process. Significant findings, contributing to prior research, are that the facilitator’s presence and involvement in the innovation teams was crucial in the pre- and first phase of the innovation process due to the very high complexity, where personal characteristics as well as e.g. facilitating-, teaching-, coaching-, group dynamic-skills were central. The importance of the pre-phase was unexpected, resulting in an extended innovation process: The Extended Innovation Process (EIP), for which the traditional innovation process was extended with a preparation-phase before the initial ideation-phase. This knowledge is applicable when e.g. creating and educating new innovation teams within an organization. Future research is suggested.

Keywords: Innovation facilitator, Innovation team, Design team, Innovation management, Product development, Innovation process

1. Introduction
This research aims to study the innovation facilitator (facilitator), i.e. a person who is in the position of supporting innovation teams to both conduct and to learn innovation work from on-going innovation projects without driving or managing the work herself. The background to this study is that prior research states that there’s a need of increased speed when conducting innovation work (Barczak et al, 2009; Chen et al, 2009; Menon et al, 2002). Nowadays it’s well known that innovative organizations are build on empowerment and trust in the employees, where the leadership should be transparent and encourage innovative behavior to enhance both individual creativity and teams’ ability to evaluate, expand, interrogate, and refine new knowledge (Mitchell and Boyle, 2008; Schraub et al, 2014), and that high involvement of employees within an organization that are not a part of R&D or development is one key to accomplish that (Bessant, 2003; Xu et al, 2006). One practical way to involve employees is to create X-functional innovation teams that can reach out in their networks to involve co-workers or external resources (E.g. McGreevy, 2006a: 2006b; O’Connor and McDermott, 2004; West el al, 2004). At the same time, previous research demonstrate that innovation teams based on inexperienced members have performance problems as they suffer from e.g. lack of knowledge and experience regarding innovation work (Karlsson et al, 2010; Kristiansen and Bloch-Poulsen, 2010), which relates to the
complex situation that innovation teams are into (Johnsson, 2014; Kesting and Ulhöj, 2010; Lee and Sukoco, 2011; Scozzi and Garavelli, 2005).

Previous research on successful teamwork has revealed three approaches; one approach is that successful teams have a mental model that unites the team members’ mind-set in e.g. goals and purpose with the project. It’s argued that team leaders have a big impact on providing the mental models, where the key factors for success were related to contemporaneous context in the where the team could focus on “here and now” and the future goal simultaneously (Davison and Blackman, 2005); another approach is that innovative leadership is the key, where the team leader handle the sequences of divergent and convergent thinking, deal with the different iterations and loops in the innovation process, work with metaphors and analogies in the search for new ideas, encouraging wild ideas and stimulating out-of-the box thinking. It also requires evaluating, judging of the new ideas during the convergent stages and create environment for social cohesion and work with limited resources (Akbar and Tzokas, 2013; Buijs, 2007; Büschgens et al, 2013); a third approach is that innovation champions have been identified as an enabler for innovation within organizations (Radnor and Robinson, 2000). They have been proved to be successful for managing and executing innovation projects when the innovation outcomes are more important than what processes to use or follow (Dulaimi et al, 2004; Gamatese and Hallowell, 2011).

This leads to the problem of learning innovation work in practice. For that reason the light is put on the facilitator as individual, who’s role is to guide the complex and non-linear innovation process with various overlapping circles of individuals, teams, divisions and departments (Hunter and Cushenbery, 2011). The facilitators’ importance and potential enabler for innovation is also identified by recent research conducted by Johnsson (2016a; 2016b) where he conducted research on the importance of innovation enablers for innovation teams and found that that the facilitator had an unexpected impact and affect on the teams.

2. Theoretical framework
A literature study regarding facilitators revealed that there’s not much research conducted within this area. Research tends to focus on organizational- and managerial settings that facilitate innovation, not on the facilitator him/herself. Though, the organizational setting for innovation work is essential. The management needs to demonstrate leadership and encourage personnel to operate effectively as teams (Dooley et al, 2000) that support divergence and convergence (Adamides and Karacapilidis, 2006), but also to has the opportunity to work individually in the early phases (Černe et al, 2013). An effective leader of an innovative personnel, according to (Rosing et al, 2011), needs to foster an ambidextrous mind-set and need to be capability to switch between the three elements of ambidextrous leadership; to foster exploration by encouraging doing things differently, exploring and experimenting, giving room for independent thinking and acting, and supporting attempts to challenge established approaches; to foster exploitation by applying closed leader behaviors, which builds on activities to reduce variances, set up specific guidelines and to monitor goal achievement; to have the temporal flexibility to switch between exploration and exploitation as the situation requires. Further, management must consider to what extent the organization is mature enough to conduct exploration work. If there are too much tension within the organization, Hollen et al (2013) suggests that the development phase should be performed in external test facilities. But this requires experienced project managers that can handle ambidextrous management. On the other hand, change towards an innovative organization will not happen if there’s no tension.
However, external innovation drivers were developed to educate organizations to learn the handcraft by a learning-by-doing-approach. Hallgren (2009) created innovation steering groups and supported them in their innovation projects. Johnsson et al (2010) revealed that an external innovation driver should preferable be a person that has experience from practical innovation work in accordance to the uncertain innovation process, be social competent, opportunity driven, flexible and have the ability to establish trust. Further on, the innovation driver must have the holistic overview of the companies’ situation, be familiar with innovation strategies, IPR, product portfolios, change management and open for project changes. Both Hallgren and Johnsson et al experienced that there were positive results in terms of innovation output, but the learning effects were poor and the innovation activities stopped shortly after that the knowledgeable persons left the organizations.

An increased focus on the individuals conducting innovation work was identified within previous research, i.e. research regarding managing social capabilities for increasing innovation output (Vincenzo and Mascia, 2011), characteristics as abilities to cope with uncertain situation, brokering skills and being social competent (Du Chantier, 2010; Han and Hovav, 2012), and building trust to the innovation project and between team members (Kadefors, 2003; Maurer, 2010; Smyth et al, 2010). A holistic picture of competence provided by Illeris (2013) who demonstrates the Competence flower, which demonstrates 20 different factors that all together is declared as competence. In the Competence flower, the context is illustrated as soil for which the flower is planted in is. The flower’s stem is related to capacities, dispositions and potentials. Then there are two circles of flower petals. The inner circle contains of personal profile, knowledge, skills, attitudes, judgments and decisions, holistic perspective, structural understanding, sociability and collaboration and autonomy. The outer circle of petals consists of creativity, fantasy, combination ability, flexibility, empathy, intuition, critical perspective and resistance potential. All these factors together become actions in specific situations, which also is the flower’s receptacle. In brief, the key elements are that the holistic aspect of competence involve not only intellectual but also emotional capacities, dispositions and potentials. These capacities and potentials are used in practice through actions where immediate judgments, and decision-making also take place. And, these actions are made in known and unknown situations. Bozic (2016) developed the understanding of the Competence flower even further by means of suggesting a theoretical framework for innovation competence based on relevant literature and research, where the four areas of Innovation practice, Content, Intra personal- and Inter personal characteristics are integrated and relating to each other. The central part in Bozic’s framework is Innovation practice, which consists of idea exploration, idea generation, idea championing and idea implementation. The area of Contents consists of definitions of innovation, innovation models, good innovation practices, and innovation skills as questioning, observing, networking, experimenting and associating. The area of Intra personal characteristics consists of curiosity, autonomy, flexibility, ability to perceive, motivation, ambitiousness, creativity, self-confidence, entrepreneurship and intuition. The area of inter-personal characteristics consists of listening, empathy, sharing, dialogue, improvisation and feedback. In addition to the model described, the learning aspect to develop competence is depending on four types of learning: cumulative, assimilative, accommodative and transformative learning, which also is the most complex level of learning (ibid). The transformative learning, when the knowledge becomes one’s own, includes creative learning that is created from reflections in unknown situations and is very important for innovation work (Ellström and Nilsen, 2014).

Innovation competence was integrated by Räsänen et al (2015) into the innovation process in seven steps suggested by Milton and Rogers (2013). The competences refer to individual- interpersonal and networking aspects and was sub categorized into five sub dimensions, i.e. creative problem-solving skills, systems thinking, goal orientation, tea
working and networking skills. When merging the innovation competences with the innovation process a theoretical framework was suggested; first, idea screening and idea generation, includes the competence regarding abilities to see new possibilities everywhere, holistic knowledge, and to spread new ideas widely; second, concept development, includes competence regarding abilities to think independently, ability to listening to others, and abilities to communicate to transmit and share knowledge and new ideas in the team; third step, system design, includes competence regarding abilities to analyze the relationships between the system's, to work persistently and abilities to interact and share knowledge with others; fourth step, detail design, includes competence interact and share knowledge with others and to understand details; fifth step, building the system, includes competence regarding abilities to take group members' viewpoints and cultural backgrounds into account; sixth step, testing and validation, includes competence regarding abilities to consider a product from a detailed- and holistic perspective; and finally, market launch and delivery, includes competence regarding abilities to productive cooperation with professionals and network from different fields.

The innovation process is on the other hand well researched, where the processes usually are divided in steps, stages or phases starting with ideation in which new ideas are generated followed by development of the idea and ending in a market launch. Tidd and Bessant (2009) suggests four phases when developing ideas to the market: first, search for new ideas and innovative opportunities; second, select ideas to develop and determine what to do further; third, develop the idea and launch in on the market; fourth, collect the value created. However, the process is not linear even though the first impression looks that way, it’s an iterative process where loops are taken repeatedly. Except for the innovation processes demonstrated by Milton and Rogers, and Tidd and Bessant, similar innovation processes are suggested as well by numerous of authors (e.g. Baxter, 2002; Farris, 1972; Johnsson; 2009; Trott, 2012). The main differences are how they are more or less practical or theoretical oriented, still they begin with an ideation related phase. The practical work when ideas are generated is highly abstract with a lot of uncertainties, and the abstract work continues throughout the selection phases of what ideas to prototype and test for market reactions. As the learning increase from the work conducted, the level of abstractness decreases to become more and more similar to everyday work (Johnsson, 2014). On a generally basis, three phases are common for the innovation processes presented: ideation, execution and value harvesting.

To conclude, previous research have identified that innovation teams are suggested for agile innovation work and that a facilitator is suggested to be the link to learning the handcraft of innovation work. Prior research regarding personal characteristics for conducting innovation work has been focused on the individuals that conduct the practical innovation work (Bozic, 2016; Kairisto-Mertanen et al, 2011) or on the innovation driver (Johnsson et al, 2010; Hallgren, 2009). Räsänen et al (2015) charted personal characteristics from students in an innovation process to demonstrate when certain characteristics are needed in accordance to an innovation process. For these reasons this research aims to study the facilitator’s required characteristics and presence in on-going innovation projects conducted by innovation teams in an industrial context.

Research question
From the introduction and literature review two questions have emerged: Which characteristics, if any, are required for an innovation facilitator when facilitating innovation teams, and when is the innovation facilitator’s characteristics most needed in innovation projects?
3. Research design
To gain knowledge about the facilitator’s characteristics and needed presence in innovation projects this study is conducted on the members of three innovation teams (teams) and their sponsor, where Team A consisted of 4 members, Team B consisted of 4 members and Team C consisted of 7 members. The Teams’ only restrictions were to deliver innovative concepts that distinctly demonstrated business opportunities and customer value. The study was action based where the researcher also participated as facilitator in the innovation projects (Projects). However, the researcher was well aware of that participating research might influence the teams and their performance (Gummesson, 2000), and took actions to prevent bias by discussing this matter with all the respondents and by continuously reflections throughout the study.

The teams were all systematically created in five steps to create and prepare the teams to conduct agile innovation work; first, the sponsor secured top managements’ and managements’ commitment; second, the sponsor and the facilitator identified an innovation team convener (convener) with purpose to gather an innovation team; third, the facilitator prepared the convener with instructions of how to manage agile innovation based on Johnsson’s agile innovation process (2009), how to systematically gather team members on a X-functional basis; fourth, the convener gathered the innovation team members; fifth, kick-off the innovation project, i.e. the convener planed and executed a kick-off regarding the idea to develop, where the team members were introduced to agile innovation work and group dynamics. The chosen innovation process for visualizing the innovation project within was set to the innovation process demonstrated by Tidd and Bessant (2009) and consists of four phases; first, search for ideas; second, select idea to develop; third, implement and launch developed product (services, processes etc.) on the market, and fourth, capture the value created along the process.

The facilitator was involved with guidance, advice and explanations of both forthcoming work in the innovation process and expected group dynamic reactions along the Projects. All communication regarding the Projects was held with the conveners who then forwarded the information to the other team members.

3.1 Data collection
The data were collected from the team members and the sponsor in three steps at a point when the innovation projects had reached the early steps in the implementation phase demonstrated by Tidd and Bessant (2009); first, an in-depth interview where the focus was on significantly important characteristics a facilitator should possess, the affect that the facilitator had on the innovation project and if the team members had learned to conduct innovation work so that they could conduct a new innovation project by themselves. The interviews was recorded and lasted for approximately 40 minutes each; second, applicable sections from the interviews were transcribed and reflectively analyzed (Schön, 1991, Yin, 2013) to reveal facilitator characteristics. Forty characteristics were identified and handed over to the team members and the sponsor to evaluate if the facilitator correlated with the identified characteristics. They were free to adjust the list of characteristics during this phase. After that, all characteristics were rated in five grades: Crucial, Very important, Important, To some degree important and Unwanted; in the final step the team members and the sponsor plotted all the characteristics in a time chart. The X-axis demonstrated the time from preparation of the innovation project, through the kick-off to the end of the project illustrated based on the innovation process by Tidd and Bessant (2009). The Y-axis demonstrated the facilitator’s characteristics’ importance for the team from 1-7, where 1 indicated not important and 7 very important.
3.2 Data analyze
The collected data were analyzed by first photo documenting and charting the data, then thematic analyzed in accordance with (Boyatzis, 1998) to identify themes of characteristics. All the characteristics were found to important to some extent. When using the thematic analyze tool by Boyatzis (1998) patterns emerged. Characteristics were highlighted when; 50% or more of the team members in at least two teams rated characteristics to the same degree and when at least one team member from each team and the sponsor rated one characteristic to the same degree (see Table 1). The plotted characteristics in the time chart were analyzed in accordance with the innovation process demonstrated by Tidd and Bessant (2009) to identify in what phase of the innovation process the facilitator’s characteristics were most important.

