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A socio-cultural and socio-historical approach

Master of Science Thesis in the Programme Design and Construction Project Management

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ABSTRACT

The construction industry is an expanding, multidisciplinary sector, where a well-functioning collaboration is a prerequisite for companies to remain competitive on the market. This study evaluates the collaboration processes between subsidiaries in internal construction projects, and was performed at one of the larger Swedish construction companies that during the last years have gone through a considerable expansion. This expansion, as well as the general expansion of the industry, includes a merging of different cultures and contributes to the context of our study where we aim to identify areas for improved collaboration. In order to do this, data collection was performed through interviews, observations of meetings and analysis of guiding documents and directives. A theoretical framework of Activity Theory, CHAT, was used to map the areas of tension regarding the collaboration in internal construction projects. Inter-organisational and inter-professional aspects as well as knowledge sharing in collaboration, provided additional lenses in order to unfold the potential areas of improvement for the case company, as well as general conclusions regarding collaboration between subsidiaries.

When analysing our findings, some major areas of improvement were identified: ambiguous directives from the top management causing uncertainty among the employees; lack of non-financial incentives for collaborating; differing work processes in the subsidiaries as a result of individual development, leading to differing expectations of each other; a lack of a common object and motive for collaborating, and a general negative view of internal construction projects. In order to address these issues and improve the collaboration there is a need of active management, which includes clear communication regarding how and why collaboration is beneficial as well as acknowledgement of the challenges in internal construction projects. Additionally, creating a more open company atmosphere that encourages knowledge sharing across the subsidiary boundaries would also contribute to a better understanding and trust of each other, which are prerequisites for the development of a unified view of the company and the project team, as well as good collaboration.

Key words: Activity Theory, CHAT, knowledge sharing, collaboration, cooperation, coordination, construction industry, communication, relationships

Samverkan mellan dotterbolag inom byggbranschen

- Ett sociokulturellt och sociohistoriskt perspektiv

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SAMMANFATTNING

Byggbranschen är en expansiv, komplex och multidisciplinär bransch, där välfungerande samarbetsprocesser är en förutsättning för företag att fortsätta vara konkurrenskraftiga. Den här studien utvärderar samarbetet mellan dotterbolag i interna byggprojekt och utfördes hos ett av de större svenska byggföretagen som under de senaste åren genomgått en markant expansion. Företagets expansion, tillsammans med den generella expansionen inom byggbranschen, innebär en sammanslagning av olika företagskulturer som bidrar till studiens sammanhang, där vårt mål är att identifiera förbättringsområden relaterade till samarbete. För att kartlägga dessa samlades data in genom intervjuer, mötesobservationer och analyser av styrdokument. Ett teoretiskt ramverk inom aktivitetsteori, CHAT, användes för att kartlägga konfliktområden gällande samarbete inom interna byggprojekt. Ytterligare en teoretisk infallsvinkel gällande kunskapsöverföring används tillsammans med kunskap gällande samarbete mellan olika yrkesgrupper och organisationer för att skapa möjligheter att utforska potentiella förbättringsområden för företag vi studerat. Dessutom används ovanstående för att kunna dra generella slutsatser gällande samarbete mellan dotterbolag i byggbranschen.

Efter att ha analyserat vår data har vi kunnat identifiera ett antal förbättringsområden där detta är några av de mer betydande: tvetydiga direktiv från koncernledningen vilket leder till osäkerhet hos de anställda; brist på icke-ekonomiska incitament för att samarbeta; olika arbetssätt inom respektive dotterbolag som en följd av deras separata utvecklingsprocesser, vilket i sin tur leder till olika förväntningar på varandra; brist på motivation och ett gemensamt mål med samarbetet, samt en generellt negativ syn på interna byggprojekt. För att bemöta dessa utmaningar och förbättra samarbetet krävs en aktiv styrning vilket inkluderar tydlig kommunikation kring hur och varför samarbete är fördelaktigt, samt ett erkännande av svårigheterna kopplade till interna byggprojekt. Genom att skapa ett mer öppet företagsklimat som uppmuntrar till kunskapsöverföring mellan dotterbolagen kommer även förståelsen och tilltron till varandra öka, vilket ger förutsättningar för att skapa en enad bild av företaget och projektgruppen, samt ett bättre samarbete.

Nyckelord: Aktivitetsteori, byggbranschen, CHAT, kommunikation, koordinering, kunskapsöverföring, relationer, samarbete, samverkan

Contents

Preface

This master's thesis was completed during the spring of 2016 as part of the Master's Program *Design and Construction Project Management*. The study took place at a Swedish construction company where the collaboration between subsidiaries in internal construction projects was evaluated, in order to map potential areas of improvement for the case company, as well as general conclusions regarding collaboration between subsidiaries.

We would like to extend our most sincere gratitude towards our supervisor and examiner, Professor Pernilla Gluch, who have guided and supported us through the processes of this thesis. Her insights in and knowledge of the academic field have been most valuable, as well as her ability to provide the right kind of motivation when we needed it.

We would also like to thank Urban Lindmark who provided guidance and support during our data collection and mapping of our case company. Finally, we would like to thank all the interviewees at the case company who set time aside for us and made our study possible.

Dictionary, Abbreviations and Definitions

Dictionary:

Arbetschef – Construction manager

Kalkyl – Estimate

Abbreviations:

CHAT – Cultural Historical Activity Theory

Definitions:

Internal Construction Projects (ICP) – construction projects involving two or three subsidiaries in the case company, either Groundwork Construction and Construction, or all three including Project Development

1　Introduction

The construction industry is one of the major employment sectors in most countries, and in Sweden it is an expanding sector (Sveriges Byggindustrier, 2015). The construction industry is also one of the most multidisciplinary and complex sectors, at the same time as it in many ways comprises an exclusionary culture where norms and structure are rather set (Dainty et al., 2007). In a short period of time, this diverse group of individuals is expected to create a well-functioning cooperative environment and deliver projects within a set timeframe and budget, before continuing on to new projects with new colleagues and new ways of working. As the industry becomes increasingly competitive and the profitability is continuously low[1], the responsibility of managing these temporary project groups is at risk of being increasingly set aside for more pressing tasks, which in a longer perspective impedes the industry's ability to improve its performance (Dainty et al., 2006). Despite this, many construction companies are more actively addressing issues regarding culture and managing people in order to reduce tensions and improve the collaboration. A well-functioning collaboration is today a prerequisite for a construction company to remain competitive on the market.

The common way of working within the construction industry is in projects. In a majority of the earlier research on project based organisations the project is described as an isolated process brought out of its organisational context, with no relation to its history or future. In contrary to this, Engwall (2003) describes the necessity of relating the project to its organisational, historical and cultural contexts. People with different professions, backgrounds and previous experience, from a variety of previous employers with differing cultures, are brought together to collaborate, adding to the complexity (Dubois & Gadde, 2002). This brings both possibilities and challenges to the projects, where the collaboration can be improved or impeded by the participants' previous and potentially different ways of working. Due to these additional dimensions to the already diverse nature of the project, a conscious approach to managing the varying aspects of managing a project is needed (Engwall, 2003).

In a competitive sector such as the construction industry, managing learning is important (Toiviainen, 2003). In projects where different professions are collaborating, the participants will learn and exchange knowledge with each other when interacting around their shared tasks and goals. In the time pressured, segmented and multidisciplinary nature of the project based organisation that describes most of the construction companies today, there is seldom time set aside for knowledge sharing or reflection (Gluch et al., 2013). Today, many larger construction companies are gathering different competencies in-house, either in different divisions or subsidiaries, as a way of facilitating the potential collaboration and communication. In order to reach the full potential of having the competences in-house, more active management is needed.

In this thesis, a Swedish construction company, referred to as "the Company", and the collaboration within construction projects between its three subsidiaries has been used as a context for studying collaboration. The Company is one of the larger construction companies in Sweden that during the last years has gone through a considerable

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[1] Christian Koch (professor at Construction Management, Chalmers School of Technology) lecture April 1st 2015

expansion. This expansion, as well as the general expansion of the industry, requires attention directed towards collaboration processes in order to remain competitive in the construction industry.

1.1 Aim

The purpose of this thesis is to understand collaboration processes between subsidiaries in the construction industry. This is done by studying collaboration in internal construction projects (ICPs)[2] at a case company, here called the Company. Through mapping of the current collaboration process and unfolding of the effects of inter-organisational and inter-professional collaboration as well as knowledge sharing, the objective is to present possible opportunities of improvements for the case company, as well as general conclusions regarding collaboration between subsidiaries. This thesis will also review an Activity Theory framework and its applicability for exploring collaboration. The context of this study is the Swedish construction industry and the challenges faced by contractors related to collaboration in ICPs.

Our research questions are:

- What characterises/distinguishes the collaboration between subsidiaries in the Company?

- How does the collaboration between subsidiaries affect the work in ICPs?

- What factors facilitate current collaborations in ICPs?

- What improvements regarding collaboration between subsidiaries in ICPs can be found?

1.2 Limitations

The construction industry and the contractor "the Company" compose the setting and thereby some of the limitations for our thesis. Furthermore, the subjectivity of the interviewees who were able to participate in the interviews provides additional limitations to the gained insights, as well as the time frame of our study.

Our analysis is based on an Activity Theory framework. There is little previous research done where Activity Theory has been applied in the construction industry, the main application has been in educational research. Due to this lack of research that relates to our field, some interpretation and translating of the framework have been necessary.

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[2] Internal Construction Project (ICP) are construction projects involving two or three subsidiaries in the case company, either Groundwork Construction and Construction, or all three including Project Development

1.3　Structure of Thesis

The introduction of this thesis introduces the importance of collaboration within an organisation in the construction industry, and it is accompanied by the purpose and limitations of this thesis. This is followed by an overall description of collaboration and common issues related to it, together with a presentation of the theoretical framework. The theoretical framework, Chapter 2, mainly consist of a framework of Activity Theory (CHAT), which will be used as a lens in order to map, understand and explain the collaboration process in the case company context, later found in Chapter 5; Analysis and Findings. In the Discussion and Conclusion, the interpretation of the findings according to the CHAT framework and its relation to inter-organisational, inter-professional and knowledge sharing, also mentioned in the theoretical framework, is narrated. Additionally, areas and insights concerning future research is included. Before presenting the Findings and Analysis, a description of the case company and the research setting, found in Chapter 3, as well as methodology for data collection and choice of theoretical framework, found in Chapter 4, are described. Finally, we present recommendations regarding development of collaboration in the case company.

2   Theoretical Framework

In this section, previous research related to the purpose of this thesis with focus on collaboration is presented. As Activity Theory will be used to explore the collaboration process, focus will be on describing the framework for mapping and analysing activities (CHAT). In order to further supplement Activity Theory and the specific challenges related to the research setting in the case study (different organisations and professionals), literature regarding inter-professional and inter-organisational collaboration and knowledge sharing is included.

2.1   Collaboration

Collaboration is often used to develop the common visions and goals of organisations, and can also be designed to deal with conflicts or tensions (Clegg et al., 2011). Through collaboration, the involved parties typically seek to exchange information, or engage in an agreement between two or more organisations to a certain project or action. When engaging in collaboration, an organisation becomes reliant on and exposed to risks by the collaborative partner, and it is a challenge to manage the interdependence and uncertainty that follows of collaboration (Lui et al. 2006). Qualities that are emphasised in order to reach the most efficient collaboration for all involved parties are in general openness, willingness to share information, and acknowledgment of potential differences as advantages rather than challenges (Clegg et al., 2011).

The process of collaboration takes place during the recognition of tasks, analysis of tasks, and during the response to them (Edwards & Kinti, 2010). Throughout this process, the unravelling of differences between views, knowledge, and approaches, together with finding ways of how to work together across these differences is essential for a successful collaboration. Moreover, in a study by Persson (2005) it was shown that in order to obtain successful collaboration more than efficient communication is needed.

Most organisations face issues of cooperation and coordination between departments or subsidiaries at some point during their organisational lifetime (Jacobsen & Thorsvik, 2008). In order to bridge these difficulties of collaboration, one could focus on affecting the employees' actions and thoughts by defining goals and strategies. The use of goals and strategies have a motivating effect, as well as a control function through constructing boundaries for the employee's decision premises, behaviour as well as creating a basis for evaluation. Furthermore, goals and strategies can also have a legitimising effect on the actions performed within the organisation.

According to Clegg et al. (2011), organisations have both formal and informal goals and strategies which affect the collaboration. Formal goals and strategies are set by the board or management, while informal goals are developed over time by the employees. Informal goals are goals that the individuals or separate groups in the organisation are working towards and they are seldom written down. There are often tensions between formal and informal goals or strategies, which could lead to sub-optimisation where the individuals are working partly or entirely in contradiction to the goals of the organisation. This implies that formal goals are being set aside in favour of goals set by a group of employees (Jacobsen and Thorsvik, 2008). It further results in focus on what is best for the individuals rather than the organisation. Sub-

optimisation could thereby create challenges for collaboration between employees or divisions. Specialisation and division of labour can work in favour to optimise the achievement of intermediate goals, but with the consequence of losing focus on the overall organisational goals. Too many directives to follow can have a similar effect, as the focus becomes directed towards how to properly follow the directives. Additionally, quantitative indicators tend to counteract the main focus. When evaluating the organisational performance, the focus of the employees tend to shift towards the criteria the employees know they are being evaluated on. Additionally, soft parameters such as collaboration could be hard to measure.

In order to achieve a functional collaboration in a team, coordination between the members is necessary (Clegg et al., 2011). Due to lack of a general perspective and information as well as differing interests, it is often difficult to rely on the employees' free will to coordinate themselves to produce the final product (Jacobsen & Thorsvik, 2008). Focus tend to be on the individual parts of the process and the overall view is lost. Therefore, formal structures need to be established in order to ensure coordination. The more specialised the team members are, the grater the need for coordination is.

The collaboration process consists of several levels of historically and heterogeneous activities, levels that are constructed through collaboration (Toiviainen, 2007). The developed interest in collaboration between organisations has created a discussion concerning the levels of analysis and their connection to levels of learning. According to Toiviainen (2007), learning takes place across object and outcomes and across levels of collaboration, and examples of levels can be worker, production or project level. These activities/levels are not obvious to either participants or observers and in order to study the collaboration process, focus is put onto the evolvement of the objectives of the activity. Furthermore, it is broadly accepted that the process of human learning is socio-culturally mediated and embedded, which further has strengthened the need of collective inter-organisation and organisation-level views. The levels of learning composing the collaboration can be studied using Activity Theory and more specific the Cultural-Historical Activity Theory (CHAT) framework, which will be presented in the following sections.

2.2   Activity Theory

To understand why collaboration is performed the way it is, the context of the interaction needs to be understood. Human relationships that are experienced everyday indicate that there is a deeper structure affecting human interactions and the way they unfold is a result of this deeper structure (Persson, 2005). Activity Theory is an example of a theoretical concept trying to determine and describe the influential aspects on collaborative activity (Engeström, 2008). By combining the *situational, historical* and *cultural* factors of an activity, Activity Theory creates a basis for analysis of relations and relationships within an activity (Engeström & Miettinen, 1999). The unit of analysis, the activity, is not equal to an event or task with definite start and end points. It is more of, as Roth and Lee (2007, p. 198) describes it, *"an evolving complex structure of mediated and collective human agency"*, and *"an activity is realized through concrete actions, which are directed towards goals that are framed by individuals"* (Roth & Lee, 2007, p. 201).

Activity Theory is based upon the works of a Russian scholar named Vygotsky, who worked with developing a new approach for studying psychological processes, aligned with the Marxist philosophical principles during the early 20th century (Yamagata-Lynch, 2010). Vygotsky wanted to capture the human consciousness and find methods to study and explain human activities. Therefore, a main characteristic in Activity Theory is that human actions have the ability to surpass constraints and given instructions, and that humans are not controlled by their biological urges but instead can control their own behaviour by using and creating mediating artefacts. (Engeström, 1999). A mediating artefact, or by other scholars referred to as tool, can be people, language (Ryder & Yamagata-Lynch, 2014), knowledge, work methods (Engeström, 2010), etc.

