Relationships for success in mega projects

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Sammanfattning

Titel: Relationer för framgång i megaprojekt

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Syfte: Syftet är att studera hur relationen utvecklas mellan entreprenör och beställare i tidiga skeden av samverkansprojekt.

Problemställning: Vilka farhågor och förhoppningar har beställare och entreprenör vid starten av projektet? Vilka problem uppstår i tidiga skeden av projektet? Hur väl fungerar konceptet och vilka förbättringar kan göras?

Metod: Kvalitativ fallstudie. Studien tog sin bakgrund i upphandlingsdokumenten från respektive part och en litteraturstudie. Observationer och intervjuer användes för att följa den pågående processen.

Slutsatser: De primära farhågorna från båda parter var att få till integrationen av personal och att lyckas komma överens om totalkostnaden. Integrationen av personal har fungerat mycket bra och det är integrationen av organisationerna som har varit svårt tillsammans med att skapa och planera för en gemensam samverkansprocess. Detta på grund av olika uppfattningar om samverkan mellan parterna. Informationsöverföringen har haltat vilket har skapat en osäkerhet kring vilka designbeslut som är viktiga och vilka som kan ändras. Konceptet har fungerat väl när det gäller att skapa en öppen och lösningsorienterad arbetsmiljö där projektets bästa står i fokus.

Nyckelord: Megaprojekt, Samverkan, Partnering, Relationer i byggsektorn, Tidiga skeden, Integrerade organisationer

Abstract

Title: Relationships for success in mega projects

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Purpose: The purpose is to study the development of the relationship between client and contractor in the early stages of collaboration projects.

Objectives: What hopes and fears does the contractor have going into the project? What hopes and fears does the client have going into the project? What issues arise in the early stages of collaboration? Evaluate how well the concept works and suggest improvements.

Method: Qualitative case study. The study began with a review of the tender documents from both parties. Observations and interviews were used to follow the ongoing process.

Conclusions: The main fears for both client and contractor going in to the project was getting the personal integration right and agreeing on a Total Works Cost. The personal integration has worked well and problems have instead arisen in the integration of the organizations and in planning and executing the collaboration concept. This because of different views on collaboration between the parties. The information transfer has been incomplete leading to uncertainty about which design decisions are important and which are changeable. The concept has worked well in creating an open and solution orientated spirit with what's best for the project in focus.

Keywords: Mega projects, Collaboration, Partnering, Relationships in the construction industry, Early proceedings, Integrated organizations.

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1 Introduction

1.1 Background

The European Spallation Source (ESS) aims to become the world's most powerful neutron source and is to be constructed outside the Swedish town of Lund during the late 2010s. The project is a 2 billion euro endeavor undertaken by close to twenty European countries with Sweden and Denmark in the lead. Large parts of the construction work at ESS will be carried out as a partnering contract by one contractor.

This project includes two areas of great interest to the construction industry: mega projects and partnering. Both areas have seen great development in the past years as mega projects are becoming more and more common even though the outcome is often poor (Flyvbjerg, 2007). Partnering contracts are perceived as the answer to many questions in the construction industry. The industry has long been defined by a lack of trust between parties and a lack of efficiency compared to other sectors (Gadde & Dubois, 2010).

Mega projects have exploded in the past two decades as development countries seek to update their infrastructure and developed countries seek to maintain the comforts of a modern lifestyle (Kardes, Ozturk, Cavusgil, & Cavusgil, 2013) The projects however often struggle with keeping time and budget and delivering the benefits predicted (Flyvbjerg, 2007). Partnering has been suggested as a way of improving the results of mega projects (Van Marrewijk, Clegg, Pitsis, & Veenswijk, 2008).

Partnering has been around in construction since the 1980s when clients of major projects began to react on the poor performance of the construction industry (Alderman & Ivory, 2007). Partnering was viewed as a way of improving the performance by creating a better relationship between client and contractor (Black, Akintoye, & Fitzgerald, 2000). However, hard evidence on cost and time benefits is yet to be presented. (Beach, Webster, & Cambell, 2005)

The studies conducted into partnering are scattered in describing partnering as a success or a failure. There seems to be a case of "the victor writes the history" where studies of successful partnering projects tend to describe the positive sides and the studies into failed ones tends to focus on the negative sides.

1.2 Problem formulation

The opportunity to study a mega project with a collaborative approach has led the study towards:

How does the relationship develop in the early stages of collaboration between client and contractor?

This formulation was chosen to enhance and give a more diverse picture of what happen in the beginning of collaboration.