Examples of coding
Interviews
Quotes from the interviews (below) demonstrate how the questions were asked and the researcher’s awareness of the personal affect on the teams. Significant parts of the answers are bold to visualize what parts that have been used in the first steps of the analyze work. The numbers in brackets indicate the time in which the respondents’ start to answer the question asked.

Researcher: “Have you noticed my appearance in the project?”
Sponsor (25.53): “Yes. If you’d ask the convener he would say that it wouldn't be possible to do the work without you because you provide him with confidence in the methodology “Yes, you’re supposed to feel a bit worried now. No, you need to iterate and reconsider your choices”. That kind of coaching is incredible important together with your e-mails where he can see “yes”, which strengthens his self-confidence. I mean the coaching in the methodology and your feedback. Without that it he couldn't manage according to what he says. So, in that sense I think you are present.”
Respondent 2 (R2) (46.03): “Yes. You were definitely involved when we had challenges of the commitment aspects. Very present and visible when we kicked things off. You’ve been involved in meetings throughout, maybe not so much leading and championing but being there as a support mechanism. So, I would say yes, visible when needed and I think that has been fine for the team.”

Researcher: “How do I affect your work according to you?”
Sponsor (28.50): “You represent the methodology they use. I mean, they are conducting the work by themselves but you ensure that they don't jump into conclusions. They think broader than product development only now, which otherwise is the normal way in our company…You coordinate them to see the bigger picture and to not run too fast.”
R2 (48.48): “You’re affecting our work by providing your input when you feel it’s needed. So, if we’re missing something my expectation is that were you can contribute. If we’re baring off path you can bring us back. If we’re not doing something, whatever that may be, my expectation is that you highlight that and challenge the team. If we need to be challenged I expect you to challenge the team.”

Researcher: “What personal characteristics do I have that affects the project?”
Sponsor (33.13): “You’re good at strengthen the convener’s self-confidence, self-esteem and courage by your e-mails for example and your coaching skills. You steer them towards things to do when needed, and you make them believe that it’s the right thing to do by encouraging them and strengthen their self-esteem. I could never do what
you do. I’m too impatient and dominant. Even though I’d read all papers and understood everything I would have taken too much space. **You’re a much better listener, patient.** I wonder if they realize **how good you are on this and how much you really know** about this. I don't want to change this, because I believe this is one of the keys to why this works. You’re so incredible good, **you let them shine. You’re there, tweaking and adjusting small things that lifts them up.**"

R2 (55.15): “Yes. **You're knowledge in your expertise which affect the team in a positive way, your feedback whether it’s positive or negative is constructive.** That kind of input affect the team. And **feedback, if we’re doing well it’s good to know that we are at least heading in the right position and I get that from you. Sharing what you do, how you do, helping to drive those two X-functional teams helped to build the credibility to the process to the team.** So I think there a lot of positive aspects to who you and what your characteristics are and what you bring to the table.”

Researcher: Would you have come this far without my participation?

Sponsor (34.58): "**No. What do you think after what I just said? I don't think they would.**"

R2 (56.23): “**No, we would not have come this far.**”

Researcher: “If I was replaced for somebody else, what would that person need to get the team to perform?”

Sponsor (43.13): “The facilitating role is supposed to be done internally in the future. And they need the entrepreneurial-management-insight, humbleness to the team, maturity and ability to listen and have patient let it wait for another week. There’s a internal need for competence, attitude and leadership regarding this.”

R2 (57.52): “I would say **trust in the team, encouragement for the team, background, communication.** If the team is starting to derail, being able to highlight that “you’re off track, and my job is to steer you back” having the force in the communication, expertise to bring the team back around, competence. I guess I come back to the knowledge of the process to steer us to ensure us that it’s the right direction. This could easily come off track. So I think **somebody familiar with the process is needed.**”

Researcher: “If a new high performing innovation team is created, does it need a facilitator or is written instructions and tools enough?”

Sponsor (36.11): “**No, it won’t work.** If you’d quit today I’d try to keep the methodology alive myself. I’d employ a physical person that could observe and coach them…”

R2 (59.53): “I’m going to say initially no. But I think through time as more and more people are involved in high performing innovation team projects and understand and learn the process. **Then yes. Maybe.**”

Researcher: Something you’d like to add or something you wanted to say that I didn't ask you about?

Sponsor (41.36): No. Nothing that I can think of, except for that I’ve been bragging so much about our work that we are going to present it at the next coming conference.

R2 (1.08.10): “I appreciate your feedback, it feels right. I can not compare to anything but we seem to making progress. We seem to be inline with what we should be doing at this time in the process.

**Questionnaires**

The questionnaires regarding the Respondent’s and the sponsor’s evaluation of the facilitator’s characteristics were charted and analyzed in three steps; first by importance
(Figure 1), followed by evaluating if the facilitator possessed the characteristics (Figure 2), and finally plotted in a time chart (Figure 3). The sponsor’s data were systematically compared to the teams’ data in average to identify deviation and similarities.

**Figure 1:** The figure demonstrates the rated characteristics by the sponsor and Respondent 2.

**Figure 2:** The figure demonstrates how the facilitator’s characteristics correlate to the identified characteristics according to the Respondent and Respondent 2.

**Figure 3:** The figure demonstrates the plotted characteristics in the time chart by the sponsor and Respondent 2.
4. Results

The interviews revealed forty characteristics that a facilitator should possess (see Table 1, column: Characteristic). All respondents found the facilitator’s characteristics important to some extend, but the level of importance varied on an individual basis. However, both similarities and deviations were identified in how the sponsor and the team members assessed the facilitator’s characteristics importance during an innovation project.

The team members and the sponsor were fully aligned in their assessment of the characteristics’ importance in three areas; “Strengthen the self-confident to the team to believe in what they’re doing” was considered to be very important; “Advices based on evaluation of current situation” and “Feedback on progress” were considered to be important. They were also aligned to some degree regarding the characteristics in three areas; “Listening to the team”, and “Knowledge of innovation process” were considered to be crucial by the sponsor and at least two of the teams’ members; and “Assure that the team is on right direction” was considered to be important by the sponsor and at least one team member in each team.

Minor deviations were identified regarding ten characteristics; “Trust in the team” was considered to be crucial by the team members and very important by the sponsor; “Bring understanding of that uncertainty is OK”, “Build self-confident to do things we not normally do” and “Allow the team to break rules were considered to be very important” by the team members and the sponsor considered these characteristics to be crucial; “Supporting without bothering the team” and “Coaching skills” and “Challenge the team when needed” were considered to be very important by the team members and the sponsor considered these characteristics to be important; “Facilitating through convener” and “Ability to give hands-on advice” were considered to be important by the team members and the sponsor considered these characteristics to be very important; “Build self-confidence to the team to keep on going according to methodology” was considered to be important by the team members and to some degree important by the sponsor.

Significant deviations were identified for five characteristics; “Not championing the team” was considered to be crucial by at least one respondent in each team and to some degree important by the sponsor; “Encouraging the team to expand boundaries”, “Support in methodology in picking the right people”, “Innovation knowledge” and “Practical experience from building innovation teams” were considered to be important or very important by the team members and to some degree important by the sponsor. From the teams’ perspective this relates to the facilitator’s ability to build trust to the team, where practical experience is similar to proof of concept and become trustworthy in the complex innovation work. The empty boxes in Table 1 don’t demonstrate that the characteristics are unimportant, rather they indicate that the respondents’ assessment of their importance varies a lot.

Whether the question if the facilitator possessed the identified characteristics or not, the sponsor and all team members but four assessed that the facilitator possessed all the identified characteristics (see Table 1). The four team members explained their responses from three perspectives; first, the team already possessed that knowledge; second, they didn’t know about work that they wasn’t part of; third, this was an on-going research project were these characteristics were tested and evaluated. One of the team members, and also convener thought that the facilitator was disturbing the team’s work from time to time.
Table 1: The table demonstrates the facilitator’s characteristics and how the respondents assessed their importance. The table also demonstrates identified themes and characteristics that were not fulfilled according to the respondent(s).

<table>
<thead>
<tr>
<th>No</th>
<th>Characteristics (In alphabetical order)</th>
<th>Team members (50% or more of team members in at least 50% of the teams)</th>
<th>Sponsor (At least one team member in each team.)</th>
<th>Not fulfilled by the facilitator according to team members (Rx) and sponsor (S)</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to give hands-on advice.</td>
<td>Important</td>
<td>Important</td>
<td>Very important</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>2</td>
<td>Ability to steer the team back on track when needed.</td>
<td>Very important</td>
<td>Very important</td>
<td>Crucial</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>3</td>
<td>Advises based on evaluation of current situation.</td>
<td>Very important</td>
<td>Very important</td>
<td>Very important</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>4</td>
<td>Allow the team to break rules.</td>
<td>Very important</td>
<td>Crucial</td>
<td></td>
<td>Knowledge management</td>
</tr>
<tr>
<td>5</td>
<td>Assurance of that this way of working is OK.</td>
<td></td>
<td>Important</td>
<td>Very important</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>6</td>
<td>Assure that the team is on right direction.</td>
<td></td>
<td>Important</td>
<td>Knowledge transfer</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>7</td>
<td>Being support mechanism when needed.</td>
<td>Important</td>
<td>Important</td>
<td></td>
<td>Knowledge management</td>
</tr>
<tr>
<td>8</td>
<td>Bring customer focus early in project.</td>
<td>Important</td>
<td>Crucial</td>
<td>R10</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>9</td>
<td>Bring entrepreneurial mind-set into the team.</td>
<td></td>
<td>Crucial</td>
<td>To some degree important</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>10</td>
<td>Bring understanding of that uncertainty is OK.</td>
<td></td>
<td>Very important</td>
<td>R10</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>11</td>
<td>Build self-confidence to involve competence outside the Company when needed.</td>
<td>Important</td>
<td>Crucial</td>
<td>R3, R10</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>12</td>
<td>Build self-confidence to the team to keep on going according to methodology.</td>
<td>Important</td>
<td>Important</td>
<td>To some degree important</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>13</td>
<td>Build self-confident to do things we not normally do.</td>
<td>Very important</td>
<td>Crucial</td>
<td></td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>14</td>
<td>Challenge the team when needed.</td>
<td>Very important</td>
<td>Important</td>
<td>Knowledge management</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>15</td>
<td>Coaching skills.</td>
<td>Very important</td>
<td>Important</td>
<td>R10</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>16</td>
<td>Communication skills.</td>
<td></td>
<td>Crucial</td>
<td>R3</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>17</td>
<td>Empowering the team to do work by themselves.</td>
<td></td>
<td>Important</td>
<td>R3</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>18</td>
<td>Encouraging the team to expand boundaries.</td>
<td>Important</td>
<td>Important, Very important</td>
<td>To some degree important</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>19</td>
<td>Encouraging the team.</td>
<td></td>
<td>Crucial</td>
<td></td>
<td>Knowledge management</td>
</tr>
</tbody>
</table>
The characteristics were plotted in a time chart by the team members (Figure 4) and the sponsor (Figure 5). The results demonstrate that the facilitator’s presence and practical advice were most important in the Pre-phase and the first two phases of the innovation process. Later on, in the early steps of the Implementation-phase it became more important to have access to the facilitator when needed, similar to a back-office support. The plotted characteristics in the time chart demonstrated that the teams in general assessed all the

<table>
<thead>
<tr>
<th></th>
<th>Experience from similar work.</th>
<th>To some degree important</th>
<th>R10</th>
<th>Innovation knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Facilitating skills.</td>
<td>Very important</td>
<td>R10</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>22</td>
<td>Facilitating through convener</td>
<td>Important</td>
<td>Very important</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>23</td>
<td>Feedback on progress.</td>
<td>Important</td>
<td>Important</td>
<td>R2</td>
</tr>
<tr>
<td>24</td>
<td>Guiding in methodology.</td>
<td>Crucial</td>
<td>Knowledge transfer</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Highlight when the team is off track.</td>
<td>Important</td>
<td>Knowledge management</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Innovation knowledge.</td>
<td>Very important</td>
<td>Very important</td>
<td>To some degree important</td>
</tr>
<tr>
<td>27</td>
<td>Keep the team focused.</td>
<td>To some degree important</td>
<td>Knowledge management</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Knowledge of innovation process.</td>
<td>Important</td>
<td>Crucial</td>
<td>Crucial</td>
</tr>
<tr>
<td>29</td>
<td>Listening to the team.</td>
<td>Crucial</td>
<td>Very important</td>
<td>Crucial</td>
</tr>
<tr>
<td>30</td>
<td>Not championing the team.</td>
<td>Crucial</td>
<td>Important</td>
<td>R1</td>
</tr>
<tr>
<td>31</td>
<td>Not leading the team.</td>
<td>Important</td>
<td>To some degree important</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>32</td>
<td>Not taking credit of the team’s results.</td>
<td>Important</td>
<td>Important</td>
<td>Important</td>
</tr>
<tr>
<td>33</td>
<td>Not turning every team into Swedish standard of personalities.</td>
<td>Important</td>
<td>Knowledge management</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Practical experience from building innovation teams.</td>
<td>Very important</td>
<td>To some degree important</td>
<td>R2, R10</td>
</tr>
<tr>
<td>35</td>
<td>Practical experience from innovation work.</td>
<td>Crucial</td>
<td>Crucial</td>
<td>To some degree important</td>
</tr>
<tr>
<td>36</td>
<td>Provide understanding of benefits of creating temporary networks.</td>
<td>Important</td>
<td>R3</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>37</td>
<td>Strengthen the self-confidence to the team to believe in what they’re doing.</td>
<td>Very important</td>
<td>Very important</td>
<td>Knowledge transfer</td>
</tr>
<tr>
<td>38</td>
<td>Support in methodology in picking the right people.</td>
<td>Very important</td>
<td>To some degree important</td>
<td>R10</td>
</tr>
<tr>
<td>39</td>
<td>Supporting without bothering the team.</td>
<td>Very important</td>
<td>Important</td>
<td>R1</td>
</tr>
<tr>
<td>40</td>
<td>Trust in the team.</td>
<td>Crucial</td>
<td>Very important</td>
<td>Knowledge management</td>
</tr>
</tbody>
</table>

Table 1, continuing

APPENDED PAPER I
identified characteristics important to some degree except for two characteristics in the first phase; “Not turning every team into Swedish standard of personalities” and “Provide understanding of benefits of creating temporary networks”. This was explained by the fact that two of the teams were Swedish which made them bias, and the network-related thing was quite obvious according to the team members. In similar to the team members, the sponsor also assessed all the identified characteristics important to some degree except for “Not turning every team into Swedish standard of personalities”. The difference however is that Swedish employee within this global company tend to be less hierarchic and more entrepreneurial which the sponsor appreciated in this work. The sponsor also assessed “Not leading the team” and “Not championing the team” as not important at all.