To explain the process of how people make sense of the world, Vygotsky created the mediated action triangle (Yamagata-Lynch, 2007). The triangle components, *subject*, *mediating artefact/tool* and *object*, represent the different parts of this process, see Figure 1. Vygotsky claim that the subject (the individual engaged in the activity) does not directly interact with the object, but rather that the interaction being mediated by mediating artefacts. All the components in the triangle can influence each other and thereby also influence the whole activity (Ryder & Yamagata-Lynch, 2014). The continuously change of the activity can for example be seen in how a subject in the triangle continuously develop new tools on its journey towards the object (Yamagata-Lynch, 2010). During this development some tools become cultural tools, which is of more significance for the participant than any other tool.
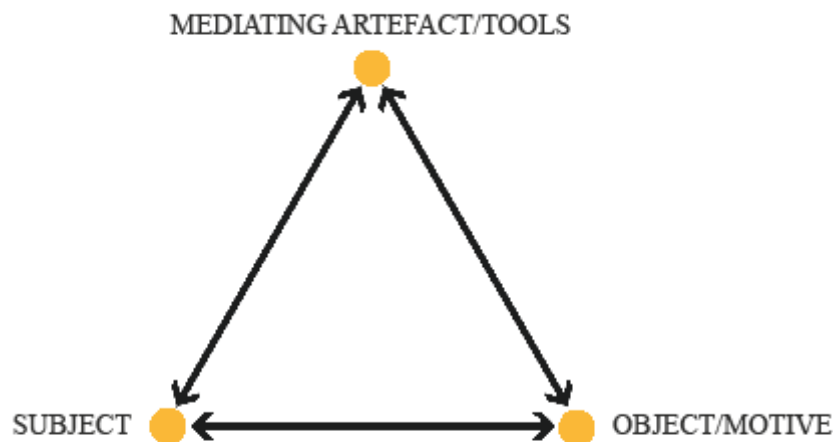
Figure 1: Vygotsky's mediated action triangle, adapted from Engeström (1999)

2.3   Cultural-Historical Activity Theory Framework

The Activity Theory model have been further developed by Leontiev and Engeström. In 1972 Leontiev published his work including both human behaviour and mental processes into his activity definition, describing the activity as a system including structure, developments, conversations and inner transformations (Yamagata-Lynch, 2007). Furthermore, according to Leontiev an activity without an object is not an activity (Engeström, 2008). Worth acknowledging is that events during an activity, as well as the consequences of the activity, can influence the participants' object and motive for participating in the activity. Thereby they are also affecting the social

environment and the actual activity, which is constantly changing and transforming (Engeström, 2008).

What Leontiev's work lacked was how to face the methodological challenges in activity-based data. This was something that Engeström (1999) continued working on as he developed the Cultural-Historical Activity Theory (CHAT) framework, which is one orientation and framework within Activity Theory. The central part of the CHAT framework is the activity system structure, which is the Vygotsky's mediating action triangle with an added socio-cultural and socio-historical dimension, see Figure 2. The activity system structure of influential aspects on the activity consists of *subject*, *object*, *rules*, *tools*, *community* and the *division of labour*. The main purpose of this activity system analysis method is to get a *holistic view of an activity*, which is possible by analysing multiple relations within the activity system structure (Foot, 2001). Furthermore, by using this framework, researchers are able to plot human interactions in a collective setting (Yamagata-Lynch, 2007).
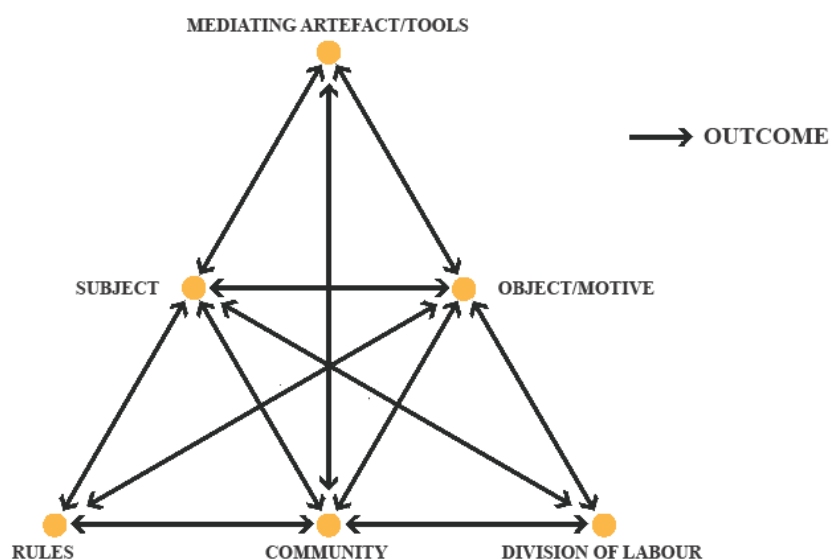
Figure 2: Activity system, adapted from Engeström (1999)

According to Engeström (1999), the structure of the activity system is arranged in order to display the motive behind the actions performed within an activity, where the main focus is on the *object,* which is what connects the individual actions to a collective activity. Due to translation problems there has been, and still is, perplexity regarding what the object definition is. What all CHAT researchers agree on is that the object answers to the question of why people participate in an activity and that it is the core that hold all aspects together within the activity (Yamagata-Lynch, 2010). Examples of objects are objectives, motives, material products gained from participating, etc.

The *motive* of the activity is projected from the object to the outcome and gives a deeper understanding of the individual actions performed within an activity (Engeström, 2000). This communal motive embedded in the object is difficult for participants to identify. The *outcome* is the result, or outcome, of the activity.

The *subject* represented in the model is the individuals engaged in the activity (Yamagata-Lynch, 2010), and any member of the group involved in the activity of

study can be considered a subject (Foot, 2001). The roles of the individuals included in the activity system model, either as subject or community of significant others, is not static and changes throughout the activity. This role changing makes analysis more difficult. In activity system based research, the starting point is often to study several individuals' behaviour in an activity in order to grasp the collective sense-making processes, as well as the critical events within the activity. (Yamagata-Lynch, 2010).

A *tool* (mediating artefact) can vary from a social others to artefacts, it can be of both physical and psychological character and the importance of the tool can vary over time (Yamagata-Lynch, 2010). Each tool used in the activity tells something about subject's perspective of the object, as well as the relationship between the participants in the activity (Foot, 2014). A tool has both a limiting and enabling function and becomes a rule when it is considered as an administrative demand by the subject, and created or endorsed by power. Some tools are of more significance for the subject and are defined as cultural tools (Yamagata-Lynch, 2010).

Rules restrict and liberate the activity. It guides the subject on how to interact with other members of the community and what approaches that are suitable to use within the activity (Yamagata-Lynch, 2010; Foot, 2001). Altogether, rules are the frame that controls the activity and interaction within the system to a varying degree (Persson, 2005). Different from the rules is the *community,* the group of individuals that, according to Yamagata-Lynch (2010), the subject identifies itself as being part of during the activity (a social group), which can be of both conscious and oblivious character. On the other hand, Foot (2001, p. 61) identify the community as *"people who share an interest in and involvement with the same object"*, meaning that the subject does not need to identify them as members of the activity.

The last component, *the division of labour*, is the actual sharing of assignments and responsibilities among the community (Yamagata-Lynch, 2010), including both vertical division of power, access to resources and rewards, as well as horizontal division of work assignments (Foot, 2001; Persson, 2005).

In any system, conflicts, contradictions and discoordination is inextricable, resulting in these occurrences becoming an important tool for understanding and analysing the activity (Engeström, 2008; Foot, 2001). If there are contradictions within the activity system they result in *tensions*, which could either hinder the achievement of the object or affect the subject's degree of participation towards attaining the object (Yamagata-Lynch, 2010). These tensions can cause an activity to break down or, in the view of the subject, result in attaining the object in a non-satisfying way. Based on Engeström's work, Foot (2001) elaborate that in Activity Theory, internal contradictions are the force that drives development. Furthermore, contradictions within an activity system is not necessarily a weakness, but rather an asset that indicates mobility and capacity of development. It is not a problem which needs to be fixed, and focusing on evolving new tools or a new divisions of labour will not automatically make the issues go away. Instead, it has been shown in Foot's research (2001) that the previous can result in the upbringing of new tensions, or intensification of the existing. Instead, the knowledge of tensions should and can be used a basis for institutional and social change.

Defining the setting in which the activities take place (the *activity setting*) enable researchers to contextualise the participants' activities along with the social environment, without large quantities of irrelevant information (Yamagata-Lynch,

2010). Moreover, the activity setting is the basis for the interpretation of how activities are affecting and are affected by the social context. The activity system model can be used in different ways by having different viewpoints, for example having a project or an organisation as the basis for analysis (Persson, 2005). In CHAT research the "multilogue" is emphasised, meaning putting focus on that individuals will bring different perspectives and cultural resources to the setting, together with different connections to participants in neighbouring or interlinking activity systems (Foot, 2001).

Implementation of CHAT in Previous Research

Previously, CHAT has been implemented in research concerning school education such as redesigning a teacher educational program as well as on undergraduates understanding of astronomy (Yamagata-Lynch, 2007). It has also been used for understanding collaborative work between members of a conflict-monitoring network (Foot, 2001) and organisational analysis of a high tech company (Blackler et al., 2000). The theory has similarly been used by Persson (2005) to understand the collaboration in product development between different fields of discipline. Persson (2005) found the Activity Theory framework useful since it allowed contextual factors such as the designer's background and management's role into the analysis of their interrelationship, which also could be of use when analysing the differences between the subsidiaries in the Company. Additionally, the Activity Theory lens and CHAT framework have been applied in the construction industry by Gluch and Räisänen (2012) investigating the interrelationships between environmental management and project practice in the industry.

Criticism and Limitations

There is some criticism towards both Activity Theory as well as the CHAT framework. Activity Theory is criticised for trying to include "everything" (history, culture, communication, etc.) into one concept (Engeström, 1999). It is also debated whether or not activity system analysis complicates research and could be expressed and analysed in simpler ways (Engeström, 1999). Toomela (2000) additionally mentions critics being concerned that Engeström's activity system model oversimplifies human psychology and that the human consciousness is not fully represented, resulting in the activity being separated from human consciousness when using the activity as origin of analysis. Findings from activity system analysis and CHAT are not generalizable since findings are based on qualitative data as well as being context specific (Yamagata-Lynch, 2007). In order to get useful results, it is important to be honest about their shortcomings and how they have been addressed in their analysis.

2.4   Inter-Professional Collaboration

For a company relying on several specialties and knowledge disciplines in order to achieve their objective such as the Company, sharing of knowledge through interaction becomes crucial (Boland & Tenkasi, 1995). The stronger the common perspective among a group of specialists/professionals is, the harder it will be to merge their view with the perspectives of other professionals. Therefore, to

understand the collaboration process, the motives and values embedded in the professional practice and culture need to be investigated (Edwards & Kinti, 2010).

The nature of interaction and social behaviour of an actor is greatly founded upon assumptions regarding beliefs, knowledge and motives of other actors, and for collaboration and coordinated action to take place it is required to gather the knowledge of what others know (Boland & Tenkasi, 1995). Hence, it is a necessity that the perspective of other professionals is realistically imagined. It has also been determined that when practitioners from different backgrounds learn that they have professional values in common, they are able to better work together with a shared task (Edwards & Kinti, 2010). Furthermore, being able to adopt and understand perspectives of others creates efficient communication and develops a common understanding of each other, which facilitate collaboration (Boland & Tenkasi, 1995).

In accordance with the CHAT framework, a central issue for understanding and developing the interaction between professionals is to understand how the professionals identify themselves with the object/objects (Edwards & Kinti, 2010). When facing a task, the professionals will acknowledge differencing challenges and opportunities, and the convincing arguments within one profession have often little bearing in another (Boland & Tenkasi, 1995). During this process, they use both material artefacts, specialist concepts and insights specific to a professional culture and practice (Edwards & Kinti, 2010).

The collaboration between professionals/practitioners occur in the boundary region of professions and in research performed by Keruso (2003, cited by Edwards & Kinti, 2010, p.129) it has been observed and concluded that the boundary regions of work are unstable and an uncomfortable place to be in. It is also expressed that these are areas of struggle between professional identity and knowledge, and situations where individuals' professional and social identity are challenged. Therefore, when studying collaboration, the main identified object needs to go beyond the economic perspective and instead explore the mediations concerning *"regimes of value"*, which is intertwined in collaborative objects (Edwards & Kinti, 2010). It is an important but difficult task to identify the collectively developed object and underlying motives.

In order to overcome challenges within collaboration between professionals with different specialities, the object of the activity needs to be expanded into a shared one (Edwards & Kinti, 2010). Also, the counterpart's motives and resources brought into the activity need to be recognised. This includes developing a common understanding of each other, and a synchronisation of their methods (Boland & Tenkasi, 1995). In order to understand and be able to change the object of interaction, the motives behind the object for the professionals need to be explored (Edwards & Kinti, 2010). Additionally, when creating the new common view it needs to be performed without losing the integrity and uniqueness of their own perspective, a change that needs to originate from both the outside and the inside of the groups (Boland & Tenkasi, 1995). The foci for the professionals engaged in the collaboration need to be mutually designated to long term goals, the revealing of motives and values, and the acknowledgment and commitment to the values and motives of others (Edwards & Kinti, 2010). The new and common perspective will need time to become established (Boland & Tenkasi, 1995).

Failures in the process of sharing knowledge and collaborating has in research been identified as failure of resolving their dissimilarities (Boland & Tenkasi, 1995). It has also been viewed as problematic when assuming others to be more similar than they

actually are, not acknowledging their differences. Other obstacles are the lack of understanding of the developmental process and being ignorant to activities of others as well as their complexity. To overcome this, the participants must make the above visible and accessible for others. Finally, a majority of collaboration is related to the ability of the individual understanding the collaboration process and self-reflecting upon that it in order to improve at engaging in communicating and collaborating with others.

2.5   Inter-Organisational Collaboration

Collaboration across organisational boundaries is crucial for organisations to be productive, innovative and remain competitive on the market (Dainty et al., 2006; Toivanen, 2003). Furthermore, the reason for individuals or organisations to learn is when it is essential for overcoming challenges faced in an activity (Toiviainen, 2003). The more similar organisations are, the easier the knowledge transfer between organisations become (Lui et al., 2006). Likewise, the similarities facilitate mutual understanding and collaboration together with having a positive effect on trust, both on an organisational and a personal level. It has been found in research that interpersonal trust is of less importance in collaboration than inter-organisational trust, but it has also been stated that interpersonal trust strengthens the inter-organisational trust (Zaheer et al, 1998).

From a study on how contractual frameworks influence the cooperative relations in the construction industry, it was detected that the goal congruence and fairness motives rather than the desire to win financial incentives or avoid sanctions, was the reason for the high level of cooperation in the project of the study. (Kumaraswamy et al., 2008). This is further comparable and can be related to the requirement of mutual commitment and long term perspectives regarding the joint efforts required in the activity stated by Toiviainen (2003). The previous also increases the inter-organisational trust, which is a prerequisite and result of successful collaboration. Absences of mutual needs, initial conditions, complementary competences, authorisation and joint value creation which create the balance and stability, will result in breakdown of the collaboration.

2.6   Knowledge Sharing in Organisations

All individuals are part of different social groups or contexts, usually a number of different groups where the roles vary from being a core member to having a more peripheral role (Wenger, 1998; Wenger et al., 2002). In these groups a collective knowledge and learning takes place as a social process. These groups can be created deliberately with the goal to exchange knowledge more efficient within their domain but it can also evolve naturally in all types of social groups where the people involved share a common goal and/or interest.

According to Wenger (1998), when working together in close groups under a relatively long period of time, the group develops interconnected relationships with mutual engagement of the shared understandings and common goals. This is in many ways a way of facilitating different views of the organisation's structure, since the focus is on the collective learning rather than reporting the progress which further can encourage collaboration (Wenger, 1998; Wenger et al., 2002). Groups or communities

with focus on knowledge sharing exist in most organisations, but are either taken for granted and/or not always recognised (Wenger, 1998). Additionally, they can be found under many different names, including communities of practice, knowledge networks, knowledge communities, learning communities or networks, skills networks and also different types of groups or clubs (Ruikar et al., 2008). Managing and encouraging these different constellations of groups can lead to increased tacit knowledge sharing, adding value and increasing the efficiency, as well as innovation of the organisation (Dubé et al., 2006).

The development of a community for knowledge sharing might be more and less conscious (Wenger, 1998). The members of the community share information through discussions and other joint activities, building relationships that enable them to learn from each other (Wenger & Snyder, 2000). A common sense of belonging and caring about the community further facilitates their learning (Wenger, 1998). The most effective means of communicating is meeting face-to-face while focusing on specific objectives, which encourages the members to admit their mistakes, ask for help from others and learn from the other participants' experiences, and further the trust within the group (Wenger et al., 2002; Clegg et al., 2011).

Participation is a necessity for learning (Wenger, 1998; Wenger et al., 2002). Thus, learning can be viewed as a process of social participation, rather than the collection of knowledge by the individuals. The initial, peripheral social process provides a "way in" to the community through discussions between newcomers and older participants regarding activities, identities, artefacts, learning and knowledge (Wenger-Trayner, 2015). Through this social-cultural interaction, the new participants can adopt the common language, identity and culture of the group in order to improve the sense making in the context of the group and further the learning process. An important factor regarding knowledge sharing is trust, where the participants' personal relationships contribute to build this trust (Wenger et al., 2002; Ruikar et al. 2008). The success of the group often depends on the willingness to trust the other members in the group and by extension their willingness to share their knowledge.

There are different reasons for why many organisations show interest in knowledge sharing and the connected theories. The concept has been mostly implemented in businesses where knowledge is an asset critical for the company's success (Wenger-Trayner, 2015). Construction projects are often complex settings, consisting of people with different professions and backgrounds; architects, managers, designers, workers, clients, etc (Dubois & Gadde, 2002). Additionally, the setting is often a project organisation which have a relatively short time frame and where participants get exchanged as the project progresses through different phases. When a project is finalised, the project-related challenges that have been collectively solved will be lost if not properly communicated resulting in learning from past experiences being hampered (Dainty et al., 2006).

In order to maintain successful in a relatively competitive industry, construction companies need to address how they manage their organisational knowledge (Dainty et al., 2006). Through the crossing of organisational boundaries and the combining of different individuals' experiences and knowledge, a successful and well managed knowledge transfer creates a potential breeding ground for innovation within their field (Wenger et al., 2002). The cooperation encourage participants who are able to take on more complex tasks, which additionally connects the participants and creates trust within the community. Through the collective learning processes, a common understanding and shared knowledge are created, which are of interest for any

organisation who wants continuously development. These informal and autonomous groups, with a focus on the practitioners that are crossing the formal boundaries of the organisation, are a challenge to manage within a traditional hierarchical organisation structure.

Individuals within the community are, contained by the set structure, enabled to manage their knowledge sharing as they find most efficient (Wenger, 1998; Wenger-Trayner, 2015). Practitioners create a direct link between knowledge and performance since they most likely are part of other communities, teams and units within the company. Additionally, the practitioners have a natural understanding of the unspoken knowledge of the group, as well as the more specific aspects of creating and sharing knowledge. Also, the connections that are created between the participants connect people across the organisation as well as over geographical boundaries.

The challenges from an organisational perspective is to combine the contribution to the professional development of the individuals, with motivating the individuals to participate in communities as a part of achieving organisational goals (Wenger et al., 2002; Ruikar et al., 2008). This could be accomplished by providing a nurturing environment that encourage not only the creation of, but even more important the development of communities that combine these aspects. When developing the community within the organisation, it also develops the knowledge and competence of the overall organisation (Wenger et al., 2002). In order to be successful with this, the leadership needs to be committed and actively work with developing an organisational culture that both values the individual at the same time as it encourages a common sense of the community (Wenger & Snyder, 2000). In organisations with traditional organisational hierarchies that emphasize the individual performance rather than the performance of the team, the implementation of earlier mentioned leadership are more difficult.

3   The Case Company

In this section, a narrative of the case of this thesis (the Company – a Swedish contractor) is given. Thereafter, a description regarding what today defines the Company and determines the research setting concerning the subsidiary collaboration is presented.

3.1   Company Description

The Company is a Swedish contractor that during the past few years has increased its number of employees with over 100%. During the expansion and development of the Company, a structure consisting of 3 subsidiaries has evolved, resulting in the Company being a group. The subsidiaries within the group have different scopes of practice and are divided into Construction, Project Development and Groundwork Construction, see Figure 3. The subsidiaries have been founded at different times and first out in 2002 was Construction followed by Project Development and lastly Groundwork Construction several years later. Recently, Concrete and Groundwork Construction was merged to one company, Groundwork Construction. Looking at the number of employees, the majority of the employees are found in Construction.
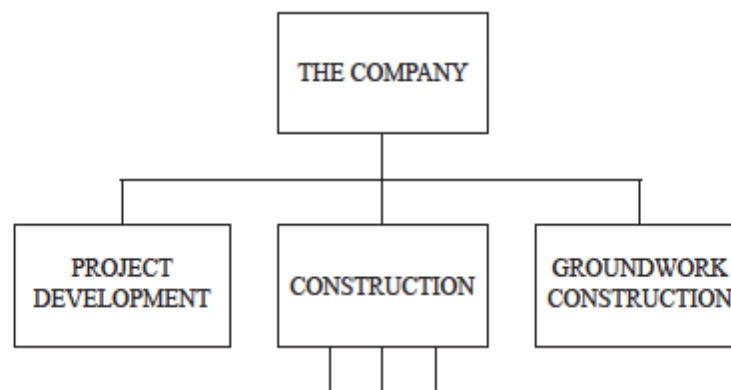
Figure 3: The organisational structure of the Company

The Company has a divisionalised organisation structure with a mother company, "The Company" in figure 3, and three subsidiaries, or divisions, which are run as separate companies. The CEOs of the separate subsidiaries have a delegated decision making position, as well as a responsibility to deliver desired results. This type of organisational structure is often rather complex and in order to coordinate the outcome the separate divisions deliver, standardisation and establishing prerequisites for a thorough evaluation of the results is necessary. Potential incentives are allocated to the division management who thereafter are responsible for further distribution to sub-divisions and individuals.

Positive aspects with a divisionalised organisation structure includes making the contributions to the overall profitability from the different divisions visible and through delegation of the decision making to the division management, improving the potential adaptation to the current market. As potential downsides, the risk of sub-

optimisation within the divisions. The overall managing and coordination might be impaired due to the central management's large amount of managerial freedom.

The headquarters of the Company houses the white collar workers as well as other administrative personnel related to the group. The employees from the different subsidiaries are therefore geographically at the same place, sharing the lunch room and other facilities. Due to the recent expansion, there are many new employees and thereby many new colleagues, resulting in that some of them have worked together in previous internal projects and some have never met, aside from lunch and coffee breaks. The office spaces are rather accessible with mostly glass doors to the smaller offices and the group activity rooms. The CEOs' offices are located in the middle of the building next to each other, accessible for all employees.

The teams for the ICPs are put together with those who are available from the different subsidiaries, taking as much consideration as possible to how compatible the intended team members are. Despite the recent expansion of the Company there is still a lack of employees, which creates a substantial time pressure where there rarely is much possibility to choose the most optimal team members for a specific project. The larger the project, the more in advance the planning will begin, giving better prerequisites to optimise the team. Moreover, the larger the project is, the longer the team will have to get to know each other which leads to stronger incentives for working on their collaboration.

When an organisation increase in size, a need for more standardisation and collaboration develops. This is often managed by additional rules and regulations, becoming reliant on a bureaucratic control rather than personal supervision. The larger the organisation, the more decentralised they tend to become. This kind of development cannot yet be seen at the Company where the structure still remains relatively flat.

Since the Company is a comparatively young company in the industry, founded just over ten years ago, the experience gathered in the Company is mostly from other companies and organisations. Due to the rapid expansion during the past years, most of the employees have not worked for the Company for so long, the average for our interviewees being a little bit over three years. The interviewees have different reasons for why they are now employed at the Company but many of them were attracted to the innovative approach of the Company, striving for flexibility within a relatively flat organisation where the daily work is performed close to the decision makers.

3.2   Research Setting

This thesis has been focused on Internal Construction Projects (ICPs), which are construction projects involving two or three subsidiaries in the case company, either Groundwork Construction and Construction, or all three including Project Development. Having ICPs where another subsidiary is a subcontractor results in a lower cost in the bidding process compared to subcontractors outside of the business group. Previous work regarding collaboration in ICPs within the Company comprise of a number of meetings in the fall of 2013, as well as an email from the CEO of the Company regarding the internal tendering process. The meetings, which were initiated by the company management, did not result in any apparent further actions or implementations besides the discussions brought up during the meetings. Regarding

the email from the CEO, the interviewees acknowledge that they have received it but also add that no one seem to be working according to its instructions.

Concerning the projects performed by the subsidiaries in the Company, there is a project guide for ensuring quality and a shared work process. The project guide is generally written for 'a project' and there is little connection to collaboration. In general, it can be deduced that the construction manager have the decision power to determine who will be involved in start-up and termination meetings, and therefore has a lot of responsibility for creating the foundation for the collaboration. The influence and consequences of this role and responsibility are not clearly expressed and can easily be overlooked. It is important to implement the collaboration early on in an ICP, since the common objectives and goals are developed by the involved parties at the beginning of the project. Today, the management guide is rather general with little content, which offers few guidelines related to collaboration. For projects where the Company is responsible for the design, the guide comprises a little more information, making the guides for projects where Project Development is involved more supportive. Internal forums for sharing knowledge and experience are according to the guides apparent, but the interviewees acknowledge them as few. The interviewees also mention the yearly conference where the whole company meet in order to inform all employees about the Company and its future, which does not include opportunities for sharing and discussing in-between the subsidiaries. For the purpose of collaboration, the internal forums and guides do little to create or support a foundation to build collaboration on.

4   Methodological Approach

This section describes the methodology, including how the literature search and the data collection was conducted, focusing on methods of interviewing and interpreting the data. It is also explained how we will use Activity Theory, and in particular the CHAT framework, for analysis.

4.1   Research Approach

A qualitative research approach has been used, which enables in-depth understanding and identification of human beliefs, social interactions and behaviour (Hennink et al., 2011). The aim of this thesis is to develop an understanding of how the collaboration process between subsidiaries is performed. Since the information needed to do that coincides with the data acquired when performing qualitative research, this was chosen as methodology. There are different paradigms on how to perform qualitative research and how to gather the data. We chose the interpretive paradigm as it purports observation and interpretation of the social world and acknowledges that there is not one single truth of what reality is instead many due to subjective views of human beings.

According to Hennink et al. (2011), the interpretive paradigm can be further elaborated into understanding, which represents understanding from the researcher's perspective, or Verstehen, which is the research participant's perspective. We chose to adopt the understanding perspective in our research and thereby we identify issues and obtain an understanding of why the participants of this study have acted towards events and or objects the way they have.

By developing an analytical frame, we could visualise the concepts we intended to explore in our study (Hennink et al., 2011). Based on the principles described by Hennink et al. (2011) and our inductive research method, a conceptual framework describing our research process was established, see Figure 4. The starting point of the research was to understand the collaboration between subsidiaries in the construction industry. The CHAT framework was used as basis of analysis for mapping the collaboration and together with a case study of a Swedish contractor an understanding of the collaborations process regarding subsidiaries within a contractor group was obtained. For the collaboration within the case company, focus is on the Company's internal construction projects (ICPs), meaning construction projects involving two or three subsidiaries in the case company, either Groundwork Construction and Construction, or all three including Project Development.
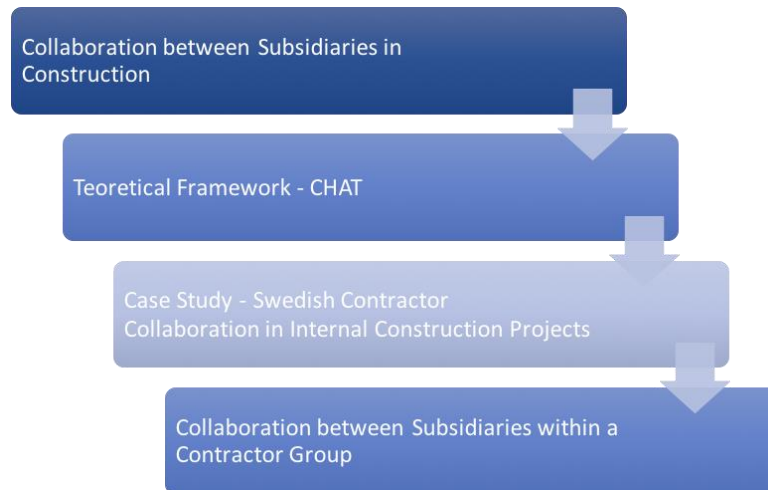
Figure 4: The inductive conceptual framework

There are several approaches for how to conduct qualitative research and gather case study data. Through the chosen methods; interviews, group interviews and observations of meetings; an initial understanding of identifying and explaining behaviour, beliefs and actions in connection to collaboration between subsidiaries was made possible.

4.2 Literature Search

To find the necessary information concerning theories and methodology, a literature search was performed. Databases provided by the Chalmers library such as Scopus and Emerald, together with Google scholar were used to find books and articles. The literature search was iteratively performed where we went back and forth between theory, results and analysis, complementing our previous findings and revising the parts we deemed as not contributing to the report.

In the search for literature, terms as Activity Theory, CHAT, collaboration, cooperation, coordination, construction industry, communication, knowledge sharing and relationships have been used in different combinations. In order to find literature on methods for conducting our interviews, terms as qualitative, interview technique, data collection and communication were used. Steinar Kvale, Etienne Wenger and Yrje Engeström are well-known and respected authors within their respective fields, searching for books and articles written by these authors led to several appropriate results

4.3 Case Data Collection and Analysis

In order to collect our data, we used interviews in two steps, step one with individual interviews and step two with group interviews where two interviewees discussed the questions and their answers. In order to gain a better understanding of the Company, we initially observed some meetings and were also given access to guiding documents, some e-mail conversations and the Company's intranet with additional information about the Company, relating to the collaboration in ICPs. According to Hennink et al. (2011), the data collection in qualitative research can be considered to

be completed when the received information starts to repeat itself, which was achieved in our research. The data collection approach will be described below.

4.3.1 Observations

The observations of meetings between Construction and Groundwork Construction gave general knowledge of the Company and insights on how daily work in ICPs is conducted, which cannot be gathered by reading company documents. The observations were performed according to the method "non-participant observation" described by Hennink et al. (2011), which includes observing meetings and taking notes concerning actions, interactions and body language. During the observations, it quickly became clear that we would not be able to gather enough information to draw further conclusions regarding the general collaboration in ICPs without taking part in a relatively large amount of meetings, which were not possible for us to do within our set time frame. The observations were therefore important in the beginning of our work, to assist us in gathering a broad general knowledge of the Company as quickly as possible. Apart from contributing to our general knowledge of the Company, the insights gained from the observations have not been included in the written analysis of our findings.

4.3.2 Interviews

According to Kvale (1996), the interpreting of interviews is based on the researchers' perspective on what is examined, and the researcher will interpret the interviews from this perspective. In order to acquire objectivity to what was said in the interviews, we decided on a methodical approach that, according to Kvale (1996), is the most common way of analysing interviews, an ad hoc use of a combination of different techniques and methods. This enabled us to recontextualise what was said in the interviews in the context of our report. The approach consisted of separately reading through and writing down our notes from the interview, as well as listening to the recordings to see if we have missed something. After that, we discussed and merged our interpretations, highlighting common themes as well as areas of disagreement for the analysis. Through this approach, defined by Andersson (1985), we were able to process the whole interview, as well as all interviews combined, and gather an overall impression before we went back to specific statements, noting further structures, meanings and connections beyond what was directly said.

4.3.2.1 Interview Guide and Setting

For the interviews, we chose a semi structured interview methodology, and the questions were designed as open questions to enable the interviewee to freely interpret the question and reason (Andersson, 1985; Lantz, 2007). The semi structured approach gave the interviewee possibilities to elaborate on his/her answers and through open questions, their interpretations of the questions contributed with additional dimension to the interview. Nonetheless, the semi structured approach still comprises a structure to the interview, enabling us to compare the answers.

An interview guide, see Appendix A, was created according to the principles stated by Andersson (1985) and Lantz (2007) to ensure objectivity, with the themes of interest as well as the questions we wanted answered. We also included which themes we

were particularly interested in the interviewees elaborating in, as a remainder to ourselves. After presenting ourselves and the reason for the interview, anonymity was ensured and the interviewee was asked if he/she was comfortable with us recording the interview. We took turns with interviewing and taking notes. The initial questions of the interview were broad opening questions intended to make the participants feel at ease before continuing to more topic specific questions, using a funnel-technique (Lantz, 2007; Andersson, 1985). Probing was used when the interviewee gave vague or ambiguous answers. Some examples of probing techniques that were used were pausing, giving the interviewee time to reflect over the question, encouraging through both verbal and non-verbal indicators of interest, follow-up questions to ensure the interviewee elaborates on short or constricted answers, as well as asking for clarifications when given ambiguous answers. Additionally, all questions were formulated in a manner that minimised the risk of confusion and misinterpretation, in such a plain language as possible.

As a way of reducing the time needed to be set aside for participating in the interviews, we chose to conduct them at the workplace of the interviewee. Due to a shortage of workplaces and available offices, it was not always possible to find a room that was as neutral as we desired, but the majority of the interviews were conducted in group activity rooms that were geographically separated from their colleagues' offices, thereby ensuring privacy.

4.3.2.2 Interviewees

Our interviewees were twelve different project managers, group managers, department directors and site managers representing the three different subsidiaries, giving us a diverse selection of employees, at thirteen occasions. The interviewees were chosen among the employees that had previous experience of working in ICPs, and were suggested by our supervisor at the Company. At least four representatives from each subsidiary were asked to participate, through e-mail or by visiting their office. In Construction and Groundwork Construction, these criteria were fulfilled but due to the high workload in the Project Development division, there were no more than two representatives that were able to set the time aside to be interviewed. Additionally, we wanted to gain insights from both senior and more recently employed persons, with previous experience from ICPs at the Company, criteria we were able to accomplish.