Figure 4: The figure demonstrates when the facilitator’s characteristics are most important in innovation projects according to the sponsor.
The figure demonstrates when the facilitator’s characteristics are most important in innovation projects according to the teams in average. Considering that the sponsor’s assessments of the characteristics’ importance are compared to the team members’ assessments in average the deviations are not significant big (Table 2). Three of the characteristics were rated the same with a difference of two decimals; “Bring understanding of that uncertainty is OK”, “Listening to the team” and “Experience from similar work”. The biggest deviation in rating were identified for two characteristics where the teams rated “Not leading the team” and “Not championing to be important but the sponsor rated those characteristics as not important.

The biggest deviations between the sponsor and the teams were related to when the characteristics were important in the innovation process. In general, the sponsor rated the facilitators’ characteristics more important than the teams did (Table 3). The sponsor assessed twenty-one characteristics, and the teams assessed six characteristics to be important in the Pre-phase. One explanation was identified from the interviews, where team members commented that they didn't know what was going on before the kick-off and the on-going communication between the facilitator and the convener between team meetings, and therefore found it difficult to relate to that work. The sponsor on the other hand was very well informed regarding the activities in the Pre-phase, the teams’ work and progress and the on-going communication between the convener and the facilitator, and by that had a more holistic view than the teams.

Table 2: The table demonstrates how important the facilitator’s characteristics are according to the innovation teams and the sponsor.
Table 2: Continuing

<table>
<thead>
<tr>
<th></th>
<th>lowest and highest rate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to give hands-on advice.</td>
<td>5.5 (Low: 1.0 - High: 6.5)</td>
</tr>
<tr>
<td>2</td>
<td>Ability to steer the team back on track when needed.</td>
<td>4.9 (Low: 3.0 - High: 7.0)</td>
</tr>
<tr>
<td>3</td>
<td>Advises based on evaluation of current situation.</td>
<td>4.9 (Low: 3.0 - High: 7.0)</td>
</tr>
<tr>
<td>4</td>
<td>Allow the team to break rules.</td>
<td>6.5 (Low: 2.5 - High: 7.0)</td>
</tr>
<tr>
<td>5</td>
<td>Assurance of that this way of working is OK.</td>
<td>5.0 (Low: 3.0 -High: 7.0)</td>
</tr>
<tr>
<td>6</td>
<td>Assure that the team is on right direction.</td>
<td>4.1 (Low: 2.0 - High: 7.0)</td>
</tr>
<tr>
<td>7</td>
<td>Being support mechanism when needed.</td>
<td>5.3 (Low: 3.0 - High: 7.0)</td>
</tr>
<tr>
<td>8</td>
<td>Bring customer focus early in project.</td>
<td>5.5 (Low: 3.5 - High: 7.0)</td>
</tr>
<tr>
<td>9</td>
<td>Bring entrepreneurial mind-set into the team.</td>
<td>4.9 (Low: 1.5 - High: 7.0)</td>
</tr>
<tr>
<td>10</td>
<td>Bring understanding of that uncertainty is OK.</td>
<td>5.9 (Low: 5.5 - High: 6.5)</td>
</tr>
<tr>
<td>11</td>
<td>Build self-confidence to involve competence outside the Company when needed.</td>
<td>4.9 (Low: 2.0 - High: 7.0)</td>
</tr>
<tr>
<td>12</td>
<td>Build self-confidence to the team to keep on going according to methodology.</td>
<td>4.6 (Low: 3.0 - High: 6.0)</td>
</tr>
<tr>
<td>13</td>
<td>Build self-confident to do things we not normally do.</td>
<td>5.3 (Low: 4.5 - High: 6.5)</td>
</tr>
<tr>
<td>14</td>
<td>Challenge the team when needed.</td>
<td>5.5 (Low: 3.5 - High: 7.0)</td>
</tr>
<tr>
<td>15</td>
<td>Coaching skills.</td>
<td>4.7 (Low: 2.0 - High: 7.0)</td>
</tr>
<tr>
<td>16</td>
<td>Communication skills.</td>
<td>5.0 (Low: 3.0 - High: 7.0)</td>
</tr>
<tr>
<td>17</td>
<td>Empowering the team to do work by themselves.</td>
<td>5.1 (Low: 3.5 - High: 7.0)</td>
</tr>
<tr>
<td>18</td>
<td>Encouraging the team to expand boundaries.</td>
<td>5.5 (Low: 4.0 - High: 6.5)</td>
</tr>
<tr>
<td>19</td>
<td>Encouraging the team.</td>
<td>5.8 (Low: 3.5 - High: 7.0)</td>
</tr>
<tr>
<td>20</td>
<td>Experience from similar work.</td>
<td>4.6 (Low: 1.0 - High: 6.0)</td>
</tr>
<tr>
<td>21</td>
<td>Facilitating skills.</td>
<td>4.2 (Low: 2.5 - High: 7.0)</td>
</tr>
<tr>
<td>22</td>
<td>Facilitating through convener</td>
<td>4.8 (Low: 2.0 - High: 6.0)</td>
</tr>
<tr>
<td>23</td>
<td>Feedback on progress.</td>
<td>5.1 (Low: 4.0 - High: 6.0)</td>
</tr>
<tr>
<td>24</td>
<td>Guiding in methodology.</td>
<td>5.8 (Low: 1.5 - High: 7.0)</td>
</tr>
<tr>
<td>25</td>
<td>Highlight when the team is off track.</td>
<td>5.5 (Low: 5.5 - High: 7.0)</td>
</tr>
<tr>
<td>26</td>
<td>Innovation knowledge.</td>
<td>5.3 (Low: 1.5 - High: 7.0)</td>
</tr>
<tr>
<td>27</td>
<td>Keep the team focused.</td>
<td>5.7 (Low: 3.0 - High: 7.0)</td>
</tr>
<tr>
<td>28</td>
<td>Knowledge of innovation process.</td>
<td>6.5 (Low: 2.0 - High: 7.0)</td>
</tr>
<tr>
<td>29</td>
<td>Listening to the team.</td>
<td>5.9 (Low: 4.0 - High: 7.0)</td>
</tr>
<tr>
<td>30</td>
<td>Not championing the team.</td>
<td>4.3 (Low: 2.0 - High: 5.0)</td>
</tr>
<tr>
<td>31</td>
<td>Not leading the team.</td>
<td>4.2 (Low: 1.5 - High: 7.0)</td>
</tr>
<tr>
<td>32</td>
<td>Not taking credit of the team’s results.</td>
<td>4.1 (Low: 2.5 - High: 7.0)</td>
</tr>
<tr>
<td>33</td>
<td>Not turning every team into Swedish standard of personalities.</td>
<td>2.8 (Low: 1.5 - High: 6.5)</td>
</tr>
<tr>
<td>34</td>
<td>Practical experience from building innovation teams.</td>
<td>5.4 (Low: 1.0 - High: 7.0)</td>
</tr>
<tr>
<td>35</td>
<td>Practical experience from innovation work.</td>
<td>4.5 (Low: 1.5 - High: 6.5)</td>
</tr>
<tr>
<td>36</td>
<td>Provide understanding of benefits of creating temporary networks.</td>
<td>3.0 (Low: 0.5 - High: 4.5)</td>
</tr>
<tr>
<td>37</td>
<td>Strengthen the self-confident to the team to believe in what they’re doing.</td>
<td>5.5 (Low: 3.0 - High: 6.0)</td>
</tr>
<tr>
<td>38</td>
<td>Support in methodology in picking the right people.</td>
<td>5.0 (Low: 3.5 - High: 7.0)</td>
</tr>
<tr>
<td>39</td>
<td>Supporting without bothering the team.</td>
<td>4.3 (Low: 1.0 - High: 7.0)</td>
</tr>
<tr>
<td>40</td>
<td>Trust in the team.</td>
<td>4.6 (Low: 3.0 - High: 7.0)</td>
</tr>
</tbody>
</table>
Table 3: The table demonstrates when in the Extended Innovation Process the facilitator’s characteristics are important.

<table>
<thead>
<tr>
<th>Phase in the Extended Innovation Process</th>
<th>The importance of an innovation facilitator’s characteristics in an on-going innovation project’s different phases in the Extended Innovation Process according to the innovation teams and the sponsor.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(The numbers below represents the innovation facilitator’s characteristics as ordered in Table 1.)</td>
</tr>
<tr>
<td>Innovation team</td>
<td>Sponsor</td>
</tr>
<tr>
<td>Pre-phase</td>
<td>20, 26, 28, 34, 35, 38</td>
</tr>
<tr>
<td>Search</td>
<td>4, 5, 8, 9, 10, 11, 13, 15, 16, 17, 21, 22, 23, 24, 29, 30, 33, 40</td>
</tr>
<tr>
<td>Select</td>
<td>1, 2, 3, 6, 7, 12, 14, 18, 19, 25, 27, 31, 36, 37, 29</td>
</tr>
<tr>
<td>Implement</td>
<td>32</td>
</tr>
<tr>
<td>Capture</td>
<td>(Out of scope)</td>
</tr>
</tbody>
</table>

The importance of the facilitator’s characteristics varied over time in the innovation projects (Figure 6), where the facilitator needed to be both involved in the team and support it by observing activities and advising for forthcoming activities throughout the innovation project. However, activities where the facilitator was expected to be involved in the team decreased during the innovation project, and activities of “back office” character increased during the innovation project. This was explicit expressed in terms of e.g. “Supporting without bothering”, “Not championing the team”, “Not leading the team”, “Trust in the team” and “Ability to steer the team back on track when needed”. This development was highly connected to the teams’ learning curve of innovation knowledge but also that activities in the latter part of the innovation process were less abstract and more similar to what members in an innovation team can relate to in their everyday work, i.e. when the innovation project enters the Implementation-phase much of the abstract problem identification and problem solving are replaced for practical and hands-on work as e.g. ordering and assembling physical components. Still, innovation teams have to keep the innovative mind-set up and be ready to radically change plans for upcoming roadblocks or changing market demands.
Figure 6: The figure demonstrates how the facilitator’s activities, involvement and presence in innovation teams change during an ongoing innovation project.

Learning outcomes
The teams’ learning curve from the innovation projects was significant. The interviews revealed that the first- (Search) and the second (Select) phase of the innovation projects were very abstract and confusing for the team members and they responded by arguing that they wasted time on useless work as they were used to be provided with already prepared specifications or requirements. In the innovation projects within this study they had to figure out all these things by themselves by following the innovation process, which includes to work on parallel tracks to find out the best solution as the innovation project emerged. In the third phase (implementation) the team members understood the purpose of previous activities as e.g. needfinding and realized that they’d saved both time and resources from the work conducted. Other values created were that they had fun while working, their motivation increased and that they explicitly said that they were ready for new innovation projects. In fact, Team B and Team C, who ended their innovation projects before Team A, started new innovation projects where the facilitator was present as “back-office-support” to the convener.

Areas of competence
The facilitator was seen as important or even crucial during the Pre-phase and the first two phases of the innovation process, where the facilitator needs to possess the ability to judge the current situation to adjust advice relevant for the given situation, which could vary from time to time or and from project to project. Based on this, four areas of intertwined competences appeared (Figure 7) that the facilitator must be able to handle, educate and advice in; first, the innovation team creation process, where the team is created and kicked off; second, the innovation team model, where the facilitator educate and advice the innovation team in team emergence processes and how that relate to the individuals and organization an overall; third, the innovation process, where the facilitator educate and advice in activities to consider and to plan for depending on what phase the innovation work
is in; forth, factors that enable innovation work, where the facilitator highlights factors to the innovation team and the sponsor to focus on that enable the team to conduct the innovation work.

Further, three themes emerged for how the areas of competences were handled by the facilitator when working with the innovation teams; first, innovation related knowledge (innovation knowledge), i.e. theoretical knowledge of how to conduct innovation work and factors that enable innovation work, innovation management and practical experience from previous innovation work; second, innovation related knowledge management (knowledge management), i.e. the ability to transform the innovation knowledge to advice related to innovation work and skills to guide an innovation team according to that advice. In that sense, knowledge management is the handcraft of being facilitator and skills to adjust advice based on current situation; Knowledge transfer, i.e. ability to transfer innovation knowledge and knowledge management to innovation teams through e.g. education, practical advice and continuously feedback on progress.