The twelve interviewees consisted of mostly white collar workers, but also three site managers and one project engineer. The experience at the Company varied from one to seven years and the total experience from the construction industry varied between three years to over forty. Of the interviewees, two were women, which relatively well represents the overall gender distribution at the Company. Their backgrounds varied as well, differing between technical high school, vocational university, building engineering, civil engineering and Entrepreneurship and Business Design. All interviewees have Swedish as mother tongue and the interviews were conducted in Swedish. Our interviewees represented the three different subsidiaries through five representatives from Construction (interviewee C1-C5), five representatives from Groundwork Construction (interviewee GC1-GC5) and two representatives from Project Development (interviewee PD1-PD2). Due to respect for their anonymity, their positions in the Company are not included.

In order to understand the complex collaboration setting and experiences, observations from the interviews such as body language, tone, gestures and attitude have also been noted and treated separately from the spoken information (Lantz, 2007). The observations were thereafter analysed according to Hennink et al.'s (2011) description of observation methodology. The observations were noted separately and after each interview discussed and evaluated in relation to the context of the observations. Only the shared observations were brought into the analysis.

4.3.2.3   Group Interviews

The group interview approach we used is similar to the approach described by Hennink et al. (2011) called focus group discussion. The main characteristics of both the focus group discussion and group interview approach is an interactive discussion concerning specific issues concerning a determined topic. The group environment allows the researcher to quickly gather a variety of perspectives on the topic and at the same time the views are challenged by other participants in the discussion. According to Hennink et al. (2011) the method can be used for explanatory research as the approach allows identification of community norms, views and socio-cultural behaviour. In the group environment the personal views may not fully be represented due to the industry's people-intensive and social nature. The smaller the group is, the greater possibility there is for personal views and experiences to be more fully expressed due to less conflicting communication in the group (Dainty et al., 2006). In a focus group discussion there are between six to eight participants and it should be about 60-90 minutes long (Hennink et al., 2011). In our group interview the intention was to have three participants, one representative from each subsidiary, but due to late cancellations we had two at each occasion. The composition was the following; first session Project Development and Groundwork Construction and at the second Construction and Groundwork Construction. Thereby were the session discussion interviews rather than group discussions. The length was approximately 90 minutes.

The interview guide for the group interviews, see Appendix A, followed the same structure as the initial interview guides with open questions and an ad hoc approach to the analysis. In order to develop the previously collected data we revised it by concretising some questions and elaborating further on others. Between the two group interviews the interview guide was refined by removing a few questions that we perceived as redundant, as well as elaborating some questions in order to make them more structured and easily understood.

The participants of the group interviews were chosen based on the previous individual interviews. We wanted to combine persons that already had given the subject some thought and with their different perspectives would be able to objectively discuss the issues connected to collaboration between the subsidiaries. As with the individual interviews, we wanted to interview both senior and more recently employed persons, with previous experience from ICPs at the Company. Despite the last minute cancellations, we managed to fulfil these criteria. Nevertheless, more perspectives would have been beneficial in order to gain a broader data collection but with the given time frame we assessed the amount of interviews to be sufficient to draw objective conclusions from.

4.4   Method of Analysis – the CHAT Framework

The mapping of our data was performed with the lens of Activity theory, more specific the CHAT framework. Our findings were collected and classified into the aspects of the "triangle" described as influential on the activity (see figure 2), according to the CHAT framework. The activity was defined as the collaboration between subsidiaries in ICPs within the Company. After defining the activity and mapping and classifying the findings, an analysis and identification of tensions within the aspects, as well as between the aspects related to the context of collaboration, was performed.

4.5   Concluding Remarks Regarding Methodology

Andersson (1985) emphasises the importance of acknowledging the influence of the interviewers on the interview and its outcome. Our social background, as well as behaviour, expectations and previous knowledge influences the research process but can at large be avoided by being attentive to tendencies of making assumptions without having the facts to back it up, and reminding ourselves to be open to the interviewees. Through discussions and comparisons of our interpretations we continuously challenged our potential interpretations, thereby ensuring as much objectivity as possible.

For the data collection, the basis for interview questions and observations have been found in the theories mentioned in the theoretical framework. The intention of doing so was to avoid explaining the theoretical concepts that can be found abstract and complicated at first sight, which is why none of the questions are using the terminology of the theoretical frameworks. Through the interviews, we were able to gather a general knowledge of the Company and its organisation. By following up these interviews with group interviews, we were able to deepen that knowledge and ask for elaborations in the areas where we needed more information. The structure of our findings and analysis is presented in compliance with the theoretical framework rather than the main topics from the interview questions, in order for the structure of the thesis to follow the same logic in the theory as the findings and analysis.

5 Findings and Analysis

In this section the collected data is presented and analysed by using the theoretical lens of CHAT. Focus is on tensions within the aspects as well as between aspects. Additionally, the theory related to knowledge sharing provide a different perspective on our findings and we use the framework to analyse how knowledge sharing could improve the collaboration between subsidiaries in a construction company.

5.1 Mapping the Collaboration in the Company Using the Lens of CHAT

In order to map the collaboration, the activity of analysis is defined to be *the collaboration between subsidiaries in Internal Constriction Projects (ICPs)* within the Company. To simplify the mapping, the activity will be divided into its different aspects (object/motive, subject, division of labour, community, rules and tools). If nothing else is stated, the findings that make up the activity system are based on the general views obtained in the interviews and discussion interviews.

5.1.1 The Activity System of Collaboration in ICPs

In the internal construction projects (ICPs), it becomes evident that the subsidiaries have different expectations on how to work and collaborate in ICPs. The interviewees have difficulties with elaborating on how the expectations differ, but they share a common feeling that it does. Interviewee C2 substantialise this by expressing the general expectation of the involved parties to take on a greater responsibility in ICPs when they in reality do less, often assuming that the bigger party, in this case Construction, will take on the additional responsibilities. A view that interviewee C2 believes is shared with Groundwork Construction.

When Project Development runs an ICP, as "the client", Project Development want Groundwork Construction and Construction to comprehend that the process for that type of project differs from their projects with an external client. The interviewees from Project Development requests more feedback and suggestions from Construction regarding alternative cost efficient solutions, as well as quicker cost estimations. They request an understanding of the effects that follow if deadlines are not met (interviewee PD2), and mentions that Groundwork Construction seem to be stuck in their traditional way of working, not focusing on potential development and innovation (interviewee PD1). In order to be successful with the collaboration in ICPs, interviewee GC3 argues that it might require resources to be set aside. For example, a group of people who are continuously involved in the ICPs while others attend to the external client projects, making the organisation more time and knowledge efficient for all parties.

There is a common opinion that it is easier to work in external projects than ICPs, which needs to be overcome in order to have efficient collaboration. Creating shared expectations on what an ICP project entails might result in getting the employees interested in engaging in ICPs. Furthermore, it is necessary to stop blaming each other for eventual failures in order to obtain a work environment that the employees want to be part of (Interviewee C1).

As our findings relate to the previously described theoretical framework seen in Chapter 2, Figure 2, an interpretation of the model is displayed with the new labels set by the authors in bold, see Figure 5 below. The new labels iteratively developed out of the empirical data in order to describe the aspects of the activity of collaboration between subsidiaries when conducting ICPs. The rationale and details behind the activity system will be given below.
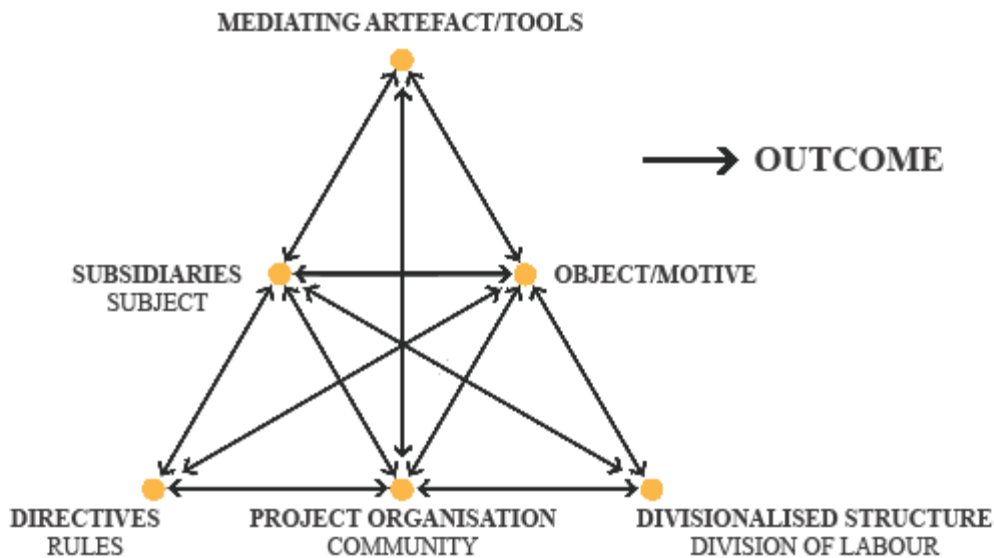

Figure 5 Activity system of collaboration when conducting ICPs.

5.1.2 Object and Motive

Regarding the object of the activity system, see Figure 6, the shared object is to participate in and successfully complete the ICPs in a financially profitable manner. Nevertheless, in order to fully understand why an activity is held together or participated in by different subjects, a non-economical object is needed. There is merely vague indications of other objects being the reason

Figure 6: Object/Motive

for participating in the activity in the collected data. It was mentioned by all subsidiaries that a more enjoyable workplace environment allowing more flexibility and innovative solutions is possible in ICPs, however this is not often obtained. Another object revealed by Interviewee C1 is the minimising of risks, which is obtained when you have worked together before and know what to expect from the others in the project group. Another object shared by a few interviewees (PD2, GC3 and C3) is the advantage of finding smart solutions early in the project life cycle. Overall, it becomes obvious that it is unclear to the participants why they are engaged in ICPs and how they would profit by participating.
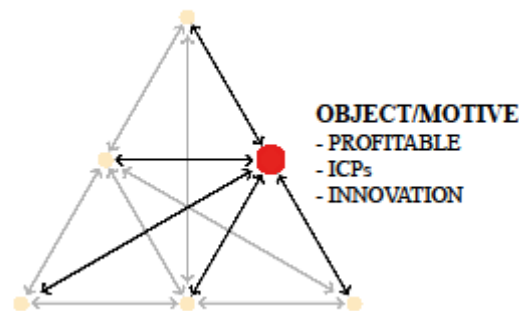
When exploring the motives of the activity, the motives for connecting the subsidiaries are almost non-existing. The notion, from both the interviewees at Groundwork Construction and Construction, is that it is something that is forced upon them, which determines the motive to participate as being told to. When trying to find other motives for being part of the activity, the interviewees cannot express any that are not also valid for non-ICPs, or concerns economic factors. Project Development's apprehension is that they are supposed to use the internal contractors, and by doing so they achieve the best product due to early contractor involvement. Early contractor involvement is made possible by having the contractors in-house, and continuously be able to discuss solutions and thereby find a financially beneficial solution. These indistinct motives and objects result in an unclear core of the activity system, resulting in an activity system without clear boundaries, which is difficult to keep together and collaborate within.

In order to change the current situation regarding collaboration in ICPs, a change of attitude is required. This is not easily done, and would require clear directives from the top management. Currently, according to interviewee C2, no discussions regarding "soft parameters" as incentives for collaboration or for project evaluation are held. Furthermore, interviewee C4 mentions that based on the current directives, why and how internal collaboration should be performed are unclear. Even if all subsidiaries share office building, which creates good preconditions for open communication and successful collaboration, the time pressure makes it a no priority issue. The interviewees emphasises a desire of the top management dedicating time for achieving good collaboration. By allocating time to the collaboration, a shared understanding is spread among the employees of why and how they are supposed to collaborate and for this to become reality it needs to be initiated from the concern management.

When concluding the analysis regarding the object of the activity system, it is clear that the interviewees find it difficult to identify a common, non-financial object for the activity system that unite the three subsidiaries. Furthermore, there is no shared motivation or incentive encouraging the subsidiaries to collaborate over the company borders, resulting in seeing no purpose of doing so. Moreover, it makes it more difficult for the employees to acknowledge the benefits of taking on a holistic perspective within the activity, except for when involved in a joint-venture project.

5.1.3   Subsidiaries (Subject)

The subjects are defined as the *subsidiaries* since the goal is to study the collaboration between the subsidiaries in ICPs. As mentioned earlier in this report, there are three different subsidiaries to regard and they view themselves and each other in dissimilar ways, bringing different historical and cultural
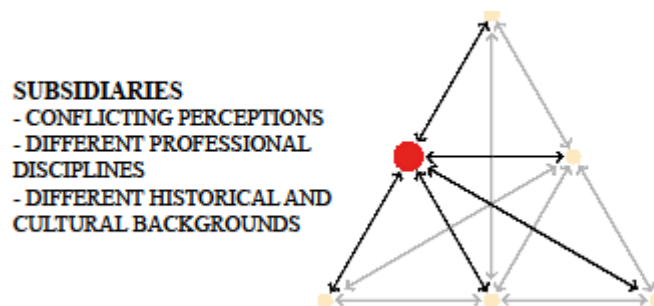

SUBSIDIARIES
- CONFLICTING PERCEPTIONS
- DIFFERENT PROFESSIONAL DISCIPLINES
- DIFFERENT HISTORICAL AND CULTURAL BACKGROUNDS

Figure 7: Subsidiaries as subject

dimensions into the activity, see figure 7. The subsidiaries are of different professional disciplines and have different views on what they are and what their purpose is, which is further reflected in their differing ways of reasoning and acting. Despite this, all interviewees share the view of their own subsidiary as engaged and driven when participating in ICPs.

Construction, which was founded first of the subsidiaries, view themselves as the core of the Company, as well as being successful at what they do. They are in most of the projects the main contractor and are therefore accustomed to run the projects according to their rather well established working method. Construction accentuates having an open atmosphere, as well as focus on the result as what distinguish them from the other subsidiaries. According to the other subsidiaries (interviewee GC4, GC2, GC1 and PD1) Construction could be perceived as authoritarian and not interested in creating successful collaboration, neither between the participating subsidiaries nor for the Company as a whole. It was also mentioned by Project Development and Groundwork Construction that Construction, compared to the others, has gotten relatively far in its development routines and structure of tasks, as well as being effective in its work.

Groundwork Construction, which is the youngest subsidiary, see themselves as being team players, solution-oriented and focused on the common goal when participating in ICPs. The other subsidiaries mentioned that their impression of Groundwork Construction is that they seem to be stuck in old patterns and lacking experience of working in early stages. Moreover, they are perceived as having deficient knowledge and experience, as well as vague routines and work process. The interviewees also share the impression that Groundwork Construction has been involved in more projects than they have had resources for, which is shared by the interviewees at Groundwork Construction.

The professional approach from Project Development is different from the other subsidiaries, Construction and Groundwork Construction, as their business differs. Project Development is acknowledged by the other subsidiaries as reliable, despite working under even more time pressure and challenges than the other subsidiaries. They are also efficient in the eyes of the others. Overall, Project Development regard themselves, and are regarded by the others, as being successful at what they do. In the ICPs they are involved in, they keep the projects together and make sure that the different responsibilities are divided between the participants, resulting in a good basis for successful collaboration. A suggestion from the other subsidiaries was a more active participation from Project Development during production, and not limited to merely the planning and design phase.

When the interviewees are describing their own subsidiary, the overall impression is that the subsidiaries have similar attitude and similar priorities. However, when asked to concretise their understandings, it become clear that they do not always perceive each other to be similar, sharing attitudes and priorities, which creates a gap that could result in collaboration difficulties. Differences between the disciplines, or subsidiaries, produces unrealistic expectations regarding what the other actors in the ICPs should contribute with. This is due to a lack of understanding between the disciplines concerning their respective challenges and ways of working, which originates from the subjects' different backgrounds. There is an apparent need to harmonise their different processes and/or develop an understanding of each other in order to obtain realistic expectations on one another. Harmonising and creating an understanding without creating one shared view could be beneficial for innovation as

well as the collaboration. The key is to make their processes compatible, which requires an understanding, openness and acceptance for each other's challenges.

5.1.4 Divisionalised Structure (Division of Labour)

The structure of ICPs is based upon the current organisational structure consisting of the three subsidiaries and their respective managers, budget and financial goals. When the ICP teams are put together it is rarely possible to handpick the project members and therefore, the individuals who are available are assigned to the project (interviewee GC2, PD1), see Figure 8.
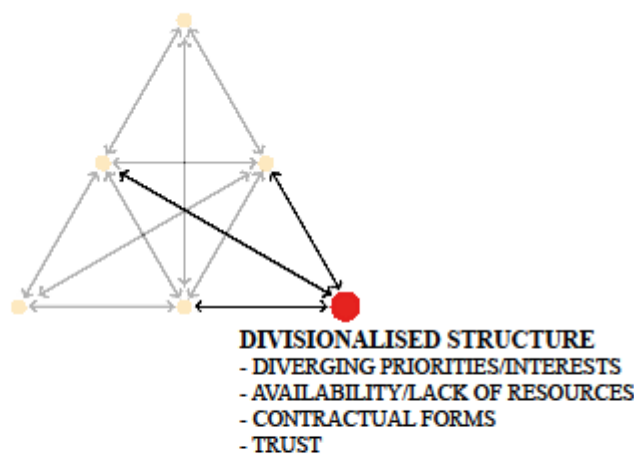
Figure 8: Divisionalised structure as division of labour

Furthermore, Interviewee PD1 states that there are no examples of ICPs with a clear division of labour. Instead, they are characterised by constant interaction, which always results in some overlap since a task often is assumed to be solved by someone else with the possibility and/or resources. Additionally, some individuals want to be a part of the whole process while some prefer to be handed the completed documents and perform their work accordingly.

All interviewees agree that the current structure with three subsidiaries creates challenges for maintaining a holistic view on how their work affects and contributes to the Company as a whole. The interviewees express difficulties in evaluating what actions would be most profitable for the overall Company, as well as the challenge of not having a common evaluation for the three subsidiaries. Another consequence of the organisational structure is an unclear division of tasks and responsibilities. Depending on the people involved, the responsibilities are rarely divided in a forum where all parties are present, creating unclear settings for the common work and performance in the project. There have been attempts to separate the overall project in smaller projects as house or groundwork, with the result in grey areas with unclear responsibilities. When Project Development is involved, they often take on the role of coordinating and assuring that all responsibilities are assigned, in order for the project to proceed according to the time plan. They become responsible for assuring a good collaborative environment, reducing the sub-optimisation caused by the conflicting perspectives, priorities and processes. Currently, they do not have any standardised way of doing that, which also might create uncertainty and a constant insecurity preceding each project. With the current and rather rapid expansion of the Company, it will take time and effort to achieve a common understanding of methods and strategies, as well as knowing what to expect from the others involved in the project at hand.

In the ICPs, the division of labour differs varyingly depending on the involved parties. As mentioned earlier, when Project Development is involved they take on the role of

organising and structuring the work, as well as monitoring the process. If it is an ICP with only Construction and Groundwork Construction from the issuing of a tender, it is up to the team itself to guarantee that all tasks are performed. The difficulty within this process is to engage the participants, who often already have full agendas when entering the project, to set aside time for the early planning stages, something that will affect the overall commitment and make the collaboration more challenging.

The foundation for collaboration is also affected by the contract type for the project. It can either be a subcontractor relationship, joint-venture or parallel contracts. In projects where Groundwork Construction is a subcontractor to Construction, their view of their respective roles differs. Groundwork Construction does not want to be treated as an external subcontractor, being pressured to deliver through economical leverages rather than communication. On the other hand, Construction is torn between how they are used to work, handling Groundwork Construction as any other subcontractor, and giving them too much freedom, which could result in less profit for Construction. There is generally little trust between the parties, both being concerned that the others would be opportunistic and only look to their own financial results. This fear of being taken advantage of overshadows the potential benefits of collaboration.

With parallel contracts, the parties answer directly to the client and might therefore gather a clearer picture of the product. The risks with having parallel contracts are that the incentives for collaboration are not as strong, leading to an increased risk for overseeing tasks in the boundaries between the subsidiaries. Interviewee C1 states that when they have parallel contracts, there are nothing to gain through collaboration. Additionally, interviewee GC3 states that it should not matter what type of contracts they have, but in reality it sets the framework for the collaboration and on who's terms the project will be managed. Even though the contract form in some ways lower the risks for conflicts related to economy through dividing the responsibilities, there might still be conflicts regarding expenses for potential additional work. Parallel contracts do not encourage communication and collaboration between the subsidiaries, but they reduce the risk of Groundwork Construction being pressured as external sub-contractors. The challenge mainly consist of, despite the contract separation, handling potential challenges as one company, giving an overall solution to the client. The interviewees from Groundwork Construction states that they sometimes miss the contact with the client, especially when they are dependent on information being brought forward by Construction. Examples of this is projects with high time pressure where Construction have prioritised their own issues when meeting with the client, as well as when the knowledge transfer has been problematic or lacking. On the other hand, interviewee C1 and C2 argues that Construction Groundwork lacks experience of communicating with clients and therefore, they prefer to manage that contact themselves.

Joint venture as a contract form theoretically comprises some positive aspects since it according to interviewee C1 require transparency, openness and trust from all participants, in order to be a successful project. Nevertheless, it also requires all participants to be interested in collaborating across the subsidiaries, and the best preconditions for ensuring that is to handpick the participants. At the current situation for the Company, this is not possible. The schedules need to be matched for the individuals that would be most beneficial in a joint venture team and due to the overall strained time frames in the Company, this cannot be done without explicit directives from the top management.

The division of labour and the structure with different companies within the Company creates a basis for prioritising the own division instead of seeing the interest of the Company as a whole. This can for example be observed in resource distribution, as well as prioritisation of tasks and money. In ICPs, this might also lead to an ambivalence regarding who to answer to. In theory, it should not matter since all are part of the same company, but that does not always reflect the reality. As mentioned earlier, the white collar workers in the Company and its subsidiaries are based at the same location, within different parts of the building. Due to the relatively small size of company, the distance between the divisions is relatively short and it is easy to walk over and talk to each other. Despite this, there are few joint activities where they can discuss future projects, solutions or development of the collaboration process.

Additionally, it is continuously recurring that the resources are too scarce and the lack of resources makes collaboration and routines come last. The Construction interviewees feel that the development of the subsidiaries might contribute to the common challenges, since the expansion of Construction is perceived as more thought through than the expansion of Groundwork Construction, who struggle to develop accordingly to the increased demand. Additionally, the Groundwork Construction interviewees mentions that there is a general notion in the subsidiary of not being equally strong as Construction, and thereby not having equal possibilities to get their opinion heard. Interviewee C4 also adds that there is lower attendance to information meetings in ICPs than in external projects, when it from a management point of view should be the other way around.

5.1.5   Project Organisation (Community)

In ICPs, it is clear which other actors are involved and all interviewees see the subsidiaries as participants in the activity, even though they might have different views on how important their role is in the activity, see Figure 9. This can partly be explained by the general opinion of the interviewees being that the responsibility division is inadequate, as well as the imprecise internal procurements mentioned by interviewee C3. Construction does often have a majority of the production cost,
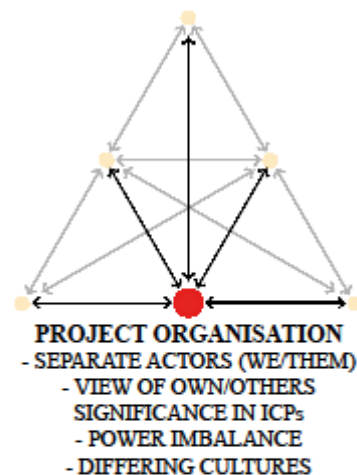
Figure 9: Project Organisation as community

thereby viewing themselves as the owner of the project and accordingly, they become the main contractor. It should also be mentioned that Concrete until recently was a separate company but has been merged with Groundwork Construction and is now a division within Groundwork Construction. This might add to the differing expectations on each other in the company as a whole and adds further challenges within Groundwork Construction through the combining of different cultures to one company.

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Since the subsidiaries still see themselves as separate actors during the whole process, they all keep to their traditional methods and the general view is that it is more efficient to perform most of the work separately. During the production it is also likely to have two site managers, one for Construction and one for Groundwork Construction, both having a separate budget to keep. In order to obtain collaboration in these situations, the intention from both parties needs to be to collaborate, and acknowledging the benefits with doing so. The issues of having separate finances could potentially be bridged in the joint-venture project, but we have not been able to see any results since this refers to a project just recently brought into production.

The expectations on how to be treated by the other participants makes it self-fulfilling prophecies since they look for the actions or tendencies that coincide with their presumptions. One view is that they are determined to be different and do not want to see the similarities between each other. This mostly concerns Construction and Groundwork Construction, while Project Development is not seen as a competitor in the same way. If they would acknowledge the similarities that they do share, they would be able to more easily work on the same task. During the interviews it became evident that they spoke of themselves and their subsidiary as "we" but all other actors as "them", even if several mentioned that they should be one company, also using "should be" instead of "are".

5.1.6 Directives (Rules)

The rules for the collaboration between the subsidiaries can in general be described as ambiguous, which is seen in the diverse interpretations of the rules, see Figure 10. When asking the interviewees what existing guidelines they see regarding collaboration, their answer is either that there are not any, or they relate to the email from the top management that nobody works according to. This email was sent out to the CEOs and project managers in the subsidiaries, explaining how the internal tendering process should be performed within the Company. When analysing the content of the email, it can be interpreted as Construction by default is supposed to be the main contractor. This interpretation further strengthens the belief within Construction that they constitute the core of the Company. This also strengthens the aggravation within Groundwork Construction as it adds to the already existing big brother-complex towards Construction. In the projects managed by Project Development, there is an apprehension that they always should work with and use Construction and Groundwork Construction.

DIRECTIVES
- AMBIGUOUS DIRECTIVES
- DIFFERENT EXPECTATIONS/VIEWS ON EACH OTHER
- LACK OF GUIDELINES FOR COLLABORATION IN ICPs

Figure 10: Directives as rules

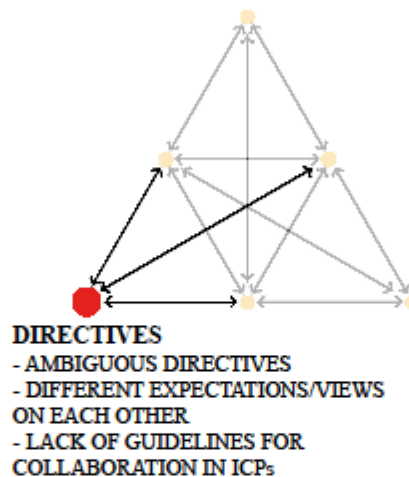All interviewees mention that when possible, Construction should ask Groundwork Construction to perform the groundwork in their projects. Nevertheless, all interviewees declare that it would not be beneficial for the Company if Groundwork Construction only worked in ICPs. The construction interviewees' main argument for this is that it increases the risk of becoming lazy and losing its competitiveness

compared to the current market. They further argue that Groundwork Construction should strive for a mix of both internal and external projects. In theory, the same would apply for Construction, but since Construction is larger and more established than Groundwork Construction, the reality is that it is not possible to collaborate with Groundwork Construction in all projects. Hence, they need to work with other sub-contractors as a complement. Overall, the impression is that there are no clear directives regarding ICPs. Instead, there are differing individual opinions concerning how and what makes the subsidiaries most competitive.

The interviewees care about the collaboration between the subsidiaries and most want to develop it further, but they have different views on what the collaboration should consist of and how to get there. What they all agree on is the need of directives from top management. Interviewee PD1 states that at the present, the attitude towards collaboration in ICPs are strongly connected to the attitude of the project manager. If that person, or persons, perceive collaboration as beneficial, the conditions are significantly improved to achieve a successful project, often resulting in an outcome more beneficial for everyone involved. Interviewee PD1 additionally argues that a change of attitude regarding collaboration should not be forced upon the project participants from higher levels in the hierarchy, as it would only create further challenges rather than being beneficial for the collaboration. Nevertheless, a mutual openness and willingness to cooperate among project participants is required.

Guidelines regarding the collaboration in ICPs might, according to interviewee PD1, not be required, who acknowledge the importance of thinking freely as more advantageous, but also concludes that some directives and templates could be beneficial. All interviewees agree on successful projects being projects with openness, making all the participants feel included. Additionally, project start-up meetings regarding common goals where at least construction managers, project managers, site managers and representatives from the estimation department all participate also adds to the success rate. These are activities that depend on time being allocated for the purpose and when done, they could contribute greatly to the collaboration. In ICPs involving Project Development, the budgeting and tendering are performed together whereas in ICPs with only Construction and Groundwork Construction, that is seldom the case, an additional indicator of the resistance towards collaboration between the two subsidiaries.

5.1.7 Tools

The tools for collaborating in ICPs can be rather diverse and there are many factors affecting how to achieve the object, both physical and psychological. The tools mentioned in Figure 11 are the key characteristics that have been brought up by the interviewees as *affecting the collaboration*.

There are generally many different tasks to perform within a construction project and therefore, there are often many different subcontractors performing the varying
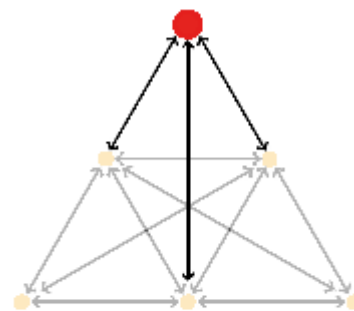
Figure 11: Tools

work. For Construction, one way of saving money is through successful procurements of subcontractors. Construction is also accustomed to a culture where they, in order to make maximum profit, pressures their subcontractors to their limits. Interviewee C2 and C4 states one of the issues with ICPs is that they do not have the same economic leverage on the subcontractor, in this case Groundwork Construction. Nonetheless, interviewee C2 acknowledge that if they could use Groundwork Construction as any other subcontractor, the process would be more efficient but result in loss of the advantages of collaboration and be part of the same company. According to the Groundwork Construction interviewees, the long-term relationships create a basis of trust for future work are more important than getting the lowest price. A good relationship with the subcontractors could lead to a mutually beneficial relationship where money can be saved in the project in the long-term and by returning for future contracts. These different work methods are different cultural tools, used by the subsidiaries when working with their subcontractors. In ICPs, where there are no current directives from the Company, these differing work methods create tensions and even conflicts between Construction and Groundwork Construction. This can be a result of the different expectations they have on each other together with the desire to want to work as they always do because it is by them consider most beneficial way of working.

Additionally, the cultural differences between Construction and Groundwork Construction are visible in the big brother-little brother relationship between the two. Apart from the differing approaches to their subcontractors, interviewee PD1 adds that both Construction and Groundwork Construction lacks experience with collaborating in early stages making collaboration harder. Both subsidiaries rely on their respective accustomed work methods, which further contribute to the lack of mutual understanding. The opinions on how the Company should work with these issues vary between the interviewees. Some argue that it is "the others" that are ignorant and do not understand. Other argue that a greater understanding of each other would solve the issues. It is mostly Project Development that have the latter attitude, most likely as a consequence of their general more holistic perspective of their projects, which so far is not shared with the other subsidiaries. The tool for overcoming these differences is to acknowledge each other, encouraging and working with understanding the different views and perspectives that exist in the Company, requiring communication and openness.

As the main prerequisite for a successful collaboration in ICPs all interviewees mention the importance of chemistry between the subsidiary representatives. Furthermore, they elaborate regarding how a lack of active management of the collaboration can be overcome if good chemistry is present, and the interviewees who have been part of good collaboration projects claim the success as a result of good chemistry between the involved parties.

In the beginning of 2016, a series of workshops were initiated, aiming at generating a common understanding of the culture of the Company. The goal is that all employees will participate in the workshops, beginning with the white collar workers. The workshops are a starting point for developing a common culture, which can be visible throughout the Company, in the everyday work. Additionally, it constitutes a forum for sharing knowledge, something the interviewee states that the organisation is currently lacking. When asking the interviewees for forums or platforms where they can discuss and learn over the subsidiary boundaries, they all refer to time pressure as the reason for not participating in such activities. They all also point out that the top

management need to initiate and allocate time for those kind of activities in order for them to be performed.

Additionally, interviewees C1 and GC3 identify a lack of routine within Project Development and Groundwork Construction. Both are rather newly founded and have not yet found their processes and routines. They also lack senior competence to rely on when continuing to expand, something that becomes more evident when comparing to Construction, who have a clear structure and work process as well as higher staffing with different experiences, while both Project Development and Groundwork Construction are still developing their work methods and routines. In order to create a common language, culture and points of evaluation, knowledge of the own as well as the other subsidiaries are needed. One tangible example of a tool for collaboration, brought forward by interviewee C4, is the joint project start-up meetings. The start-up meeting creates an understanding of the common goal, as well as the process to achieve that goal including who is responsible for what. Currently, the subsidiaries are not even using the same estimation software, and additionally a lot of work is needed to engage all employees to a common knowledge and an open atmosphere where the subsidiaries can learn from each other.

One of the tools for sharing knowledge and gaining a common understanding for the project, is to gather everyone involved in the ICP in the weekly meetings with pre-defined agendas, concerning responsibility division and coordination. These meetings ensure participants being up to date and also facilitate the identification of upcoming challenges, as well as revising of the most efficient action plan for all parties. During these meetings and even more importantly, in the beginning of new projects, the responsibilities are divided, identifying tasks that otherwise might be overlooked. According to interviewee C1, this is not always done and interviewee C2 describes it as more comfortable for the involved parties not to attend these meetings since it is preferred to be well prepared in advance and when not properly prepared it easier to not show up. These types of collective meetings need to be encouraged by the management as a way of implementing it as a natural part of the company culture.