Figure 7: The figure demonstrates the facilitator’s areas of competence.

The Pre-phase to the innovation process, the Extended Innovation Process
An unexpected finding was the importance of the Pre-phase to the innovation process, where the facilitator played a significant role when preparing the sponsor and the convener for the forthcoming work and advising the convener in what team member to aim for when gathering the innovation team. The time spent in the Pre-phase enabled the teams to kick off successfully without any signs of team development problems. The teams handled problems that occurred during the teams’ work as a team, not blaming problems on each other but solving them as a team. The Pre-phase’s purpose was to prepare and allow time for the sponsor, management and convener to accept the forthcoming work and plan for next coming steps without being stressed from feelings of unnecessary uncertainty. This resulted in the Extended Innovation Process, demonstrated below (Figure 8; Figure 9).
The Extended Innovation Process (EIP) (Figure 9) is based on the general demonstration of well-established innovation processes, where EIP is built on four iterative phases: first, the preparation-phase, where the innovation team is created accordingly to avoid group development problems and prepared for forthcoming innovation work; second, the ideation-phase, where the operational innovation work is begun. The work is characteristic by high level of creativity and abstract work as ideas are generated and selected based on the overall business strategy; the execution-phase, where the practical development work is conducted, containing work related to design, prototyping, testing and evaluating the product or service. It also implies preparation for production and launch on the market; fourth, value harvesting-phase, where values created from the innovation project are harvested. Value is relative and must be defined for each innovation project. Additionally, as the EIP is an iterative process, values are to be harvested in each phase of the EIP as the innovation projects emerge towards market launch. However, the first phase regarding preparation is preferable not iterative if not needed due to unexpected circumstances, illustrated by the fairly dense dashed line and the dashed arrow back from ideation-phase to the preparation-phase.

Figure 9: The Extended Innovation Process (EIP).
5. Discussion and Conclusion

- Four main findings were identified within this research:
  - The facilitator’s characteristics and importance for innovation teams.
  - Innovation teams learning effects.
  - The facilitator’s areas of competences.
  - The Extended Innovation Process.

This research revealed characteristics considered to be important for a facilitator to possess when facilitating innovation teams and relates to previous research by means of providing a picture of the facilitator’s practical role for innovation teams in ongoing innovation projects. The identified characteristics of a facilitator are similar to the characteristics to possess when conducting innovation work when it comes to e.g. social skills, handle uncertainty and building trust (Du Chantier, 2010; Han and Hovav, 2012; Kadefors, 2003; Maurer, 2010; Smyth et al, 2010; Vincenzo and Mascia, 2011). In addition, as the first two phases in the innovation process were assessed to be abstract and sometimes frustrating for the teams, the facilitator must work to avoid team stress which otherwise will have negative affect on team performance (Lee and Sukoco, 2011). The same applies for competence (Illeris, 2013) and innovation competence (Bozic, 2016) in that sense that a facilitator needs to possess certain skills and experience, and to handle the complex situation of content and inter-and intrapersonal aspects to be successful. The biggest deviation according to Illeris’ and Bozic’s suggestions of competences to possess when conducting innovation work is that a facilitator according to this research should not be a champion according to the team members within this study. The sponsor on the other hand supported that a facilitator should possess that characteristic. Additionally, this study revealed that the facilitator has to handle the very complex situation to e.g. both steer the team back on track when needed but not disturbing the team. In the research of Räsänen et al’s (2015) they suggested a theoretical framework regarding when certain competences are needed in an innovation process. Their results provided a general picture of skills to possess when conducting innovation work in different phases of the innovation process. This research contributes to prior research with very specific skills and experience regarding facilitation of innovation teams work, for which previous research demonstrates clusters of competence areas in general.

This research demonstrates that the facilitator as a teacher of practical innovation work had positive effects on learning, as two of the teams started new innovation projects where the facilitators’ presence was more of a back-office-support. This finding builds on research regarding innovation drivers (Hallgren, 2009; Johnsson et al, 2010) and champions (Dulaimi et al, 2004; Gamatise and Hallowell, 2011; Radnor and Robinson, 2000) where the learning outcomes haven’t been satisfying. Though, the majority of the team members were the same in the new innovation projects, which ease the understanding of tasks to do in complex innovation work. The result would probably not have been the same with completely new innovation teams or if the majority of the team members were new, this because of the new team constellation (Wheelen, 2013).

The identified characteristics were identified and their importance confirmed by one sponsor and three innovation teams that had been facilitated by the same facilitator in a comparable context and a set-up. The identified characteristics demonstrate both abilities and tasks for a facilitator to conduct during an on-going innovation project, which were organized in competence areas covering models and processes related to innovation teams and factors that enable innovation. The areas of competences that a facilitator need to possess relates to Bozic’s (2016) research on innovation competence to that sense that she highlights the need for transitional knowledge for individuals that are going to conduct innovation work. This research show that the facilitator is capable of doing this educational part if possessing the areas of competence as demonstrated above.
This research was conducted on innovation teams that have conducted real innovation projects contrast to Räsänen et al that suggested a theoretical framework based on Milton’s and Rogers’ (2013) innovation process. The difference is major, where the biggest contribution to prior research is that the facilitators competence were significant important before the chosen innovation process by Tidd and Bessant (2009), Milton’s and Rogers’ innovation process or other innovation processes (e.g. Farris, 1972; Johnsson, 2009; Trott, 2012) begins. I.e. the preparation-phase was not only revealed as important for the facilitator to address management, convener and sponsor about forthcoming innovation work, but is also revealed as an additional step to innovation processes presented where it serves as a tool to avoid group develop problems which are very common for newly formed teams (Tuckmann and Jensen, 1977; Whelan, 2013), and by that formed the Extended Innovation Process which is illustrated in Figure 9.

In one aspect the facilitator could be seen as an enabler for innovation teams, this because the presence and involvement by giving advice from time to time to the conveners served as indirect energy to the teams to keep on working in times when they e.g. struggled from uncertainty or lack of dedication or resources. According to team members and the sponsor, the innovation work wouldn’t be able to conduct without the facilitator, especially not in the first two phases of the innovation process. This was highlighted in previous research by Johnsson (2016a; 2016b) but was confirmed within this research.

Practical implication
The deviations between the sponsor and the teams’ opinion in when the facilitator’s characteristics were most needed provided an understanding of that the sponsor saw an opportunity to avoid forthcoming problems by planning and preparing an innovation team in advance. The teams on the other hand demonstrated a picture of when the facilitator should execute his/her skills relating to the activities in the innovation project. The practical implication by this knowledge is that a facilitator could work closely to the convener with tasks that match the present and forthcoming coming work in the innovation project. The benefit would be to avoid information overload and disturbance, relating to “supporting without bothering the team”. On the other hand, a convener must have a holistic view (Bozic, 2016, Illeris, 2011), which means that a facilitator needs to provide the convener with rich information in advance. Therefore, a facilitator must carefully pay attention to indications of information overload to avoid setbacks.

The understanding by knowing that the need of an facilitator’s presence and involvement decrease during on-going projects could be used when planning activities regarding how many innovation teams a facilitator can serve and when time is best for starting new innovation teams.

The results from this study show positive learning effects, which could be used for developing educating programs for innovation facilitation within companies or for consultancy firms. The education could be used for identifying appropriate individuals to be educated to become new facilitators that could teach conveners to create innovation teams. Further on, the knowledge from this research could be used when teaching and training innovation teams to plan for, and predict up-coming actions within an innovation project.

The Extended Innovation Process, includes the preparation-phase, allows an increased understanding that preparation is needed but it could also serve as a visual tool for planning activities in forthcoming innovation work.

Limitations and future research
This qualitative study has involved three innovation teams, where the researcher has acted as a facilitator to all the teams, which may be a risk due to bias and therefore affect the results negatively. This risk was known in the research design and actions were taken to avoid bias.
by carefully plan the research and to highlight this concern in the interviews to strengthen the validity and the reproducibility of the research. The results demonstrate that the facilitator’s role was more important and complex than expected, for which this knowledge may be useful when guiding, advising and teaching innovation teams in their innovation work. However, in overall this research demonstrates a very complex situation for an facilitator to handle, but the innovation teams showed positive learning outcomes within this study. Though, the findings are based on a limited number of teams and respondents, which calls for attention when generalizing the results. Therefore, further research on the facilitator’s characteristics and how the facilitator could be a teaching tool for new facilitators and conveners are suggested. Further, the Extended Innovation Process was unexpectedly identified during this research, and is therefore future research is suggested where its functionality and importance could be studied.

Acknowledgements
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<thead>
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<td>Statement-based questionnaire audit regarding innovative organization.</td>
<td>A</td>
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<tr>
<td>B</td>
<td>Statement-based questionnaire audit regarding innovative organization translated to Swedish (in Swedish).</td>
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</tr>
<tr>
<td>C</td>
<td>Statement-based questionnaire audit regarding innovative organization rephrased to “how-perspective”.</td>
<td>A</td>
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<td>D</td>
<td>Planning of workshops regarding increased innovation capacity (in Swedish).</td>
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<td>Open-ended questionnaire used in workshops regarding increased innovation capacity (in Swedish).</td>
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<td>Interview guide open-ended verbal interview regarding innovation-related knowledge and awareness (in Swedish).</td>
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<td>Statement-based questionnaire regarding the team emergence process.</td>
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<td>H</td>
<td>Interview guide open-ended verbal interview regarding top-of mind of innovation enablers.</td>
<td>G, H</td>
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<td>I</td>
<td>Statement-based questionnaire regarding innovation enablers (kick-off).</td>
<td>G, H</td>
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<tr>
<td>J</td>
<td>Statement-based questionnaire regarding innovation enablers (to capture progress).</td>
<td>G, H</td>
<td>247</td>
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<tr>
<td>K</td>
<td>Questionnaire regarding importance and fulfillment of innovation enablers.</td>
<td>G, H</td>
<td>249</td>
</tr>
<tr>
<td>L</td>
<td>Questionnaire regarding the relative importance between innovation enablers.</td>
<td>H</td>
<td>251</td>
</tr>
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<td>M</td>
<td>Interview guide open-ended verbal interview regarding the innovation facilitator’s characteristics.</td>
<td>I</td>
<td>253</td>
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<tr>
<td>N</td>
<td>Planning of workshop regarding the innovation facilitator’s characteristics and importance in innovation projects in general</td>
<td>I</td>
<td>255</td>
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<tr>
<td>O</td>
<td>Questionnaire regarding the importance of the innovation facilitator’s in general.</td>
<td>I</td>
<td>267</td>
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<tr>
<td>P</td>
<td>Questionnaire regarding the fulfillment of the innovation facilitator’s characteristics.</td>
<td>I</td>
<td>269</td>
</tr>
<tr>
<td>Q</td>
<td>Time chart used to plot the need of the innovation facilitator’s characteristics in the innovation project.</td>
<td>I</td>
<td>271</td>
</tr>
</tbody>
</table>
Appendix A
Statement-based questionnaire audit regarding innovative organization.

Used in Paper A

1. People have a clear idea of how innovation can help us compete.
2. We have processes in place to help us manage new product development effectively from idea to launch.
3. Our organization structure does not stifle innovation but helps it to happen.
4. There is a strong commitment to training and development of people.
5. We have good “win-win” relationships with our suppliers.
6. Our innovation strategy is clearly communicated so everyone knows the targets for improvement.
7. Our innovation projects are usually completed on time and within budget.
8. People work well together across departmental boundaries.
9. We take time to review our projects to improve our performance next time.
10. We are good at understanding the needs of our customers' end users.
11. People know what our distinctive competence is – what gives us a competitive edge.
12. We have effective mechanisms to make sure everyone (not just marketing) understands customer needs.
13. People are involved in suggesting ideas for improvements to products or processes.
14. We work well with universities and other research centers to help us develop our knowledge.
15. We learn from our mistakes.
16. We look ahead in a structured way (using forecasting tools and techniques) to try and imagine future threats and opportunities.
17. We have effective mechanisms for managing process change from idea through to successful implementation.
18. Our structure helps us to take decisions rapidly.
19. We work closely with our customers in exploring and developing new concepts.
20. We systematically compare our products and processes with other firms.
21. Our top team have a shared vision of how the company will develop through innovation.
22. We systematically search for new products ideas.
23. Communication is effective and works top-down, bottom-up and across the organization.
24. We collaborate with other firms to develop new products or processes.
25. We meet and share experiences with other firms to help us learn.
26. There is top management commitment and support for innovation.
27. We have mechanism in place to ensure early involvement of all departments in developing new products/processes.
28. Our reward and recognition system supports innovation.
29. We try to develop external network of people who can help us, e.g., with special knowledge.
30. We are good at capturing what we had learned so that others in the organization can make use of it.
31. We have processes in place to review new technological or market developments and what they mean for our firm’s strategy.
32. We have a clear system for choosing innovation projects.
33. We have a supportive climate for new ideas – people don’t have to leave the organization to make them happen.
34. We work closely with the local and national education system to communicate our needs for skills.
35. We are good at learning from other organizations.
36. There is a clear link between the innovation projects we carry out and the overall strategy of the business.
37. There is sufficient flexibility in our system for product development to allow small “fast-track” projects to happen.  
38. We work well as a team.  
39. We work closely with “lead users” to develop innovative new products and services.  
40. We use measurement to help identify where and when we can improve our innovation management.  

Appendix B
Statement-based questionnaire audit regarding innovative organization translated to Swedish (in Swedish).