5.1.8   Tensions between Aspects

Tensions are found where the different aspects contradict each other. The severity of tensions varies, but in order to achieve a successful collaboration they need to be addressed. The tensions visualised in red in Figure 12 are the areas where attention, aside from addressing the tensions within the respective aspect, should be directed for implementing institutional and social change, in order to create a common culture. The key characteristics we identified when analysing our findings are brought forward in connection to each aspect, in order to gain an overview of the system.

Between the directives and the subsidiaries, we have not identified any significant tensions. This is also the case between the directives and the project organisation, but it should be mentioned that a lack of directives might create some uncertainty in the project organisation. Between the directives and the object, the ambiguous directives from the management together with the current templates that are not adapted to ICPs, creates uncertainty and tensions. Regarding the interaction between the project organisation and the subsidiaries, and the project organisation and the tools, there are no significant tensions. Nevertheless, the differing view the subsidiaries have on themselves as well as the other subsidiaries create different expectations, which leads

to tensions between the project organisation and the divisionalised structure. Between the project organisation and the object, the relation is unclear since the subsidiaries does not have a well-defined common object, creating tensions. Tensions are also found between the divisionalised structure and the object due to the division that is not facilitating collaboration, but between the divisionalised structure and the subsidiaries, as well as between the subsidiaries and the object, no major tensions were noted. Additionally, the subsidiaries are using different tools for achieving the object, which leads to tensions in collaboration projects, but between the tools and the subject no significant tensions were identified.
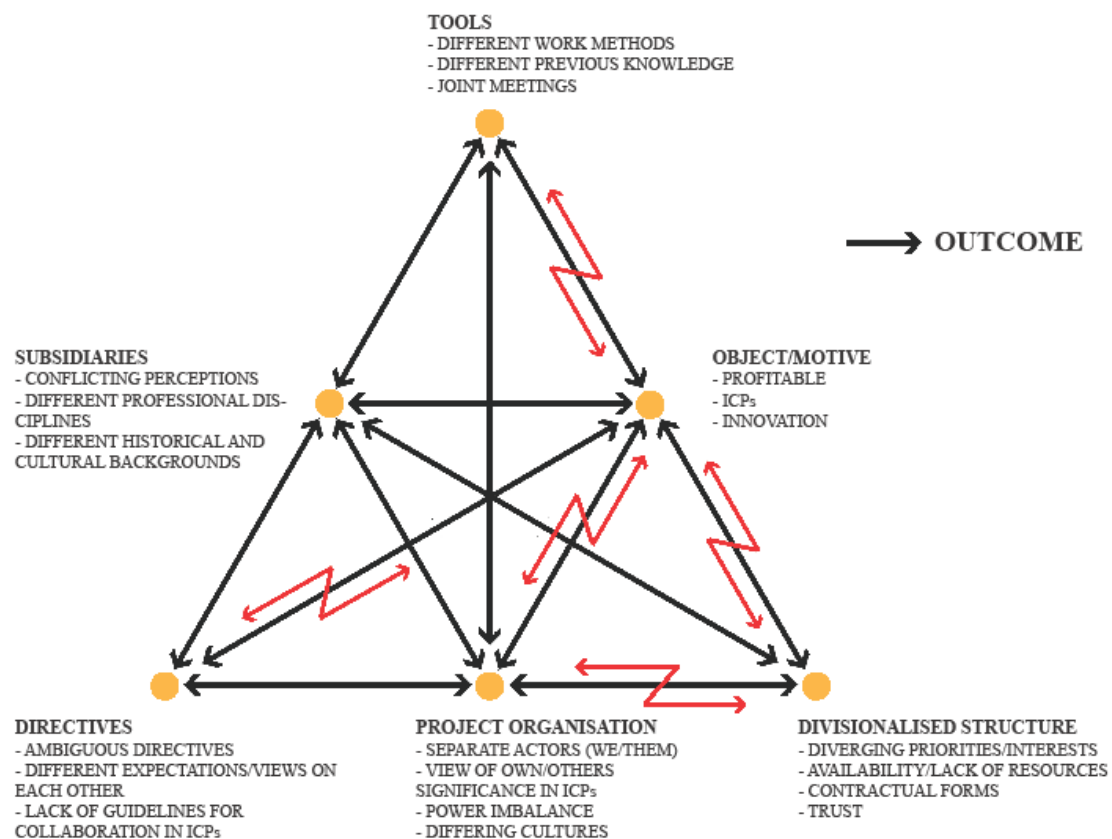
Figure 12: Activity system including tensions

In the tension areas where there is uncertainty due to lack of directives, management or knowledge, uncomfortable situations might appear. As seen in Figure 12, these areas of uncertainty or conflict are identified as boundary regions, where the space is not neutral and the risk of conflicts are apparent. Neither tension areas nor boundary regions are beneficial for an efficient collaboration.

5.2   Knowledge Sharing in the Case Company

Working in projects is common in the construction industry but a project team does not necessarily share their knowledge between the participants in the projects. The

ICP facilitates a mutual engagement of the participants to finalise the task at hand, and the interviewees show a shared understanding of what connects them as individuals. This creates good prerequisites for the participants to create a common trust, as well as sharing knowledge within the ICP. In the terms of collaboration, a shared understanding of a successful project as a goal, besides the financial aspects, is beneficial.

A majority of the interviewees from Construction states that they have little or no interest in working with developing the collaboration in ICP and cannot identify anything in particular that they could learn from the other subsidiaries, which they could not learn from their own organisation. This opinion coincides with the opinion that the focus should be directed towards collaboration within the subsidiary, not between them. Due to this, the engagement of the individuals in the ICP team cannot be seen as entirely mutual. However, all interviewees agree that in order to develop the collaboration in ICPs, the top management need to set aside time for this and develop guiding directives, initiating a change that could facilitate collaboration as well as give better preconditions for learning from each other.

Even though the interviewees' opinions differ on whether or not working in ICPs is beneficial, as well as how to perform the actual work, the individuals in the ICP team still share an understanding of why they are there and how they are connected. Their interactions clearly connect them to each other in a joint community. This also applies to the subsidiaries, whose shared understanding of their community is strong.

5.2.1   Mutual Engagement and Trust in ICPs

Within the subsidiaries, there is a greater amount of mutual engagement as well as knowledge sharing than between the subsidiaries in ICPs, and the interviewees often refer to their own subsidiary as "we" and the other subsidiaries as "them". The interviewees mention issues and challenges within their respective subsidiary, but they also emphasise their collaborative relationship and openness to their colleagues' differing competencies. Most interviewees also agree that the company culture or climate are fairly open and that it is easy to ask others for help if needed. The challenges seem to be connected to time and to knowing who to turn to, as well as individual personality and familiarity of the Company.

Most of our interviewees agree that a greater understanding of the other subsidiaries would be beneficial for the efficiency of both internal and external construction projects. Furthermore, it would also lead to heightened efficiency in ICP, since more employees know who to ask about earlier experiences regarding specific issues. The knowledge within the company as a whole would in practice be more evenly distributed, benefitting from both senior persons as well as new employees within the organisation. Emphasising these aspects and seeing the benefits of collaborating can be a potential basis for developing a common understanding across the subsidiary borders.

All interviewees agree that ICP setting often provides good possibilities to meet face-to-face in the ICP project team, which can be helpful for creating trust and a mutual engagement to the common task. Nevertheless, many of them adds that there are exceptions when the time pressure is too high and some of the project team members need to work on two or more projects simultaneously. The interviewees also agree that there often are issues regarding knowing who is who and what roles the members

within the project team have, as well as what responsibilities that are connected to a certain working title since this varies between the subsidiaries and sometimes even projects. This further implies that it might be unclear who to ask about a certain issue, and adding the previous statement regarding working on many parallel projects, some personnel might not be at the office or the site when expected or desired to. This situation will easily result in the individuals involved in the projects either believes that everyone shares an engagement to the task when they in reality do not, or that the different parties sees the others as not engages when everyone actually are. The second case can easily lead to the involved parties not seeing any reasons for collective learning. In both cases, no mutual engagement to the ICP is achieved.

5.2.2   Forums for Knowledge Sharing

The interviewees states that there is currently no apparent forum for sharing knowledge, either in formal or informal contexts. Some of them also adds that it should be the human resources department who should initiate that type of activities since they are the only ones who would have the time and will to organise it. Common activities outside of work is a good thing and are initiated rather regularly, but since they mostly occur in evenings or at weekends, many, especially those who have children, does not want to spend more time at work than what they already do.

Furthermore, the interviewees argue that there is a need for additional forums for common discussions between the employees of the different subsidiaries, in order to create a greater understanding of each other. Both formal and informal meetings are needed, and all forums need a clear agenda as well as well communicated purpose in order for the employees to feel that it is worth their time. The directives for implementing these types of meetings need to come from the top management, who through this will show the employees that these issues are important. Potential complaining should be immediately addressed, to ensure that a negative attitude towards the meetings are not spread.

5.2.3   Common Language in ICPs

The interviewees all concur that they lack common procedures and methods between the subsidiaries, which makes it challenging to find a common language in the ICP teams. The internal structures in the subsidiaries are similarly organised, the ambition being the flat organisation with close to the management, but based on the interviewees' descriptions both regarding their own as well as the other subsidiaries, it still varies. The interviewees states that this is largely connected to how recent the subsidiaries were founded, as well as the personality of the respective CEO. In the ICP teams, the common goal is to successfully finish the project, but in most projects there are not time enough for the participants to create a common repertoire to share their knowledge. Nonetheless, the individuals will over time have the possibility to develop shared language and procedures, but since many of the interviewees are under a great amount of time pressure and are working with different people in different projects, the preconditions are not optimal.

5.3 Interviewees' Thoughts for Future Work in ICPs

Based on the interviews, it becomes clear that many employees share an understanding that successful collaboration are built on openness in the project environment, combined with all participants feeling involved in the project. Even though they share this notion, it is not transformed into actions which reflects back, due to the lack of incentives for working in that way as well as the fact that there are few managers responsible for these ICPs that actually express that collaboration is desirable. The shortage of resources and especially the lack of time makes it difficult to find opportunities to discuss and improve the collaboration, even though prioritising it would benefit the whole company. Nevertheless, the interviewees mention some ICPs that had a mutual understanding over the subsidiary boundaries and were successful, where the experiences could be used in future collaboration projects. It is evident that there are individuals in the Company that are interested in and see the value of developing the collaboration in ICPs, and combining these individuals in a project team would create good prerequisites for a successful collaboration.

Additionally, some of the interviewees expressed a desire for a broader understanding for the challenges the different subsidiaries face in their daily work. Furthermore, the interviewees representing Groundwork Construction express a desire to not only be seen as a subcontractor doing the groundwork for housing, they wish to diversify their competence with additional infrastructure projects. If they were to take on more external project with their currently already maximized capacity, they would not be able to be involved in all Construction projects.

The Company is a growing company and even though it would be beneficial to further develop the collaboration processes, it might not be prioritised due to the degree of coordination that is necessary for completing the current projects. The interviewees also add that a clear and common description of the process including time frame, organisation and division of responsibility, created through discussions with everyone involved in the project, would be beneficial for all involved parties. Interviewee C2 and PD1 adds that a conflict management plan for how to act and handle conflicts in ICPs could also contribute to making the ICPs a friendlier and more secure environment to be part of. At the present, it is noticeable that when the directives are unclear, in an environment with scarce resources where the participants' agendas are already full, they do not want to perform tasks that might not be within their responsibility, thereby prioritising other tasks.

6   Discussion and Conclusion

In this section, the findings are evaluated and elaborated on, starting with the theoretical aspects focusing on Activity Theory and the CHAT framework. Thereafter follows a discussion regarding organisational implications, mutual understanding and knowledge sharing, as well as our suggestions to future research.

6.1   Classification of Findings within the Framework

Using an Activity Theory framework as a tool for mapping and understanding the collaboration process and its components has been a good choice and moreover it has helped with delimiting our study. When applying the framework to the data, sorting it into the different aspects, some interpretation of the aspects has been needed. Rather than focusing on where the different findings are situated within the framework, the emphasis has been on identifying and acknowledging the findings' influence on the activity. In order to develop the collaboration, an understanding of what affects the collaboration between the subsidiaries is required. The CHAT framework has been useful and made the mapping process manageable. The findings included for each aspect (in findings and analysis) were the ones recurring in the data collection and identified as of great influence. There are findings that could have been included in the process but were chosen not to, due to either, or a combination of, too much subjectivity and too much abstraction.

In this thesis, the activity of analysis has been *collaboration between subsidiaries in Internal Construction Projects (ICPs)*. As mentioned in Chapter 5; Findings and analysis, there are no shared non-financial objects, and in line with the work by Edwards & Kinti (2010) this results in no motives for keeping this activity together. Furthermore, as mentioned in theory (Engeström, 1999), an activity is kept together by a shared object and thereby it can be arguable if the activity that we defined fulfills the requirements of the framework. We argue that even though there is not a shared non-financial object today, when successful collaboration in ICPs is the case, resulting in an activity in coherence with the CHAT framework, there will be one.

Regarding the community, there are different ways of defining it, one being the group of individuals that the subject identifies itself as being a part of during the activity (Yamagata-Lynch 2010), or the group of individuals that share an interest in the same object (Foot, 2001). We chose to identify the community according to the first description, the individuals that actually participate in the ICP, since the focus of our study is to analyse the collaboration between the subsidiaries within ICPs, whilst maintaining as much of a non-economic perspective as possible. If including all parties with an interest in ICPs in this study, where the focus is on the collaboration between the subsidiaries in ICPs, the number of involved parties would have become too many to manage in an in-depth and professional manner.

6.2   CHAT as a Basis for Analysis

Despite the initial perception of Activity Theory and the CHAT framework as rather complex, after achieving a deeper understanding of its structure it provides an efficient and useful tool for analysing collaboration. It comprises a starting point for dividing and identifying the different influencing factors of collaboration and when

familiarised with the theory. The initial complexity might be the reason that the theory is not yet widely recognised within the construction industry, but after the initial familiarisation it is easy to implement the system, where the structure is well thought through and relevant for studying collaboration.

There are some criticism regarding the use of the CHAT framework and the risk of oversimplifying the collaboration process, it therefore being not entirely reliable (Toomela, 2000). One needs to understand and remember that in order to perform an analysis, some simplifications or generalisations are necessary (Hennink, 2011). Nonetheless, the CHAT framework provides a tool for mapping the general areas of tension that need to be addressed in order to improve the collaboration. By using the framework as an analysis method of the activity rather than a tool for explaining the full complexity of the participants' psychology, the model can be used for analysing the system.

6.3   Using the Results

In the mapping and investigation of the collaboration in ICPs, some contradictions both within and between the aspects in the activity has been emphasised. As Foot (2001) mentioned, these areas does not necessarily need to be seen as weaknesses, but rather areas indicating mobility and capacity of development. Therefore, when it is elaborated on how to address the issues and how to potentially overcome them, the recommendations should not be regarded as separate quick fixes that will make the problems disappear, but should rather be seen as a basis for working with a social and institutional change. None of the suggested improvements can be done without addressing the challenge of implementing them throughout the organisation. If changes to the activity are performed without the understanding and consent of the activity participants, there is a risk of creating more tensions due to different perspectives, expectations, management and understandings.

A clear framework as well as acknowledgment from the management is essential for allowing and encouraging the work of overcoming the differences between the subsidiaries in ICPs. Taking shortcuts such as creating new divisions of labour, new directives (rules) from the top management, or new tools within the separate subsidiaries in order to, for example, create frameworks enforcing people to work accordingly, does not work. This has been mentioned in theory by Foot (2001) as well as seen in for example the email instructions regarding internal tendering within the Company, and could instead result in more tensions and challenges within the collaboration.

6.4   Organisational and Structural Implications

In Findings and Analysis focus has been on identifying tensions (tension areas) when collaborating in ICPs. Edwards & Kinti (2003) describe tensions areas, as well as boundary spaces, as caused by a lack of directives, management or knowledge, and when a conflict occurs between the identity and the knowledge of an individual, discomfort follows. Some of the consequences of this discomfort might be a reluctance towards the work place or the colleagues, lack of motivation as well as inspiration, and it could also affect the work that is not within the discomfort zone which neither is positive for achieving well-functioning collaboration. The

individual's competencies might not be compatible with the work assignments, which could lead to questioning of the own professional identity. Most employees will be exposed for a limited amount of work within the boundary spaces, but if continuously performing work within the discomfort zone over a longer period of time, actions in order to avoid this need to be taken. Due to the discomfort perceived in boundary areas management related to removing this feeling is needed in order to gain efficient collaboration.