Used in Paper A

1. Vi i vår organisation förstår hur innovationer gör oss mer konkurrenskraftiga.
2. I vår organisation finns etablerade processer som stödjer oss i arbetet med att effektivt utveckla nya produkter från idé till lansering.
3. Vår organisationsstruktur är inte ett innovationshinder utan bidrar till att nya innovationer kommer fram.
4. I vår organisation finns ett starkt åtagande avseende utbildning och utveckling av oss som arbetar här.
5. Vår organisation har goda ”win-win” förhållanden till våra leverantörer.
6. Vår organisation har en innovationsstrategi som är tydligt kommunikerad så att alla känner till förbättringsmålen.
7. Innovationsprojekten i vår organisation avslutas vanligtvis i tid och inom ramen för lagd budget.
8. I vår organisation arbetar vi väl tillsammans över avdelningsgränserna.
9. I vår organisation tar vi oss tid att gå igenom och granska våra projekt för att kunna presterar bättre nästa gång.
10. Vi i vår organisation är duktiga på att förstå behoven hos våra kunder och slutanvändare.
11. I vår organisation vet vad som är karaktäriserande för vår kompetens - vad det är som ger oss vår konkurrensmässiga skärpa.
12. I vår organisation har vi effektiva mekanismer som försäkrar oss om att alla (inte bara försäljning) förstår kundernas behov.
13. I vår organisation involverar vi oss genom att föreslå förbättringar avseende produkter och processer.
15. I vår organisation lär vi av våra misstag.
16. I vår organisation ser vi framåt på ett strukturerat vis (använder verktyg och tekniker för förutsägelser och trendanalys) för att försöka föreställa oss framtidens hot och möjligheter.
17. I vår organisation har vi effektiva mekanismer för att leda processförändringar från idé till framgångsrik implementering.
18. Strukturen i vår organisation hjälper oss att fatta snabba beslut.
19. I vår organisation arbetar vi nära våra kunder då vi utvecklar och utforskar nya koncept.
20. I vår organisation jämför vi systematiskt våra produkter och processer med andra företags processer och produkter.
21. Ledningsteamet i vår organisation har en delad vision av hur företaget ska utvecklas med hjälp av innovation.
22. I vår organisation söker vi systematiskt efter nya produktidéer.
24. I vår organisation samarbetar vi med andra företag för att utveckla nya produkter/processer.
25. För att underlätta lärandet, träffar och utbyter vi erfarenheter med andra företag.
26. Ledningstoppen i vår organisation är engagerad och stödjer innovation.
27. I vår organisation finns mekanismer som säkrar tidig delaktighet från alla avdelningar vid utveckling av nya produkter/processer.
28. Vår organisation har ett belönings- och erkännandesystem som stödjer innovation.
29. I vår organisation försöker vi att utveckla externa nätverk med människor som kan hjälpa oss med t.ex. specialistkunskap.
30. I vår organisation är vi bra på att ta in vad vi lärt oss så att andra i organisationen kan dra nytta av det.
31. Vi har processer på plats i vår organisation för att överblicka ny teknologi eller marknadsutveckling och vad de betyder för vår firmas strategi.
32. I vår organisation har vi ett tydligt system för att välja innovationsprojekt.
33. I vår organisation har vi ett klimat som stödjer nya idéer – vi behöver inte lämna organisationen för att realisera våra idéer.
34. Vi i vår organisation arbetar nära det lokala och nationella utbildningssystemet för att kommunicera vårt behov av kunskap.
35. I vår organisation är vi bra på att lära av andra organisationer.
36. Det finns en klar länk mellan de innovationsprojekt vi genomför och organisationens övergripande strategi.
37. Flexibiliteten i vår organisation är tillräcklig för att vårt produktutvecklings system ska tillåta små "snabbspårsprojekt".
38. I vår organisation arbetar vi bra i team.
39. Vi i vår organisation arbetar nära de avancerade, ledande och drivande användare för att utveckla nya produkter och services.
40. I vår organisation har vi mätverktyg för att identifiera var och när vi kan förbättra vår innovationsledning.

Appendix C
Statement-based questionnaire audit regarding innovative organization rephrased to “how-perspective”.

Used in Paper A

1. Hur gör innovationer er organisation mer konkurrenskraftiga?
2. Hur stödjer de etablerade processerna er i arbetet med att utveckla nya produkter från idé till lansering?
3. Hur bidrar organisationsstrukturen till att nya innovationer kommer fram?
4. Hur utbildas och utvecklas ni i er organisation?
5. Hur arbetar er organisation tillsammans med era leverantörer?
6. Hur kommunicerar er organisations innovationsstrategi och era förbättringsmål?
7. Hur gör ni i er organisation för att era innovationsprojekt ska bli klara inom lagd tids och budgetram.
8. Hur arbetar ni i er organisation över avdelningsgränserna?
9. Hur använder ni i er organisation sig av erfarenhet från genomförda projekt för att förbättra kommande projekt?
10. Hur skapar ni i er organisation förståelse för behoven hos kunder och slutanvändare?
11. Hur vet människor i er organisation vad som är karaktäriserande för er kompetens - vad det är som ger er konkurrensmässiga skärpa.
12. Hur gör ni i er organisation för att alla (inte bara försäljning) ska förstå kundernas behov.
13. Hur kommer förbättringsideror avseende produkter och processer fram?
14. Hur samarbetar ni i er organisation med universitet och andra forskningscenter?
15. Hur lär ni i er organisation sig av era misstag?
16. Hur gör ni i er organisation för att försöka föreställa er framtida möjligheter och hot?
17. Hur ser ledarskapet ut från idé till framgångsrik implementering vad gäller processförändringar?
18. Hur hjälper strukturen er att fatta snabba beslut?
19. Hur samarbetar ni i er organisation med era kunder i utvecklingen och utforskandet av nya koncept?
20. Hur jämför ni i er organisation era produkter och processer med andra företags processer och produkter?
21. Hur ser ledningsgruppens vision ut avseende hur företaget ska utvecklas med hjälp av innovation?
22. Hur söker ni i er organisation efter nya produktidéer?
23. Hur ser kommunikationen inom er organisation ut?
24. Hur samarbetar ni i er organisation med andra företag för att utveckla nya produkter/processer?
25. Hur lär och delar ni i er organisation erfarenheter med andra företag?
26. Hur visar ledningsgruppen sitt engagemang och innovationsstöd?
27. Hur skapar ni i er organisation delaktighet från alla avdelningar vid utveckling av nya produkter/processer?
28. Hur får innovation belöning och erkännande?
29. Hur arbetar ni i er organisation med externa nätverk av människor som kan bidra med t ex specialistkunskap?
30. Hur sprider ni i er organisation lärdomar inom organisationen?
31. Hur överblickar ni i er organisation ny teknologi och marknadens utveckling och vad betyder det för ert företags strategi?
32. Hur väljer ni i er organisation innovationsprojekt?
33. Hur stödjer arbetsklimatet nya idéer?
34. Hur samarbetar ni i er organisation med och kommunicerar ert kunskapsbehov till det lokala och nationella utbildningssystemet?
35. Hur lär ni i er organisation sig av andra organisationer?
36. Hur hänger er organisationers innovationsprojekt samman med verksamhetens övergripande strategi?
37. Hur ser flexibiliteten i er organisationers produktutvecklingssystem ut när det gäller små "snabbspårspjorcket".
38. Hur arbetar ni i er organisation i team?
39. Hur arbetar ni i er organisation med de avancerade, ledande och drivande användarna för att utveckla nya produkter och tjänster?
40. Hur identifierar ni i er organisation sådant som kan förbättra er innovationsledning?
Appendix D
Planning of workshops regarding increased innovation capacity (in Swedish).

Used in Paper B

Workshop-serie
Syftet i båda grupperna är att öka förståelsen för innovationens roll i företaget, för lönsamheten och i det dagliga arbetet. Att lägga grunden till allas engagemang och delaktighet i innovationsarbetet. Att öka kunskapen om hur var och en kan bidra till en god och ökad innovationsförmåga samt att lägga grunden för en företagsgemensam innovationsstrategi.

Search – att hitta möjligheterna
Syftet i båda grupperna är att öka förståelsen för att upprepad innovation har sitt ursprung i medvetet och systematiskt sökande efter möjligheter. Sökandet påverkan på företagets konkurrensförmåga och lönsamhet, på kort och lång sikt. Att lägga grunden till allas engagemang och delaktighet i sökandet efter innovationsmöjligheter. Att öka kunskapen om hur var och en genom att aktivt söka innovationsmöjligheter kan bidra till en god och ökad innovationsförmåga.

Select – att välja bland möjligheterna
Syftet i båda grupperna är att öka förståelsen för att upprepad innovation har sitt ursprung i medvetet och systematiskt urval av de möjligheter man vill satsa på. Urvalets koppling till företagets övergripande mål och vision, lönsamhet och konkurrensförmåga. Att lägga grunden till allas engagemang och delaktighet i arbetet med att välja och utvärdera bland tillgängliga innovationsmöjligheter. Att öka kunskapen om hur var och en i sitt dagliga arbete kan bidra till ett bra och framgångsrikt innovationsurval.

Implement – att realisera möjligheterna
Syftet i båda grupperna är att öka förståelsen för att upprepad innovation är gynnas av ett medvetet och strukturerat tillvägagångssätt då man realiserar de innovativa möjligheter man vill satsa på. Hur realiseringsarbetets påverkas av företagets interna och externa relationer och löpande verksamhet. Att lägga grunden till allas engagemang och delaktighet i arbetet med att implementering av valda innovationsmöjligheter. Att öka kunskapen om hur var och en i sitt dagliga arbete kan bidra till bra och framgångsrikt förverkligande av innovationsmöjligheter.

Capture – att maximera värdet
Syftet i båda grupperna är att öka förståelsen för att man i ett framgångsrikt innovationsdrivet företag på ett tydligt vis arbetar med kort- och långsiktig systematisk värdering. Hur innovationsarbetets värde kan maximeras i såväl det aktuella innovationsprojektet som den övriga verksamheten. Att lägga grunden till allas engagemang och delaktighet i arbetet med att maximera värdet av innovationsarbetet. Att öka kunskapen om hur var och en i sitt dagliga arbete kan bidra till bra och framgångsrikt tillvaratagande av möjliga innovationsvärden.

Strategi – att maximera värdet
Genomförs endast i chefsgruppen med syfte att öka förståelsen för behovet av att betrakta innovationsarbetet ur ett affärsstrategiskt perspektiv. Hur ledningen av innovationsarbetet kan knytas till verksamhetens övergripande mål och syfte. Att lägga grunden till allas engagemang och delaktighet i arbetet genom att bryta ned innovationsstrategin i konkreta och mätbara mål. Att öka kunskapen om hur var och en i sitt dagliga arbete kan arbeta i linje med fastställd innovationsstrategi.
Appendix E
Open-ended questionnaire used in workshops regarding increased innovation capacity (in Swedish).

Used in Paper B

Kort introduktion och förklaring av de olika begreppen.

**Användare (brukare)** är den person som använder den färdiga varan/tjänsten i sin vardag eller yrkesmässigt.

**Konsument** är den person som betalar för varan/tjänsten men som kanske lämnar den vidare till en annan användare. Kan vara en person på ett företag eller privatperson.

**Leverantör** är en intern avdelning eller en extern leverantör av varor/tjänster.

**Distributör** är de företag och organisationer som ingår i värdekedjan för att förse konsumenten med varor/tjänster.

**Search**

1. Var söker ni efter möjligheter till innovation hos…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

2. Vem i er organisation söker efter möjligheter till innovation…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

3. När söker ni efter möjligheter till innovation hos…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

4. Vad söker ni efter för sorts möjligheter till innovation hos…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?
Select
1. Vid val av innovationsprojekt, vem samarbetar ni med i gruppen…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

2. Vid val av innovationsprojekt, hur samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

3. Vid val av innovationsprojekt, när samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

4. Vid val av innovationsprojekt, varför / varför inte samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

Implement
1. Vid produkt - / tjänsteutveckling, hur samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

2. Vid produkt - / tjänsteutveckling, när samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

3. Vid produkt - / tjänsteutveckling, varför / varför inte samarbetar ni med…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

4. Vid produkt - / tjänsteutveckling, på vilka kriterier segmenterar ni…
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?
**Capture**
1. Vid ny produkt - / tjänsteutveckling, hur skapas affärsmässiga värden baserat på kunskap från …
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

2. Vid ny produkt - / tjänsteutveckling, när skapas affärsmässiga värden baserat på kunskap från …
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

3. Vid ny produkt - / tjänsteutveckling, varför skapar ni / varför skapar inte affärsmässiga värden baserat på kunskap från …
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

4. Vid genomförda produkt - / tjänsteutveckling, hur tar ni tillvara på kunskap från deltagande …
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

**Strategy**
1. Vid strategiarbete, hur utnyttjas kunskap från …
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

2. Vid strategiarbete, när utnyttjas kunskap från...
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

3. Vid strategiarbete, varför utnyttjas kunskap från / varför inte utnyttjas kunskap från...
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?

4. Vid strategiarbete, vem samlar kunskap från...
   … Användare?
   … Konsument?
   … Leverantörer?
   … Distributörer?
Appendix F
Interview guide open-ended verbal interview regarding innovation-related knowledge and – awareness (in Swedish).