6.4.1   Issues and Effects of the Organisational Structure

The organisational structure of the Company is a breeding ground for conflicting perspectives, priorities and coordination difficulties, which easily result in sub-optimisation between the subsidiaries. This will always be the case when goals, directives and practices are either created at separate chambers or when the main overall goals and directives are not sufficiently specific and hands-on in order to be applied in the same way at all levels (Jacobsen and Thorsvik, 2008). It is evident that the organisation of this study lacks active management regarding the collaboration and avoidance of sub-optimisation, even though the subject of collaboration between subsidiaries and the apprehension that they should be able to act as one company engage a lot of people. The workshops concerning company culture will not contribute to less sub-optimisation since the focus is not on mutually defined long-term goals and objects, which Edwards & Kinti (2010) and Toivaianen (2003) stated as necessary for avoiding conflicting interest and thereby sub-optimisation. The focus of mutually defines goals is also in coherence with statements made by Jacobsen and Thorsvik (2008) regarding how to avoid sub-optimisation. Even if the subsidiaries were divisions or departments within one company, instead of separate companies in a group with their own economy, the differing perspectives and priorities would still need attention in order to coordinate the participants and achieve successful collaboration in ICPs. When working exclusively in separate units, the participants create their own intermediate goals and over time their own practices, which creates tensions when they are to collaborate in ICPs as representatives of their division or department or subsidiary. Thereby the organisational structure is in conflict with the prerequisites of successful collaboration according to Edwards & Kinti (2010), Toivanen (2003) and Boland & Tenkasi (1995). The solution is to create a feeling of being one project team with shared goals and not consisting of representatives trying to make sure their own part is performed successfully. To achieve the best outcome for a company a feeling of being one project team with shared goals acknowledging and using the benefits of collaboration between different professionals, combining areas of expertise and experience is a prerequisite.

The organisational structure of the Company reflects the ambition of having a flat organisation structure and the employees emphasise flexibility and closeness to management as advantages of being part of such a structure. Nonetheless, there still exists some uncertainty regarding the decision process, and especially concerning how much decision power the individuals apprehend they have compared to the need of awaiting instructions from higher levels. This uncertainty of what is included in their professional role creates additional uncertainty regarding what is expected of the employee resulting in making the actions of employees be performed in the boundary region of their profession. As stated by Edwards & Kinti (2010), no one is comfortable acting within the boundary region and it could additionally lead to more

conflicts and tension together with a feeling of one's personality being challenged. It could furthermore have the consequence of making individuals avoid getting into these situations where they need to act in the boundary region making collaboration more difficult.

Additionally, the level of involvement from higher levels within the organisational structure differ between the subsidiaries, which adds to the conflicting expectations they have on each other regarding what the different roles within the subsidiaries are able to perform. Lui et al. (2006) mentions that the more similar organisations are, the easier collaboration becomes, and different expectations and views of each other is therefore not compliant and beneficial for collaboration. The different expectations could lead to additional conflicts and frustration, not beneficial for the collaboration.

6.4.2   Importance of Directives

Neither a lack of rules and directives, nor too many of them, benefits the collaboration in ICPs, according to Jacobsen & Thorsvik (2008). The current lack of directives for how and why the employees should engage in ICPs creates an uncertainty that combined with time pressure results in them continuing to work as they are used to, rather than engaging in the collaboration process. Uncertainty as well as interdependence are, according to Lui et al. (2006), apparent in collaboration and creates an unwillingness to engage in collaboration. This lack of directives is problematic, but too many directives would also be challenging if the focus instead is directed to complete separate tasks, especially to those evaluated upon, since evaluating collaboration is not easily done. Hence, collaboration does not become the foci but rather the completion of tasks for the sake of completing them, with the result being that the holistic perspective is lost. The consequences could also be unnecessarily bureaucratic processes and lack of opportunities for innovation, an environment that is not compatible with the Company's ideas and desires for the organisation. Additionally, with overly strict directives applied to projects that differs from project to project, the result will might be non-compliant to the projects and will therefore be disregarded by the employees, even though parts of the directives and rules are applicable and helpful. Therefore, attention needs to be directed towards directives in order to ensure an appropriate amount of them, which also is compliant with the employees and work tasks. The issues of an appropriate amount of regulation are previously addressed by Jacobsen & Thorsvik (2008) and Clegg et al. (2011).

The current directives, such as the handbook containing project guidelines, is mostly applicable for external projects, presuming internal and external projects being the same and not requiring extra attention regarding the relation between the subsidiaries. One could argue that not acknowledging the fact that ICPs are different from external projects, requiring different management, constitutes risks of more tension and larger boundary regions with unclear responsibilities. Combined with the unwillingness to take part of ICPs, if nothing is changed, the participants in ICPs will continue to start on less than zero when being put together in their project team.

Regarding the guiding documents that are available for the employees, there is a noted correlation between more thorough descriptions of what is needed during design projects and more successful collaboration. The guides combined with the representative/representatives of Project Development taking responsibility for

coordination and follow-up, creates a project environment were all participant become more engaged and collaborative, and more successful collaboration is achieved.

The content and structure of the guides also highlight and require assessing the right person to the right position in the Company, especially at the position of construction manager, in order to achieve a collaborative environment. In accordance with the statements by Boland and Tenkasi (1995), this person needs to understand and be able to reflect on the collaboration process in order to further the collaboration within the ICP. If both time and interest in collaboration is present for the construction manager, a better collaboration across organisational boundaries could likely be developed, due to active management. Active management is mentioned as important for collaboration by Wenger et al. (2002) and Gluch et al. (2013).

As long as Construction sees themselves as being the core of the Company and Groundwork Construction perceive them as dominant and more influential, there will be tensions in the collaboration. In order to create a community where the collaboration improves the results instead of being viewed as a hinder that would be better to avoid, clear responsibility division and directives are needed both from the top management and the project managers, which coincides with the ideas of Clegg et al. (2011). The reasons for the subsidiaries working together need to be clearly conveyed regardless of the procurement and contract form, something that is currently missing. Elaborated from ideas previously described by Edwards & Kinti (2010) and Boland & Tenkasi (1995) indicates that if the goal is to work more with ICPs, a genuine perception as the project team as "we", representing one company, need to be created, something that is not easily nor quickly done, and requires a common effort of communicating.

6.4.3 Professional Differences Between the Subsidiaries

As acknowledged in Chapter 5; Findings and Analysis, there are differences in the work methods chosen and applied by the subsidiaries. Their respective methods are deep-rooted cultural tools. By being identified as cultural tools they are of high significance for the collaboration, as the participant identify themselves with them (Yamagata-Lynch, 2010). The cultural tool concerns the work process, which in collaboration needs to be compatible in order to achieve a successful collaboration, and focus on how to merge and harmonise the processes is required. Finding and creating a shared work process for the ICPs is essential but challenging, since the different subsidiaries clearly view themselves as separate actors with separate organisations. This is further supported by Boland & Tenkasi (1995) and Edwards & Kinti (2010).

Throughout this study, it has become evident that there are differing perspectives regarding the relations and organisation level between the subsidiaries. A general apprehension from Construction interviewees is that the subsidiaries of the group, Project Development and Groundwork Construction, are equal to the subsidiaries owned by Construction which they use as subcontractors. Especially Groundwork Construction feel that Construction generally treats them as a subcontractor and it is not appreciated by them. This might relate to Construction being accustomed to having a contractor-subcontractor relationship to their subsidiaries, which is reflected upon the relationships to the other subsidiaries in the Company. The importance of a common understanding of each other is addressed by Boland & Tenkasi (1995),

where the differing expectations and apprehensions of one another comes in the way for successful collaboration. Thereby, management need to define what the relationship between the subsidiaries should be and continuously work with enforcing that view.

6.5   The Importance of Mutual Understanding

By collaborating across the subsidiary borders, the challenges and solutions found in a project can, as described by Wenger (1998), be shared and further spread in the different subsidiaries. This creates a common knowledge and a greater general understanding of each other, including the individuals not taking part in that specific project. Today, the participants in ICPs have a common understanding of the goal being to make as much profit as possible. Through this purely financial incentive they engage in collaboration, but there are no designated forums for sharing their knowledge and learn from each other in order to further future collaborations.

The benefits of gaining a shared understanding of each other's challenges, tasks and perspectives from the other subsidiaries creates prerequisites for successful collaboration (Toiviainen, 2003). Furthermore, based on the findings of Lui et al. (2006), by having a shared trust for each other, the problem of feeling exposed to risks and uncertainties by the collaborative partners is bridged through personal relationships and openness within the group, combined with a mutual engagement to the task. With a basis in the findings of Wenger et al. (2002), the mutual engagement in the group create a basis for innovation, development as well as discussions concerning work and collaboration processes. Through collaboration across the subsidiaries, the participants can help each other with keeping up with new technologies and trends as a means of further facilitating innovation but in order for this to happen, there must be time set aside for these type of discussions. Additionally, the environment could also be helpful to avoid conflicting goals and priorities, which can result in sub-optimisation. Nevertheless, it should also be acknowledged that a shared understanding does not guarantee a coordination of tasks, there would still be a need for recognising the collaboration as a separate process in need of attention and resources.

There are currently few forums in the Company for sharing knowledge as well as discussing differences and similarities, and the interviewees continue to come back to the time pressure being the reason for this. Through a common understanding of each other and an open atmosphere where it is easy to share knowledge, there will, as previously brought forward by (Edwards & Kinti, 2010), be less need for pressuring through economic leverages. Also, as mentioned by Boland & Tenkasi (1995), a greater understanding for each other will reduce the potential uncertainties and doubts the participants have towards the other parties when entering an ICP, since it is easier to get a general view of the project and the different areas of responsibility. The concerns based on the lack of routine in Project Development and Groundwork Construction would also be reduced through a more open atmosphere and more clear common goals.

Even though they could inspire development, tensions within the activity system are not desirable and the creation of new practices/tools need to be in line with the company as a whole in order to not add more tensions. The workshops concerning common understanding of the company culture and their focus on how the company

culture influences the everyday work is a starting point. The workshops addresses how the current core values of the Company should be used in conflicts and the daily work, whilst the important aspects of creating a common understanding of each other as well as each other's problems and perspectives, as emphasised by Boland & Tenkasi (1995) and Edwards and Kinti (2010), tend to be lost. Additionally, the focus tends to be directed towards common values that they should share, rather than what values they actually share. There is a need for forums and time set aside for working and understanding the different inputs, underlying motives and reasons the participants of the project brings.

The procurement method and contract form of an ICP does not necessarily matter for the collaboration performance, which coincides with the result of a study by Kumaraswamy et al. (2008), as long as the reasons for and consequences of choosing one form over the others are clearly communicated to the whole project team. Furthermore, the goal congruence and the fairness motives need to be acknowledged in order to create successful collaboration. The management of the Company need to be clearer when communicating these issues to the subsidiaries, as well as the project managers in the specific project.

Regarding the motivation for working towards achieving the object, the interviewees had great difficulties thinking of non-economic incentives or tools, which as previously stated by Edwards & Kinti (2010) are important for keeping the activity together. In order to overcome the attitude that it is "the others" that does not understand and are difficult to work with, all employees need to acknowledge that it might be a common issue, and that blaming each other for mistakes in a collaboration project will have a negative effect on both the current project as well as potential upcoming projects. As stated by Wenger (1998) and Wenger-Trayner (2015), people do not need to get along just because they share an interest or object, and even though mutual agreement is not a prerequisite for a successful collaboration, the relationships between the individuals in the community is what creates the connection to each other and unites the community. The interviewees all argue that due to time pressure and lack of resources, creating the feeling of a community across the subsidiary boundaries is not possible to achieve in ICP teams. Nevertheless, they have a sense of belonging to the Company, but the belonging is connected to the separate subsidiaries rather than the collaboration projects.

6.6   Knowledge Sharing in ICPs

Learning and knowledge sharing within construction projects which consist of people with different professions and backgrounds is difficult (Dubois and Gadde, 2002; Dainty et al., 2006) but many benefits are to be gained. In accordance with Engwall (2003), when a project is finalised, the project-related challenges that have been collectively solved will be lost if not properly communicated, and the learning from past experiences will be hampered. Based on the findings of Wenger & Snyder (2000), ICPs create potential prerequisites for the participants to share their knowledge and further on spread it within the whole organisation, which if acknowledged and encouraged by the management could be beneficial for the Company. In order to do so in an effective manner, it would require an open atmosphere and a positive attitude towards collaboration over the subsidiary boundaries. This could be done by initiating and encouraging the potential forums that combines individuals from the different subsidiaries. By nurturing these communities

and encouraging their development within the Company, the results might be a greater common knowledge and understanding together with trust between the members of the knowledge sharing group for example participants in an ICP.

In knowledge sharing communities which have been spending a lot of time exclusively with each other, their own language and tools will be developed. This could happen in a group such as an ICP group, and the language and tools created might be unique for the group and therefore only understood by the members of the group (Wenger-Trayner, 2015; Wenger et al., 2002). As further mentioned by Wenger et al. (2002) and Ruikar et al. (2008), the shared language and tools creates a foundation for a common identity and culture but will at the same time create some challenges, one being the potential difficulty for someone that is not part of the common culture and speaks the same language to have or get the mandate to initiate change. In the collaboration between the subsidiaries in ICPs, this might be an initial challenge to overcome when the individuals from different subsidiaries have different cultures. A challenge that need to be addressed by the project management as soon as it is identified, where acknowledging the differences might be enough to create a more open and including atmosphere, once again emphasising the importance of the managements' attitude towards collaboration and knowledge sharing. A clear and active management is needed, that shows interest of improving the collaboration as well as the attitudes towards each other. Furthermore by participating in several different knowledge sharing communities and ICPs an understanding shared by several ICP groups can be obtained.

6.7   Possibility of Developing Collaboration in ICPs

There are individuals in the Company who acknowledge the benefits of internal collaboration, are motivated by ICPs and moreover, are driven to develop them. A way of encouraging these individuals could be by setting resources aside and assigning them primarily to ICPs. Theoretically, these individuals could be given the possibility to work with developing the most efficient ways for the Company to work with ICPs and explore how to successively implement the required work processes. Due to the current time pressure and lack of resources, it is not possible to handpick the team members to the majority of the construction projects in the Company, but in order for ICPs to be more competitive this needs to be prioritised by the management. This might be achieved through encouragement and acknowledgement of collaboration in ICPs by working together, creating a positive view of these types of projects.

By only letting the individuals who are interested in or are acknowledging the benefits of collaboration to participate in the process of development, the challenges will, as discussed by Wenger (1998), be that the new processes and a shared understanding will be limited to the participants of that specific work group. The ones in the greatest need of recognising and exploring the benefits are the ones that are not interested. Additionally, elaborating from the findings of Lui et al. (2006), the interpersonal chemistry between the team members matter, and by striving to as far as possible combine compatible individuals, a positive view and successful outcome of the project will be more likely. In order to get the new practices to become rooted and have all employees at disposal for staffing the ICPs, the development of new practices, expectations and views on the ICPs are necessary. A process where all

employees need to, in one way or another, participate, or the result will be the same or even worse tensions within or between the aspects of the activity.

6.8 Influence of Methodology

When analysing our data, we have used an interpretative approach as described by Hennink et al. (2011). The approach acknowledges the subjectivity of researchers or interviewers, as how their backgrounds, emotions and characteristics influences the interpretation of the data. To maintain an objective approach throughout the interview process, a constant reflexivity was needed which was achieved by constantly reminding ourselves to reflect on our potential influence on the interviewee and data interpretation. Through this self-awareness, we were able to acknowledge our differences as well as similarities as researchers but also discuss how we might affect the interviewees. By taking turns in interviewing, our combined and relatively differing backgrounds from architecture as well as civil engineering additionally provided differentiating perspectives on the issue of unintentional leading questions, where the person taking note were extra attentive to such tendencies. Through this, we also gained different perspectives and interpretations of subtler indicators as body language and tone of speak.

Regarding the number of interviewees representing the Company, there is no guarantee that they represent the opinions of all other employees. Special attention have therefore been directed to, as far as possible, separate their personal opinions from the general ideas and continuously reflect back on potential subjective interpretations. As it is a qualitative study with the purpose of exploring the subjective views on collaboration, the subjectivity will always be a factor. If acknowledging this subjectivity and taking it into account, the results can be of value for both the Company as well as other contractors exploring the same issues.

6.9 Future Applicability and Research

During the process of this thesis we have elaborated around how our results can be generalised and applicable in future research and implemented in the construction industry. As mentioned by Yamagata-Lynch (2007), the obtained results relate to a specific context and therefore cannot be generalised. In order to achieve results that are generally applicable to contractors, several additional studies of other contractors need to be conducted. However, in this thesis it has been shown that the methodological approach and theoretical framework provides a basis for these future studies, as it illustrates the applicability of Activity Theory as a tool for identifying tensions in the collaboration between organisations and professionals in the construction industry. The theory has great potential in future research and can be a pathbreaker for understanding and developing collaboration across professional and organisational borders.