Used in Paper C

1. Namn?
2. Befattning?
3. Hur länge har du arbetat på Company B?
4. Har du tittat på frågorna som skickades ut i fredags?
6. Om det inte finns någon arbetsbeskrivning, fråga varför den saknas.
8. Beskriv Dina arbetsuppgifter som Du upplever som unika för Din arbetsplats. Vilka fler utför samma eller liknande arbete?
9. Hur skulle du beskriva innovation med dina egna ord?
10. Hur skulle Du beskriva vad innovativt arbete är?
11. Vilka jobbar aktivt med innovation på ditt företag?
12. Hur bidrar du till innovation i ditt arbete?
13. Tycker du att du bidrar till innovation i ditt arbete?
14. Hur skulle Du kunna bidra till innovation i ditt arbete?
15. Hur skapas underlaget/arbetsuppgifterna som du ska jobba med?
16. Vem skapar dina arbetsuppgifter?
17. När skapas dina arbetsuppgifter?
18. Får du dina arbetsuppgifter i tid för att göra ett bra jobb?
19. Känner du att du gör ett bra jobb?
20. Om det skulle ta slut på arbetsuppgifter, vad skulle du göra då?
21. Hur prioriterar du om det är fler arbetsuppgifter samtidigt?
22. Om du inte skulle hinna med dina arbetsuppgifter, vad gör du då?
23. Händer det att du känner dig stressad på din arbetsplats? När, varför, hur åtgärdar du det?
24. Vem kan du prata med om ditt arbete förutom dina arbetskollegor?
25. Vem lämnar du vidare dina arbetsuppgifter?
26. Hur lämnar du vidare dina arbetsuppgifter?
27. När lämnar du vidare dina arbetsuppgifter?
28. Lämnar du vidare dina arbetsuppgifter i tid så att nästa person kan göra ett bra jobb?
29. När nästa man har jobbat med dina uppgifter, var tar de vägen då?
30. Vilka andra avdelningar jobbar du tillsammans med i dina arbetsuppgifter?
31. Brukar du vara med på mässor, utställningar, vid kundbesök på Company B?
32. Brukar Company B ställa ut på, besöka andra än branschmässor? Brukar du vara med?
33. Hur får du inspiration till ditt jobb?
34. Vad pratar ni om på rasterna?
35. Vilka har du rast med?
36. Kan du jobba på annan plats än den du har här?
37. Får du jobba på annan plats?
38. Känner du till ftg övergripande mål?
39. Om du var 5h /v mindre på din arbetsplats, skulle du hinna med dina arbetsuppgifter ändå?
40. Om du är sjuk en dag, hinner du med veckans arbete då?
41. Vilka avdelningar på Company B är viktigast enligt dig?
42. Vilka organisationer är viktiga för dina arbetsuppgifter?
43. Vad känner du till om dom?
44. Vilka tidningar läser du på jobbet?
45. Vilka forum är du med i?
46. Hur länge tänker du jobba på Company B?
47. Vad gör du på fritiden?
48. Hur kan ditt fritidsintresse vara en tillgång för Company B?
49. Hur lång restid har du till jobbet?
50. Brukar du tänka på jobb då på fritiden, på resorna?
51. Löser du problem till och på väg hem från jobbet?
52. Hur gör du med insikterna, lösningarna som skapas på fritiden, resorna?
53. Hur noga kan du planera din kommande arbetsdag, vecka?
54. Hur mycket oplanerat arbete dyker upp under en arbetsdag? Vecka?
Appendix G
Statement-based questionnaire regarding the team emergence process.

Used in Paper G and Paper H

1. I avoid blaming others for group problems.
2. I assume that every group member is trying to do a good job.
3. I treat people as individuals and don’t make assumptions about them based on my preconceived notions about people like them.
4. I do not get bogged down in interpersonal issues or personality conflicts.
5. I encourage the process of goal, role and task clarification.
6. I encourage the use of effective problem-solving and decision-making procedures.
7. I encourage the group to outline, in advance, the strategies that will be used to solve problems and make decisions.
8. I work to ensure that decisions and solutions are implemented and evaluated.
9. I encourage norms that support productivity, innovation, and freedom of expression.
10. I encourage the use of effective conflict management strategies.
11. I support division of labor necessary to accomplish goals.
12. I work to ensure that the input and feedback of every member is heard.
13. I work to ensure that we all have a chance to demonstrate our competence and skills in the group.
14. I discourage any group tendency to adopt excessive or unnecessary norms.
15. I am, and encourage others to be, cooperative.
16. In conflict situations, I communicate my views clearly and explicitly.
17. I respond cooperatively to others who are behaving competitively.
18. I act, and encourage others to act, in the best interest of the group.
19. When members contribute good ideas, I express my appreciation.
20. I encourage and work to achieve mutually agreeable solutions to conflict.
21. I support the leaders’ efforts to coordinate and facilitate group goal achievement.
22. I offer advice to the leader when I think the advice will be helpful.
23. I have negotiated, or would be willing to negotiate, with other groups and individuals to help my group obtain needed resources.
24. I share information and impressions I have about other parts of the organization with the group.
25. I encourage the group not to overwhelm itself with too much external information or demands.
26. I talk positively about my group to outsiders.
27. I keep other members of the organization informed about what my group is doing.
28. When members stray off the task, I diplomatically try to bring the discussion back to the task.
29. I go along with norms that promote group effectiveness and productivity.
30. I encourage high performance standards.
31. I expect the group to be successful and productive.
32. I encourage innovative ideas.
33. I use what I have learned about group development and productivity to help my group become effective.
34. I encourage the group to frequently assess and alter its functioning, if necessary.
35. I volunteer to perform tasks that need to be done.

Understanding:
The statements have been easy to understand:
1 = Not agree at all
7 = I fully agree
Appendix H
Interview guide open-ended verbal interview regarding top-of mind of innovation enablers.

Used in Paper G and Paper H

Definitions to commonly used terms within this study.
Organization: Organization is your company, not your department or group alone.
Innovation management: The person or persons that are in charge of the innovation teams on a holistic level in the organization.
Innovation team: A team that has the task to develop an idea to a concept, named team.
Innovation coach: A member in the innovation team that have the role of, not only to develop the idea together with the team members, also handle and understand the innovation process on a more holistic way and a deeper level than the rest of the members. Named iCoach within this interview.
Innovation enabler: Factors that enable an innovation team to do innovation work. This is named as innovation enablers, enablers or factors within the following questions.
Innovation: Innovation is a new or significantly improved product, service, process, method or other solution that has created value on an internal or external market. An innovation is in other words something new (e.g. a product, service or process) that has been developed and successfully reached its market where it is used and is creating value (which doesn’t have to monetary value).
We/our: We or our is you AND your coworkers as one unit.

Do you have any questions regarding this introduction?

1. What is your occupation at your company?
   a. Could you describe your work and responsibility at your company in a holistic way?
   b. Who is your closet manager?
   c. What persons do the innovation management consist of according to you?
   d. Who is innovation coach in your innovation team?
   e. Do you know what other person that have direct impact on your innovation team?

2. What do you do an ordinary day at work?
   a. What is your experience from innovation work?
   b. How familiar are you with the GPD-process? That is the Global Product Development-process that your company uses when developing new products.
   c. How long have you been a member in the innovation team?
   d. How did you become a member in the innovation team?
   e. Have your manager approved you to be a member is the innovation team?

3. What drives you to work as a member in the innovation team?
   a. What do you think drives the innovation coach to work in the innovation team?
   b. What do you think drives the other members in the innovation team to participate in this innovation project?
   c. What do you think the innovation coach thinks drives you members to participate in the innovation team?
   d. What do you think the innovation management thinks drives you members to work in the innovation team?

4. What are your personal expectations with working in the innovation team?
   a. What do you expect your innovation team to deliver within this innovation project?
   b. How do you ensure that the innovation team delivers what you expect you to do?
   c. What do you think the innovation coach expect the innovation team to deliver?
   d. What do you think the innovation management expects the innovation team to deliver?
Now I’m going to ask you some questions regarding innovation enablers where an innovation enabler is something that enables an innovation team to do innovation work. And as I said in the introduction innovation work is all work that has to be done to develop an idea to the market. I’d like you to think from another person’s perspective and to answer how you think that person is thinking regarding the questions. I know this is impossible but I’d like you to try anyway. I have asked the others to do the same and together we can draw a map of the situation and to identify where we need to be more clear and how we become a high-performing innovation team.

OK?

5. Could you give some general examples of what an innovation enabler is to you?
   a. Any some more examples?
   b. What enablers do you, as a member in the innovation team, need in your work in the innovation project?
   c. What enablers are you missing?
   d. What enablers do you think the innovation team needs in the innovation project?
   e. What enablers is the team missing?
   f. What enablers do you think the other members in the innovation team thinks that they are missing?
   g. What enablers do you think the other members thinks that the innovation team is missing?
   h. What enablers do you think the innovation coach think that the innovation team is missing?
   i. What enablers do you think the innovation management think that the innovation team is missing?
   j. What enablers do you think the innovation coach needs to be able to work with the innovation teams?
   k. What enablers do you think the innovation coach considers that he’s missing?

6. What are the incentives for you to work with the innovation team?
   By incentives I mean “what are your motivation” to participate in the innovation team?
   What’s in it for you?

7. What support do you as a member in the innovation team have in order to do a good job in the innovation project?
   a. Are you missing some kind of support?

8. What support do the innovation team have to do a good job in the innovation project?
   a. Are you missing something?

9. How is the innovation team rewarded from a well-executed innovation project?

10. What values do you expect the innovation team to generate?
    a. Could you give me examples of values that are not monetary but still positive outcomes that should be counted as valuable to your company.
    b. If a value cannot be expressed as money. How can one say that value has been created?

11. What are, you think, on a holistic level the greatest challenges to implement innovation teams as a way of working at your company?

12. Now I have a few questions regarding how you relate to some terms connected to innovation enablers.
    a. What does “enough resources to the innovation project” mean to you?
    b. What does “enough time to work in innovation project” mean to you?
    c. What does “innovative climate” mean to you?
    d. What does “innovative culture” mean to you?
e. What does “managing innovation” mean to you?
f. How do you get engaged to work in the innovation team?

13. Something you’d like to add?
14. How did you perceive the questions?
15. Something you wanted to say that I didn’t ask you about?
Appendix I
Statement-based questionnaire regarding innovation enablers (current state at kick-off).

Used in Paper G and Paper H

Definitions to commonly used terms within this study.

**Innovation management**: The person or persons that are in charge of the innovation teams on a holistic level in the organization.

**Innovation team**: The team, which you are a member of, that has the task to develop an idea to a concept.

**Innovation coach**: A member in the innovation team that have the role of, not only to develop the idea together with the team members, also handle and understand the innovation process on a more holistic deeper level than the rest of the members. Named coach.

**Innovation enabler**: Factors that enable an innovation team to do innovation work. This is named as innovation enablers, enablers or factors within the following questions.

**Innovation work**: All work needed to do to develop an idea to the market.

**Innovation project**: The innovation project is the your project you are conducting.

**Innovation**: Innovation is a new or significantly improved product, service, process, method or other solution that has created value on an internal or external market. An innovation is in other words something new (e.g. a product, service or process) that has been developed and successfully reached its market where it is used and is creating value (which doesn’t have to monetary value).

**We/our**: We or our is you AND your team members as one unit.

Below you will find 34 statements regarding situations applicable to you as a member in the innovation team.

Your task is to answer every statement on the separate forms.

Answer every statement with a figure between 1-7 depending on how well consider the statement to describe the “conditions in your team at your company”.

1 = Not true at all
7 = Very true

1.  I think the innovation team I am a member of has been formed with the best possible conditions.
2.  I have high expectations from the innovation team that I participate in.
3.  The innovation team has everything needed to do the innovation work.
4.  I feel that the innovation team is satisfied with the resources allocated for the innovation project.
5.  I have enough knowledge regarding how to manage innovation to do a good job in the innovation project.
6.  The innovation team have enough knowledge regarding how to manage innovation to do a good job in the innovation project.
7.  I have enough time to do a good job in the innovation project.
8.  The other members of the innovation team have enough time to do a good job in the innovation project.
9.  I expect my innovation-management-skills to increase from this innovation project.
10. I believe I can use learning from the innovation project in my everyday work.
11. My and the other members' competencies in the innovation team cannot be seen as innovation enablers within the innovation project.
12. Innovation work at my company has not high priority because of over load in everyday work.
13. My innovation team has self-determination to decide what the innovation project should result in.
14. Innovation work in the innovation team has not high priority because of over load in everyday work.
15. All essential information regarding the innovation project is available to me.
16. I feel confident that my managers agree that we in the innovation team do not follow traditional processes in innovation work.
17. I get sufficient support from my managers to do a good job in the innovation team.
18. The innovation team has sufficient project support from managers to do a good job in the innovation project.
19. Incentives are very important to my performance.
20. I think incentives are very important for the innovation team performance.
21. Me and the innovation team is encouraged to make our own decisions and thereby control the innovation project by ourselves.
22. Expected goals with the innovation project is clear to us in the innovation team.
23. Communication between the innovation coach and the innovation team is working satisfactorily.
24. Communication between me and the other team members is working satisfactorily.
25. I would do a good job in the innovation project, even if the allocated time "on paper" would not be sufficient.
26. I believe that the other members in the innovation team would do a good job in the innovation project even if the allocated time "on paper" would not be sufficient.
27. Resource issues are no real problem but are about priorities at my company.
28. Rewards are used to stimulate the innovation team.
29. Employees who do not work in the innovation team are jealous.
30. Employees who are invited to be a part of the innovation project feel proud.
31. The innovation management consciously ensures that our innovation team gets all needed innovation enablers in order to perform well.
32. Arguments about lack of time for innovation work are actually an excuse for a lack of commitment.
33. Negative deviations of the needed innovation enablers make our innovation team perform bad or innovation work to completely stop.
34. I ensure in an active way during the innovation project that the innovation team delivers what I expect.

Understanding:

The statements have been easy to understand:
1 = Not agree at all
7 = I fully agree
Appendix J
Statement-based questionnaire regarding innovation enablers (to capture progress).

Used in Paper G and Paper H

Definitions to commonly used terms within this study.

**Innovation management**: The person or persons that are in charge of the innovation teams on a holistic level in the organization.

**Innovation team**: The team, which you are a member of, that has the task to develop an idea to a concept.

**Innovation coach**: A member in the innovation team that have the role of, not only to develop the idea together with the team members, also handle and understand the innovation process on a more holistic deeper level than the rest of the members. Named coach.

**Innovation enabler**: Factors that enable an innovation team to do innovation work. This is named as innovation enablers, enablers or factors within the following questions.

**Innovation work**: All work needed to do to develop an idea to the market.

**Innovation project**: The innovation project is the Multi Shaft Drum-project.

**Innovation**: Innovation is a new or significantly improved product, service, process, method or other solution that has created value on an internal or external market. An innovation is in other words something new (e.g. a product, service or process) that has been developed and successfully reached its market where it is used and is creating value (which doesn’t have to monetary value).

**We/our**: We or our is you AND your team members as one unit.

Below you will find 45 statements regarding situations applicable to you as a member in the innovation team.

Your task is to answer every statement on the separate forms. Answer every statement with a figure between 1-7 depending on how well consider the statement to describe the “conditions in your team at your company”.

1 = Not true at all  
7 = Very true

1. I think the innovation team is a high performing innovation team. 
2. My expectations from the innovation team have been fulfilled so far. 
3. Uncertainty of needed recourses to the innovation project is not a problem to the innovation team because we have learned how to deal with it. 
4. I have enough knowledge regarding how to manage innovation to do a good job in the innovation project. 
5. The innovation team needs to strengthen its competence to come up with a satisfying result. 
6. I have enough time to do a good job in the innovation project. 
7. My innovation-management-skills have increased during this innovation project. 
8. I have used knowledge from this innovation project in my everyday work. 
9. My and the other members’ experience from this innovation project can be useful when creating new innovation teams at my company. 
10. I’ve become more motivated in my everyday work thanks to the innovation project. 
11. I feel that my company has become more interested in new ways to do innovation work thanks to the innovation project. 
12. The innovation team has self-determination to decide what the innovation project should result in. 
13. My everyday work affects my performance in the innovation project in a negative way. 
14. All essential information regarding the innovation project is available to me. 
15. I feel confident that my managers agree that we in the innovation team do not follow traditional processes in innovation work.
16. I get sufficient support from my managers to do a good job in the innovation team.
17. My impression is that our innovation team works faster than the ordinary GPD-process.
18. My impression is that our innovation team is more cost effective than the ordinary GPD-process.
19. The innovation team has sufficient project support from managers to do a good job in the innovation project.
20. The incentives I have in this innovation project are good enough for me to perform well.
21. The innovation team and I are encouraged to make our own decisions and thereby control the innovation project by ourselves.
22. Expected goals with the innovation project are clear to us in the innovation team.
23. The innovation team has got helpful innovation related advices from innovation management or affiliate persons.
24. Communication between the innovation coach and the innovation team is working satisfactorily.
25. Communication between me and the other team members is working satisfactorily.
26. I would do a good job in the innovation project, even if the allocated time "on paper" would not be sufficient.
27. I believe that the other members in the innovation team would do a good job in the innovation project even if the allocated time "on paper" would not be sufficient.
28. Employees who do not work in the innovation team are jealous.
29. Employees who are invited to be a part of the innovation project feel proud.
30. The innovation management consciously ensures that our innovation team gets all needed innovation enablers in order to perform well.
31. Negative deviations of the needed innovation enablers make our innovation team perform bad or innovation work to completely stop.
32. The innovation project affects my performance in my everyday work in a negative way.
33. We solve problems related to the innovation project in an effective way.
34. I ensure in an active way during the innovation project that the innovation team delivers what I expect.
35. We are following the ground rules we set up for the innovation team.
36. I’m convinced that we’ll reach the innovation team’s goal in time.
37. I feel that the other members in the innovation team are committed to the innovation project.
38. It has been easy to attract needed competence to the innovation project.
39. I’m satisfied with my deliveries in the innovation project.
40. I’m satisfied with the progress of the innovation project.
41. I know by fact that our innovation team works faster that the ordinary GPD-process.
42. I know by fact that our innovation team is more cost effective than the ordinary GPD-process.
43. I have fun when working in the innovation project.
44. I can feel that the other innovation team members are having fun when working in the innovation project.
45. I can recommend this concept to other innovation projects.

Understanding:
The statements have been easy to understand:
1 = Not agree at all
7 = I fully agree
Appendix K
Questionnaire regarding importance and fulfillment of innovation enablers.

Used in Paper G and Paper H
words something *new* (e.g. a product, service or process) that has been developed and successfully reached its market where it is used and is creating value (which doesn’t have to

<table>
<thead>
<tr>
<th>Innovation enablers in alphabetical order. All enablers relate to the innovation project and your innovation team.</th>
<th>Importance for the innovation team according to you. 1-7</th>
<th>Fulfillment in the innovation team according to you. 1-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Awareness (E.g. able to “see” new innovation related opportunities or lack of competence along the innovation process, to “see” invisible, intangible or unspoken needs in different situations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Capabilities (E.g. skills related to the innovation project, understanding of complexity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Climate (E.g. OK to fail-, let’s try, let’s do-mentality in work environment. (Climate is more easy to change than culture))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Collaboration (E.g. x-functional work in teams, collaboration between departments, suppliers and customers, open innovation, knowledge sharing, networks, partners)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Culture (E.g. invisible rules and norms within the organization, behavior to each other, “this is how we do here”. (Culture takes long time to change than climate))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Economy (E.g. Budget, non-monetary resources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Education (E.g. theoretical- and practical training related to innovation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Empowerment (E.g. Trust to take own decisions regarding time to spend on tasks to do, autonomy, interdependence)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Understanding:**
The innovation enablers 1-20 have been easy to understand:
1 = Not agree at all
7 = I fully agree

The table above lists the innovation enablers in alphabetical order. Each enabler relates to the innovation project and your innovation team.

The questionnaire assesses the importance and fulfillment of each enabler on a scale from 1 to 7.

Understanding:
The innovation enablers 1-20 have been easy to understand:
1 = Not agree at all
7 = I fully agree
Appendix L  
Questionnaire regarding the relative importance between innovation enablers.  

Used in Paper H

<table>
<thead>
<tr>
<th>Innovation enablers in alphabetical order. All enablers relate to the innovation project and your innovation team.</th>
<th>Ranking of innovation enablers, a list from 1-20</th>
</tr>
</thead>
</table>
| **1. Awareness**  
(E.g. able to “see” new innovation related opportunities or lack of competence along the innovation process, to “see” invisible, intangible or unspoken needs in different situations) | **1-20** |
| **2. Capabilities**  
(E.g. skills related to the innovation project, understanding of complexity) |  |
| **3. Climate**  
(E.g. OK to fail-, let’s try, let’s do-mentality in work environment. Climate is more easy to change than culture) |  |
| **4. Collaboration**  
(E.g. x-functional work in teams, collaboration between departments, suppliers and customers, open innovation, knowledge sharing, networks, partners) |  |
| **5. Culture**  
(E.g. invisible rules and norms within the organization, behavior to each other, “this is how we do here”. Culture takes long time to change) |  |
| **6. Economy**  
(E.g. Budget, non-monetary resources) |  |
| **7. Education**  
(E.g. theoretical- and practical training related to innovation) |  |
| **8. Empowerment**  
(E.g. Trust to take own decisions regarding time to spend on tasks to do, autonomy, interdependence) |  |
| **9. Entrepreneurship/Intrapreneurship**  
(E.g. “doers” that make things happen) |  |
| **10. Dedication**  
(E.g. factors that makes one feel dedicated, motivated, stimulated etc. to work in the innovation project) |  |
| **11. Human resource**  
(E.g. access to other colleagues that could contribute to the innovation project, sharing competence and contributing to reduce bottlenecks.) |  |
| **12. Incentives**  
(E.g. Monetary and non-monetary rewards.) |  |
| **13. Knowledge**  
(E.g. knowledge regarding innovation and expertise) |  |
in innovation project topics.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Knowledge management</td>
<td>(E.g. knowledge in how to use knowledge or how to fill knowledge gaps related to the innovation project.)</td>
</tr>
<tr>
<td>15. Management</td>
<td>(E.g. project managers-, leadership-, management-upper management-support related to the innovation project.)</td>
</tr>
<tr>
<td>16. Mind-set</td>
<td>(E.g. self-confidence “I can”, contributing “I share”, want-to develop company, pro-innovation bias “I like”, free-will “I want to”.)</td>
</tr>
<tr>
<td>17. Need</td>
<td>(E.g. explicit and clarified need to solve for customer, organization… The Why we should do this.)</td>
</tr>
<tr>
<td>18. Processes</td>
<td>(E.g. innovation process, models and best practice that guides from idea to product on market.)</td>
</tr>
<tr>
<td>19. Strategy</td>
<td>(E.g. directions in customer segment, areas, geographical markets, level of novelty on new products and technology to use or develop.)</td>
</tr>
<tr>
<td>20. Time</td>
<td>(E.g. explicit, dedicated or allocated time to the innovation project)</td>
</tr>
</tbody>
</table>

**Understanding:**

The innovation enablers 1-20 have been easy to understand:
1 = Not agree at all
7 = I fully agree
Appendix M
Interview guide open-ended verbal interview regarding the innovation facilitator’s characteristics.

Used in Paper I

Introduction to status in the innovation project.
- The convener volunteered to create an agile innovation team based on the CIT-process.
- The convener and I had a meeting where…
  o I described how to create a innovation team.
  o I described an innovation model and how to use it.
  o I described what principles to have in team.
- The convener created an innovation team and we planned for a Kick-off.
- On the Kick-off, where I participated online…
  o I presented the research project and innovation model.
  o The convener introduced the project, working methodology and rules.
  o Team was terminated caused of not accepting rules.
- The convener created a new innovation team based on the same conditions as before.
- On the new kick-off, where I was participating on site…
  o I presented the research project and innovation model.
  o The convener and team developed ground rules.
  o All team members accepted and the project started.
- I’ve been telling the convener things to think about and consider during the work so far.
  o The convener has been driving these issues without my involvement, and I’ve most often had a passive attitude at the meetings, for many reasons.
  o I’ve commented and reflected on what has been said and gave suggestions on what to focus on in future work.
- The convener has been driving project according to plan, planned and conducted activities.
- The team has had some problems that you have sorted out, e.g. perceived lack of commitment and from members in the team and from VCE in general.
- First checkpoint clarifies that you’re ahead of ordinary plan, but also that there’s a lot of uncertainty regarding economy and content in work coming up. But I get the impression of that you’re OK with that.

1. Is my observation correct so far?
2. As reported, the project is successful so far, except for the report, the convener told me of even more details that have saved you time in in the project.
   a. What success factors can you identify at this moment?
      i. What external factors have had the biggest impact on the project so far?
      ii. What external factors have had the biggest impact on the project so far?
   b. What do you think caused the very rapid group emergence process?
   c. What do you think caused your good performance so far?
   d. What do you think caused your ability to handle uncertainty in innovation process?
   e. What makes you put extra effort in this project?
f. (The convener: team had a history together, and trust)

3. Have you noticed my appearance in the project?
   a. What should I do better you think? (R3 suggested me to step in more in the meetings but I’d rather talk to the convener if there’s isn’t something obvious that I need to take with the team immediately.
   b. How do I affect your work according to you?

4. My methodology is to talk with the convener, giving him feedback and he’s talking to you concerning what to do and focus on. He’s like a convener, trying to achieve an unite or joint leadership within the team. Making the team into one unit that drives the project.
   a. How do you like that methodology?
   b. Would you prefer another way of my participation?
   c. What do I bring to the project that the team doesn’t already have?
   d. What personal characteristics do I have that affects the project?
   e. Would you have come this far without my participation?
   f. If I was replaced for somebody else, what would that person need to get the team perform?
   g. How do I help you feel confident in what you’re doing in the project?
   h. If you trust me and my advices coming through the convener, what make me a trustable person?

5. If a new innovation team is created, does it need a facilitator or is written instructions and tools available on Interakt enough?
   a. If person:
      i. What background does he/she need?
      ii. Most important personal characteristics?
   b. If instructions:
      i. What type of instructions?
   c. Except for time and money that we’re measuring in the project. Have you noticed any other valuable outcomes from the project?
   d. Have the project affected you on a personally level?
      1. If yes, what type of affect?
      2. How did you notice that?
   e. Have the project affected the other team members on a personally level?
      1. If yes, what type of affect?
      2. How did you notice that?

6. Do you have enough knowledge at this point to gather a new team and drive it?
   i. If yes, how do you now?
   ii. If not, what support do you need?
   iii. If not, when do you think you would be able to create an innovation team?

7. Sum up what makes impact on innovation team performance.
8. Something you’d like to add?
9. How did you perceive the questions?
   Something you wanted to say that I didn’t ask you about?
Appendix N
Planning of workshop regarding the innovation facilitator’s characteristics and importance in innovation projects in general.

Used in Paper I

FINAL DATA COLLECTION
• First, one-on-one meetings with respondents. (Questionnaires have been conducted before meeting and summarized diagrams are prepared in advance).
• Second, all members together in a mutual reflection workshop.

One-on-One (2h meetings):
(Data collection: notes; photos of work; recording from discussion (researcher assist participant to think aloud at all time), reflection and; interview.)

5 min Introduction
• OK to record?