7 Recommendations for Developing Collaboration at the Case Company

Construction projects require individuals with different competences to work together and share knowledge in order to be competitive and successfully complete projects. In the future, internal construction projects (ICPs) will be further used since they enable production of more competitive tenders due to less mark-ups, as well as contributing to creating a supportive environment for innovation, which is partly enabled by having competences in-house. The tensions and challenges identified in the analysis of this thesis bring forward some areas of improvement to address in order to improve the collaboration processes in the Company.

In the ICPs, the respective work processes of the three different subsidiaries are one of their tools during collaboration, and due to the subsidiaries' different degree of establishment and routine within the organisation, these processes differ between them. Tensions appear when the participants of the ICPs try to implement their own way of working without properly communicating and establishing the approach among the other participants. *Guidelines and directives from the top management* regarding the work process in ICPs could function as a uniting factor for the project participants, as it is something to start at and proceed from as a team. It could also function as a way of emphasising that the ICP is its own type of project, in need of a different approach and a corresponding management than the external project, something that currently is not apparent. However, the management need to *emphasise the positive aspects of collaboration* and *motivate* the participants in the project team to communicate and share their knowledge between one another to develop their understanding and trust between the subsidiaries, in order to achieve an improved collaboration.

In order to benefit from the synergy effects of linking different competencies within one group, the Company, collaboration between them is needed. The current view of ICPs as consisting of different responsibility areas divided into the different competencies, making the parts of the project separated from each other not favourable. Moreover, the apprehension that the most efficient way of managing ICPs is with as little interaction with the other parties as possible, since interaction might lead to additional work load for all involved parties. This is an effective work process in the short term perspective to get the task done, but in order to reach the long term benefits of collaboration, such as innovation and a development of the Company as a whole, a *common object and motive for collaborating* need to be identified and communicated to the involved parties. In a perfect world this would be developed and acknowledged from the project team members themselves, but with the current lack of time and resources, and previous experiences from working in ICPs, they need assistance for this to be developed. These ICPs demand *active management* of the collaboration process, which is something that today is perceived to be of no priority from management and others in the deficient resource situation. Furthermore, it is important that the management *acknowledge* that internal and external projects have different prerequisites and challenges, as well as the different professional and organisational identities of the employees within the respective subsidiaries, which influences the collaboration between them. To actively address these differences and develop the collaboration between the subsidiaries, resources such as time, people and money are needed. These have to be allocated by the management which thereby would indicate an interest in developing the collaboration.

From this thesis it can be concluded that there is a need for an organisational structure that encourages the apprehension of being *one company* and *one unified project team* with common goals, working for and together with each other. Today, there are companies within the Company, resulting in sub-optimisation and conflicting interests, policies and roles, which leads to uncertainty regarding responsibilities and on what premises the collaboration should be performed. *Clarity* regarding these areas, answering how collaboration should be performed and the *purpose* of collaboration, is essential and thereby need to be addressed from higher up in the organisation, especially as one of the current problems being that the subsidiaries cannot really express what the advantages and benefits of collaboration are.

Another challenge for achieving a successful collaboration is the differing expectations and apprehensions the subsidiaries have of each other. This, together with the unrealistic and differing views as well as the expectations, result in tensions within the activity, making collaboration difficult. This is partly based upon a lack of *understanding* and *trust* of each other. In order to obtain an understanding for the other participants of ICPs, a forum where time is dedicated to create a common understanding is a necessity. A greater amount of understanding would additionally create connections between the participants that facilitates trust, which adds to the preconditions for good collaboration. Especially exploring and creating an understanding of the perspectives the other subsidiaries bring to the table and how that can and will affect the interaction in the joint projects, would be beneficial. It is important that everyone who will be involved in ICPs participate in the process of developing common goals and a shared understanding. For the shared understanding to have an effect, it needs to be widely spread and accepted within the project group, or the collaboration would still be negatively affected.

One way of achieving better preconditions for collaboration is through encouraging potential knowledge sharing groups over the subsidiary boundaries, due to its potential of being a facilitator for creating a shared knowledge and understanding. ICPs might constitute such a group or forum. Even though knowledge sharing is not the only solution, nor a quick fix, the benefits with such communities are the creation of the previously mentioned shared understanding of each other. Additionally, this will lead to less conflicts and disagreements between the participants, resulting in less resistance towards participating in future ICPs. If there are no preconditions for this type of forums, lack of encouragement and prerequisites as well as no actions taken for creating them, there is a very low probability for them being created.

This thesis should not be used as a manual for quick fixes. Hence, the aspects of the activity system triangle is treated as separate parts, rather than its intentional use as a basis for implementing social and institutional change within the organisation and professions that are participating in the activity. By using this thesis as a starting point, the potential challenges for the collaboration can be identified and addressed in order to improve the overall collaboration processes, both for the Company as well as other contractors within the construction industry.

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Appendix A – Interview guides

Intervjuguide - Tjänstemän
Introduktion

Vi presenterar oss själva och vårt arbete – studerar de interna samarbetena mellan de tre dotterbolagen som ingår i koncernen samt hur kulturen ser ut både inom dessa och koncernen i sin helhet.

Mål med intervjun

Vårt mål med de här intervjuerna är att få en bild av organisationen från medarbetarnas perspektiv och en insyn i verksamheten som inte är möjliga att utläsa i styrdokument och dylikt. Syftet med hela rapporten är att den i framtiden ska vara till hjälp för företaget i arbetet med att utveckla samarbetet inom koncernen. Vi vill också att detta tillfälle ska innebära möjligheten att reflektera kring situationen idag och framtiden.

Etiska aspekter

Det som sägs här idag kommer behandlas anonymt av oss, inga namn kommer förekomma i rapporten. Vi vill också spela in samtalet för att vi bara är två och kunna kolla att vi inte missat något och att vi korrekt återspeglat vad ni sagt. Samtalet kommer inte transkriberas i sin helhet och om vi skulle vilja citera dig kommer vi kolla detta med dig först. Sekretessavtal har vi också skrivit på.

Berätta om dig själv i korthet

> Position inom företaget?
>
> Hur länge har du varit på företaget?
>
> Hur hamnade du på företaget?
>
> Tidigare positioner inom företaget?
>
> Tidigare arbetsplatser och positioner där?
>
> Utbildning?

Hur skulle du i korthet beskriva företaget?

> Externt/internt

Vi jobbar just nu med att kartlägga organisationen i stort och mer specifikt vilka projekt som passar in i vår studie.

Är du i dagsläget del av några projekt där två eller alla dotterbolag samarbetar?

> Om ja, vilket/vilka projekt?

Hur skulle du beskriva projektet/projekten från ett kultur- och samarbetesperspektiv?

Vilka skulle du säga är nyckelpersonerna i de projekten?

Vem tog ansvar för samordningen?

Vilken typ av samarbete - UE, sidoentreprenör etc.?

Har du tidigare varit del i projekt av liknande karaktär? (Där två eller alla dotterbolag samarbetar internt.)

Om ja – vilka?

Hur skulle du beskriva dessa projekt från ett kultur- och samarbetesperspektiv?

Vilka skulle du säga är nyckelpersonerna i de projekten?

Vem/vilka tog ansvar för samordningen?

Vilken typ av samarbete - UE, sidoentreprenör etc.?

Hur skulle du beskriva hur samarbetet ser ut idag inom koncernen?

Vilka direktiv finns för gemensamma projekt och kommunikationen kring dessa?

Vilka kommunikationskanaler/plattformar används idag?

Hur och när sker kommunikationen?

Hur uppfattas kommunikationen?

Hur arbetar ni med detta idag?

Hur skulle du vilja att det såg ut?

Vilka incitament skulle du säga det finns för medarbetarna att arbeta för ett gott samarbete? *(Främst ej ekonomi.)*

Har dotterbolagen (folk inom) samma syn på samarbetet idag och målen för framtiden?

Ser du några fördelar med ett ökat samarbete jämfört med idag?

Hur skulle du beskriva företagskulturen idag?

Inom koncernen i stort?

Inom ditt dotterbolag/din avdelning?

Hur arbetar ni med detta idag?

Hur skulle du önska att arbetet med detta såg ut?

Intervjuguide - Platschefer
Introduktion

Vi presenterar oss själva och vårt arbete – studerar de interna samarbetena mellan de tre dotterbolagen som ingår i koncernen samt hur kulturen ser ut både inom dessa och koncernen i sin helhet.

Mål med intervjun

Vårt mål med de här första intervjuerna är att få en bild av organisationen från medarbetarnas (ditt) perspektiv och en insyn i verksamheten som inte är möjliga att utläsa i styrdokument och dylikt. Syftet med hela rapporten är att den i framtiden ska vara till hjälp för företaget i arbetet med att utveckla samarbetet inom koncernen. Vi vill också att detta tillfälle ska innebära möjligheten att reflektera kring situationen idag och framtiden.

Etiska aspekter

Det som sägs här idag kommer behandlas anonymt av oss, inga namn kommer förekomma i rapporten. Vi vill också spela in samtalet för att vi bara är två och kunna kolla att vi inte missat något och att vi korrekt återspeglat vad ni sagt. Samtalet kommer inte transkriberas i sin helhet och om vi skulle vilja citera dig kommer vi kolla detta med dig först. Sekretessavtal har vi skrivit på också.

Berätta om dig själv i korthet

> Position inom företaget?

> Hur länge har du varit på företaget?

> Hur hamnade du på företaget?

> Tidigare positioner inom företaget?

> Tidigare arbetsplatser och positioner där?

> Utbildning?

Hur skulle du i korthet beskriva företaget?

> Externt/internt

Är du i dagsläget del av några projekt där två eller alla dotterbolag samarbetar?

> Om ja, vilket/vilka projekt?

> Hur skulle du beskriva projektet/projekten från ett kultur- och samarbetesperspektiv?

> Vilka skulle du säga är nyckelpersonerna i de projekten?

Vem tog ansvar för samordningen?

Vilken typ av samarbete - UE, sidoentreprenör etc.?

Hur känner du inför interna projekt?

Hur ser du på den allmänna inställningen?

Vad skulle du säga är nyckelpunkterna för att behålla/förbättra detta?

Arbetsfördelning

Beskriv ett från ditt perspektiv optimalt upplägg på ett projekt från framtagande av anbud till färdig produkt (förutsätt att ni får projektet). Skissa! (Inkluderade delar: anbudsprocess, planering och samordning, produktion, färdigställande/slutbesiktning.)

Vilka arbetsuppgifter samt roller är viktiga att lyfta fram? (Person, roll, funktion, uppgift… Från vilket dotterbolag?) Förklara och jämför!

På vilka sätt skiljer sig detta optimala scenario från de projekt du känner till och har erfarenhet av?

Projektgrupper

Hur definierar ni er gemensamma uppgift i ett projekt?

Hur ser ni att utvecklingen gått rörande interna samarbeten under de senaste åren?

Hur skulle du beskriva hur samarbetet ser ut idag inom koncernen?

Vilka direktiv finns för gemensamma projekt och kommunikationen kring dessa?

Vilka kommunikationskanaler/plattformar används idag?

Hur uppfattas kommunikationen?

Hur arbetar ni med detta idag?

Hur skulle du vilja att det såg ut?

Vilka incitament skulle du säga det finns för medarbetarna att arbeta för ett gott samarbete? *(Främst ej ekonomi.)*

Har dotterbolagen (folk inom) samma syn på samarbetet idag och målen för framtiden?

Ser du fördelar med ett ökat samarbete jämfört med idag?

Vilka faktorer driver och motiverar ditt dotterbolag?

Har ni gemensamma mål som i samarbetsprojekt fungerar som drivkrafter?

Hur skulle du beskriva företagskulturen idag?

> Inom koncernen i stort?
>
> Inom ditt dotterbolag/din avdelning?
>
> Hur arbetar ni med detta idag?
>
> Hur skulle du önska att arbetet med detta såg ut?

Personkemi

Hur viktigt tycker du det är med god personkemi i ett projekt?

Hur viktigt uppfattar du att andra anser att det är?

Träffar ni i något sammanhang andra från koncernen som inte är från ert dotterbolag? Utöver inom arbetet med projekt.

Är ni delaktiga i andra typer av informationsutbyte – i både formella och informella situationer?

Regler

Skulle ni säga att det finns oskrivna regler som är specifika för företaget, för samarbetet inom projekt?

Finns det formella regler/föreskrifter för samarbetet? Om ja, följs dessa?

Avslutning

Vad skulle ni säga att ni kan lära av de andra dotterbolagen?

Vad har ni för tankar och reflektioner kring det vi pratat om här?

Något som ni vill tillägga

Intervjuguide - gruppintervjuer
Varför är ni här?

Ni är här för att representera er personliga åsikt i de ämnen vi diskuterar. I vissa frågor kommer vi fråga efter ert dotterbolags generella åsikt eller ståndpunkt, det är då er tolkning av denna vi eftersöker.

Varför är vi här?

Skapa diskussion kring de frågor vi ställer och vi uppskattar om ni är tydliga med vad ni tycker, om ni håller med varandra eller har skilda uppfattningar.

Inledande frågor

Vad har ni för relation till varandra?

Något/några gemensamma projekt?

Vilken var er roll?

Varför trivs du i just den rollen?

Uppfattning rörande interna projekt

Hur känner ni inför interna projekt?

Hur ser ni på den allmänna inställningen?

Vad skulle ni säga är nyckelpunkterna för att behålla/förbättra detta?

Arbetsfördelning

Beskriv ett från ditt perspektiv optimalt upplägg på ett projekt från framtagande av anbud till färdig produkt (förutsätt att ni får projektet). Skissa! (Inkluderade delar: anbudsprocess, planering och samordning, produktion, färdigställande/slutbesiktning.)

Vilka arbetsuppgifter samt roller är viktiga att lyfta fram? (Person, roll, funktion, uppgift… Från vilket dotterbolag?) Förklara och jämför!

På vilka sätt skiljer sig detta optimala scenario från de projekt du känner till och har erfarenhet av?

Personkemi

Hur viktigt tycker du det är med god personkemi i ett projekt?

Hur viktigt uppfattar du att andra anser att det är?

Träffar ni i något sammanhang andra från koncernen som inte är från ert dotterbolag? Utöver inom arbetet med projekt.

Är ni delaktiga i andra typer av informationsutbyte – i både formella och informella situationer?

Prioritera ord. (Se lista med ord sist i dokumentet.)

Vilka aspekter inom organisationen anser du är viktigast för ett lyckat projekt?

1. Välj ut de 5 ord du tycker bäst representerar din professionella roll inom samarbetesprojekt.
2. Nu byter du perspektiv till att representera hela ditt dotterbolag – vilka 5 ord anser du bäst representerar dotterbolaget inom samarbetesprojekt?
3. Slutligen – välj ut de 5 ord som bäst representerar hela företagskoncernen.
4. Från ert personliga perspektiv – vilka 3 ord skulle ni välja ut för att beskriva de andra två dotterbolagen i de samarbetesprojekt ni varit delaktiga i?

Incitament

Vilka faktorer driver och motiverar ditt dotterbolag?

Vilka faktorer skulle du säga driver och motiverar de andra dotterbolagen – skiljer det sig och om ja, hur?

Har ni gemensamma mål som i samarbetsprojekt fungerar som drivkrafter?

Projektgrupper

Hur definierar ni er gemensamma uppgift i ett projekt?

Hur ser ni att utvecklingen gått rörande interna samarbeten under de senaste åren?

Problemområden

När en konflikt eller ett problem uppstår, hur hanterar ni en potentiell konflikt/problem inom ett projektlag? Själv eller med hjälp?

Är det önskvärt att ha ett projekt helt utan konflikter?

Regler

Skulle ni säga att det finns oskrivna regler som är specifika för företaget, för samarbetet inom projekt?

Finns det formella regler/föreskrifter för samarbetet? Om ja, följs dessa?

Avslutande frågor

Vad skulle ni säga att ni kan lära av de andra dotterbolagen?

Vad har ni för tankar och reflektioner kring det vi pratat om här?

Är det något som förvånat er?

Något som ni vill tillägga?

Styrning	Kundfokus
Platt organisation	Konsekvens
Effektivitet	Motivation
Hierarki	Mål
Förtroende	Varumärke
Respekt	Attityd
Gemensam tidplan	Öppenhet
Insyn i varandras ekonomi	Vana
Gemensam ekonomi	Traditioner
Kommunikation	Gemensamma aktiviteter utanför arbetet
Trygghet	Kunskap
Tidspress	Flexibilitet
Press att prestera	Personkemi
Resultat	Utmaning
Moral	Tålamod
Gemensam målbild	Säkerhet
Ärlighet	Förutsägbarhet
Omtanke	Ansvar
Engagemang	Inflytande
Nyfikenhet	Gemensam projektering
Samspel	Inspirerande
Mod	Variation
Lösning	Omväxling
Miljö	Projektspecifika lösningar
Innovation	Mervärde