1. 10 min. Reflections on situations that had positive and negative impact on the team. (No other information expect for dates for start up and data collections):
To do (Use A3 charts):
• Respondent reflects on, and place post-its on the time line grade to show how much impact the situation had on the team.
• What was the cause/reason?
• How was the team affected?
• How did the team utilize/handle situation?
• What was learned from that?
• What had biggest impact? –Why?
• Take photo to document

Purpose: To understand what is top of mind of memories from this year.
2. **20 min. Reflect on one innovation enabler at a time (see sample below).**

To do (Use A4 charts):
- Reflect on **why** the perceived importance have changed over time.
- Reflect on **what** could have been done to reach fulfilled level?
- Reflect on the facilitator’s affect on the innovation enabler?
  - **What did the facilitator do** that helped the respondent?
  - **What could the facilitator have done** to help the respondent?
- Reflect on the gaps between data collections. **Draw a line to connect** the data collections.
- Take photo to document.

### Purpose:
To understand why the perceived importance have changed during the project, to understand what the perceived importance between data collections were, to understand what the respondents thinks about the facilitator’s affect on that development.

**Reflect on one innovation enabler at a time from the team perspective as one unit, anonymous respondents (see sample below).**

To do:
- Reflect on **why** the perceived importance differ between members.
- Reflect on **why** respondent is higher/lower than average.
- Reflect on the facilitator’s affect on the innovation enabler?
- **What did the facilitator do** that assisted the team?
- **What could the facilitator have done** to assist the team?

### Purpose:
To understand why the participant differ from the other team members/average and to understand what the respondents thinks about the facilitator’s affect on the development on the team.
3. 20 min. Reflect on the facilitator’s affect on the innovation enablers. 
To do:
- Put a grade on how much each one of the influencers have affected the progress of the innovation enablers.
- Why chosen order (think aloud)?

### Innovation enablers: Importance and fulfillment

<table>
<thead>
<tr>
<th>Innovation enablers</th>
<th>Fulfillment in the innovation team</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apr 20</td>
</tr>
<tr>
<td>Leadership</td>
<td>1</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>4</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>5</td>
</tr>
<tr>
<td>Climate Impression</td>
<td>5</td>
</tr>
<tr>
<td>Change</td>
<td>5</td>
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<tr>
<td>Competiton Impression</td>
<td>5</td>
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<tr>
<td>Collaboration</td>
<td>5</td>
</tr>
<tr>
<td>Innovation</td>
<td>5</td>
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<tr>
<td>Education</td>
<td>5</td>
</tr>
<tr>
<td>Environment</td>
<td>5</td>
</tr>
</tbody>
</table>

- What could the facilitator have done better?
- What could the coach have done better?
4. **45 min Super Questionnaire :)**

Todo: The task is to answer every statement where the respondent checks previous answers and reflect on what influencers that affected the result. One or several answers on each statement is OK.

1 = no affect at all, 7 = Maximum.
5. **10 min. Satisfaction of personal expectations and value creation**

Todo: Use questionnaire to answer to what degree the respondent is satisfied with personal and team result. Use quotes and prepare the doc for each respondent.

1 = not satisfied at all, 7 = Could be more satisfied.

<table>
<thead>
<tr>
<th>Name</th>
<th>Expected personal goals</th>
<th>Results</th>
<th>Fulfilled to what degree 1-7</th>
<th>Expected team value creation</th>
<th>Results</th>
<th>Fulfilled to what degree 1-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td></td>
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<td>P2</td>
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<td>P4</td>
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<tr>
<td>P6</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

6. **10 min. Interview and follow up on previous answers.**

Todo: Use quotes from recordings and questionnaires to confront respondent.
Team meeting

1. **5 min. Place characteristics / personalities in one out of four areas.**
   To do:
   Place the post-its of characteristics in one of the four areas.
   Use the characteristics from interviews, i.e. these that a facilitator should have.
   Use the unwanted

   These characteristics of a facilitator are…

<table>
<thead>
<tr>
<th>...crucial.</th>
<th>...very important</th>
<th>...important</th>
<th>...to some degree important</th>
<th>...not necessary.</th>
<th>...unwanted</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you don’t have this one you shouldn’t facilitate innovation teams.</td>
<td>This one makes the difference to the innovation teams work.</td>
<td>This one means a lot to create progress in the innovation teams work.</td>
<td>This one is more or less a minimum for a facilitator.</td>
<td>This one is more of a “nice to have”.</td>
<td>Please, spare us from this.</td>
</tr>
</tbody>
</table>

   • Take photo to document

2. **5 min. Reflect on the fulfillment of the important characteristics / personalities in this projects.**
   To do:
   - Place the post-its in one of the three areas.
   - Why the chosen order? (think aloud)

   In this project, these characteristics / personalities of the facilitator were …

<table>
<thead>
<tr>
<th>...fulfilled.</th>
<th>...not fulfilled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust.</td>
<td>Mind set.</td>
</tr>
</tbody>
</table>

   • Take photo to document
3. 5 min. Reflect on how important the facilitator’s characteristics / personalities have been in overall during the project.
To do:
• Place the innovation in order from biggest impact to lowest impact, 1-20. (E.g. below)
• Why the chosen order? (think aloud)

- Take photo to document
4. Inform about the charts of Innovation enabler.
- Dedication is critical. Time could be solved !!
5. Inform about the ranking and the task to organize to new team
6. Now, time to stand up. Take your sticky notes and place them an the chart of when the characteristics is most needed.
7. Build on prior ideas of situation with positive and negative affect on the team.
   o What have we learned?
   o Comments to every situation and solution to next time.
8. Rank the Innovation enablers to a new team.

9. 15 min. Reflect on the facilitator as an innovation enabler to the team.
To do: Use a summary of the members’ chart no1. Place Post-it along the time line and in grade depending an affect level.
• Reflect on how the facilitator’s affected the team in a positive way.
  o When was it? Place a “green” sticker
  o Write on Post-it:
    ▪ What was it about? Give example
    ▪ What was the outcome? Give example
• Reflect on how the facilitator’s affected the team in a negative way.
  o When was it? Place a “red” sticker
  o Write on Post-it:
    ▪ What was it about? Give example
    ▪ What was the outcome? Give example
• Reflect on when the facilitator should have been more active.
  o When was it? Place a “orange” sticker
  o Write on Post-it:
    ▪ What was it about? Give example
    ▪ What was the outcome? Give example
• Reflect on when the facilitator should have been less active.
  o When was it? Place a “orange” sticker
  o Write on Post-it:
    ▪ What was it about? Give example
• What was the outcome? Give example
• Reflect on when the facilitator is of no use anymore.

• Take photo to document

• (Summarize all charts into one chart when respondents do the next task.)

10. 15 min. Ranking the importance and fulfillment
Todo: Reflect on the ranking of how the importance and fulfillment has changed during the year.
• Why is that?
11. 15 min. Reflect on when the facilitator’s characteristics had biggest impact on the team in overall during the year.
To do:
• Place the characteristics in the time line and grade them, write doublets of characteristics if needed.
• Need more characteristics?
• What was it about? (think aloud)

- Take photo to document
12. **What have you learned?**
To do:
a. Write and place post-it on time line and grade on impact on learning. What to do different next time?

![Graph of project timeline]

13. **Reflect on the facilitator as an innovation enabler to the respondent.**
To do:
- Interview respondents based on previous interviews and statement based questionnaires: E.g.
  - Do you think the facilitator has affected your work?
    - Explain how and in what way/why not?
  - You say that the team is performing faster and to a lower cost than the ordinary process, have the facilitator helped you to do that?
    - Explain how and in what way/why not?
  - You say that you have improved your innovation management skills, has the facilitator helped you to this?
    - Explain how and in what way/why not?
  - You say that you believe the team to be a high performing innovation team, has the facilitator helped you to get there?
    - Explain how and in what way/why not?
  - You say that the team work affect your everyday work in a very negative way, has the facilitator affected you in this way?
    - Explain how and in what way/why not?
  - You say that the team work affect your everyday work in a very negative way
    - How can you still recommend team to other projects?
  - Have the facilitator advised you to take specific actions that you didn't feel OK to do?
    - Any specific you can remember?
    - How did you respond to that?
    - Did you conduct the advised actions?
    - Explain how and in what way/why not?
    - What was the result?
• Any action you didn’t take that could have improved your progress even more?
  o You have said that an facilitator should have some specific characteristics, such as experience, knowledge, holistic view, etcetera.
    • Do you feel at this moment that you could do the facilitator work in a new innovation project like this?
    • What is still to improve?
    • Would you like to become a facilitator if there is an opportunity?
    • Do you know anyone here in SHP that could be a facilitator?
  o On a personal level, what have you learned so far in the project?
  o Are you satisfied with your work?
    • What are especially satisfied with?
  o On a personal level, what have you learned through the project?
  o In your opinion, is this project a success?
    • Why / Why not?

Purpose: To understand how the facilitator have had impact on concrete results.

14. Final team reflection.
   To do:
   • Discuss with team members based on previous interviews and statement based on questionnaires: E.g.
     o What are especially satisfied so far in the project?
     o What could you have done better?
     o What did the facilitator do that was especially good in the project?

   • Interview respondents according interview guide, e.g. Similar to one-on-one, but from team perspective.
     o Are you satisfied with the result on a general level?
     o How many people have been involved except for you?
     o Have the ground rules helped you in your team work?
     o Do you think the facilitator has affected your work?
       • Explain how and in what way/why not?
     o What do you think of the project in general?
     o What do you think of the performance in general?
     o What do you think of the effectiveness in general?
     o What are the biggest outcomes?
     o What value has been created?
     o You say that the team is performing faster and to a lower cost than the ordinary process, have the facilitator helped you to do that?
       • Explain how and in what way/why not?
     o You say that you have improved your innovation management skills, has the facilitator helped you to this?
       • Explain how and in what way/why not?
     o You say that you believe the team to be a high performing innovation team, has the facilitator helped you to get there?
       • Explain how and in what way/why not?
     o You say that the team work affect your everyday work in a very negative way, has the facilitator affected you in this way?
       • Explain how and in what way/why not?
     o You say that the team work affect your everyday work in a very negative way
       • How can you still recommend team to other projects?
o Have the facilitator advised you to take specific actions that you didn’t feel OK to do?
  • Any specific you can remember?
  • How did you respond to that?
  • Did you conduct the advised actions?
  • Explain how and in what way/why not?
  • What was the result?
  • Any action you didn’t take that could have improved your progress even more?

o You have said that an facilitator should have some specific characteristics, such as experience, knowledge, holistic view, etcetera.
  • Do you feel at this moment that you could do the facilitator work in a new innovation project like this?
  • What is still to improve?
  • Would you like to become a facilitator if there is an opportunity?
  • Do you know anyone here in SHP that could be a facilitator?

Purpose: To understand how the facilitator have had impact on concrete results.
### Innovation enablers – The facilitator

The facilitator’s characteristics / personalities’ importance to the AIT

To do: Place the characteristics / personalities in one of the five areas. Place them in grade of importance to each other within each area, where the most important one is in the top.

**These characteristics / personalities of a facilitator are...**

- **...crucial.** If you don’t have this one you shouldn’t facilitate AITs.
- **...very important**
  - This one makes the difference to the AIT’s work.
- **...important**
  - This one means a lot to create progress in the AIT’s work.
- **...to some degree important**
  - This one is more or less a minimum for a facilitator.
- **...unwanted.**
  - Please, spare us from this.
Appendix P

Questionnaire regarding the fulfillment of the innovation facilitator's characteristics.

Used in Paper I

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In this project, these characteristics/personalities of the facilitator were...

- ...fulfilled.
- ...not fulfilled.
- ...missing.

Here's an opportunity to be creative.
Innovation enablers – The facilitator

When did the facilitator’s characteristics have the biggest affect on the AIT
To do: Make a green (positive) or red (negative) dot with a pen in the time line, and grade the impact from 1-7. Write a comment on a sticker and place it next to the dot.

Time chart used to plot the need of the innovation facilitator’s characteristics in the innovation project.

Used in Paper 1
ABSTRACT

The aim of this study is to develop an understanding of factors that enable innovation teams to conduct agile innovation work in an industrial context. The reason for this research is not only that innovation is necessary for companies that want to stay in business, but also that these companies need to increase their speed of innovation work to stay competitive.

Still, there is much knowledge to be gained regarding innovation teams. In cases where teams have been created with the purpose of conducting innovation work, i.e. innovation teams, problems related to e.g. performance and learning have occurred, and the innovation work has stopped shortly after conducted research projects due to the high level of complexity.

The research question (RQ) that this thesis intends to answer is the following: “Which innovation enablers are important for innovation teams when conducting agile innovation work in an industrial context?”

Qualitative data have been collected from five innovation teams in an industrial context, where three of them conducted real innovation projects.

This research revealed five main findings: first, knowledge about important innovation enablers (Enablers) revealed from a literature study; second, the Innovation Team Model (ITM), demonstrating innovation teams before innovation work is begun in relation to the individuals and organization in a holistic way; third, the innovation team creation process (CIT-process), a stepwise process in how to create an innovation team; fourth, the innovation facilitator, who supports and facilitates the innovation team throughout the CIT-process and the innovation projects; and fifth, the Extended Innovation Process (EIP), an extension of the traditional innovation process by a preparation-phase to gather and prepare the innovation teams for forthcoming work. The findings regarding the importance of the CIT-process, the EIP, and the innovation facilitator for the innovation teams were unexpected.

The findings formed the Innovation Team Framework (ITF), which represents all of the findings in relation to each other. The EIP is used as the basis for which the other innovation enablers are provided to the innovation teams through an innovation facilitator’s competence throughout the innovation project. The ITF is multidimensional: it could serve as a tool to describe both the simplicity and the complexity when creating an innovation team and forthcoming work and activities.

All findings within this thesis contribute to prior research in individual ways, however, the ITF is the main scientific contribution of this study to Innovation management.

Practitioners can use the ITF and its detailed models as a complement and tools to already established methodologies for product development or similar or when creating and supporting innovation team’s innovation work.

Further studies regarding the ITF and its detailed models and processes are suggested.