1.3 Aims and objectives

The aim of the study is to follow the development of the relationship between client and contractor in the ESS- project with the following sub-objectives:

- What hopes and fears does the contractor have going into the project?
- What hopes and fears does the client have going into the project?
- What issues arise in the early stages of collaboration?
- Evaluate how well the concept works so far.

1.4 Limitations

As this is a master thesis in construction management some limitations have had to be made. The scoop of the study is limited to the time period of spring 2014 and the ESS project. Trust and relationships are analyzed from a construction viewpoint. Even though psychological factors play a large role in relationships, a study of those factors would have widened the study too much. As the study only consists of a single case will the study be limited to the relationship between Skanska and ESS. This will also limit the study to the Swedish construction industry. The study is limited to the partnering concept in use by Skanska and ESS and focuses on the relationship and execution of the concept and not cost and time aspects of the concept.

1.5 Definitions

BS 11000 -	British Standard for collaboration contracts
ESS -	European Spallation Source
TWC -	Total Works Cost
ITT-	Invitation To Tender
CF-	Conventional Facilities
C101-	The Partnering organization and name of the contract
ECI-	Early Contractor Involvement

1.6 Disposition of the study

The report is divided into the following chapters:

Introduction

The introduction chapter gives the background to the study with problem formulation, objectives, purpose and definitions.

Method

The method chapter describes the way the study was conducted.

Theoretical framework

This chapter presents the theory relevant for the study.

Empirical data

The empirical data chapter contains the results from observations, interviews and reviewed documents.

Analysis

This chapter presents the analysis done from connecting the empirical data to the theoretical framework.

Conclusions

The conclusions chapter contains the conclusions drawn from the analysis and suggestions for further study.

2 Method

2.1 Choice of method

The study was conducted as a qualitative exploratory case-study. This method was chosen because of the opportunity that presented itself by the collaboration with ESS. I was able to follow the process when the contractor was initialized in the project organization of conventional facilities at ESS with a partnering agreement. The qualitative method was chosen because of its strength in investigating the link between the context and the studied phenomenon rather than the statistical link between variables within context and phenomenon witch is the strength of quantitative methods (Rosaline, 2008). The choice of an exploratory case study was based on the level of control of events and the research questions. The strengths of case studies are in examining contemporary events where the behaviors can't be manipulated. Furthermore, the wide spectrum of possible data sources is a strength since interviews and observations also can be used as a data source (Yin, 2003). Therefore, it is suitable to use case study as the method for studying the phenomenon.

2.2 Induction, deduction and abduction

Research always have to deal with the existing theory on the subject, the three terms above are the different ways to do this (Patel & Davidsson, 2003). Induction means that the data collected in the study is used to form new theory on the studied phenomenon. Deduction is a way of working where the existing theory is used to form hypothesis, these are then tested against the collected data. Abduction is combination of the two where the theory is formed from empirical data and then tested against other empirical data (Patel & Davidsson, 2003).

2.3 Qualitative or Quantitative

The line between these two approaches is not quite clear but a simplification can be to say that qualitative study is narrated whereas the quantitative is statistical (Given, 2008). Qualitative methods focus on the context and include all the factors influencing a phenomenon and the quantitative are focused on the exact interactions between a few variables and to determine these as close as possible (Rosaline, 2008).

2.4 The case Study

Case studies are a form of research strategy where the researcher studies the phenomenon in its natural context (Yin, 2003). Case studies can be designed in many ways. One or multiple cases can be part of the study and the questions asked can vary between descriptive exploratory questions to explanatory questions. Deciding these aspects is the first stage of a case study (Yin, 2003). In this stage it is also suitable to check that case study is the right choice of method. Case studies are suitable to use when studying contemporary events with no control over contextual perimeters.

Otherwise it is more suitable to use another method like a survey or an experiment (Yin, 2003).

The next phase is the data collection. In this phase many different sources of information can be used to gather information on the studied phenomenon. Documents, interviews and observations are the main sources. Documents are suitable for creating a theoretical background to the questions being asked in the study. This theory forms the backbone for the analysis. A critical review of the literature used is important to ensure the quality of the information (Merriam, 2009). Interviews can be held in many different ways. In order to get fair information the interviewee needs to feel relaxed (Yin, 2003). The level of structure the interviews need to have are based on the questions asked in the study. A higher level of structure and highly specified questions give exact answers but also run the risk of not picking up important contextual aspects. Unstructured interviews and open questions give answers that are deeper and wider but the interviewer risk not getting the questions fully answered (Merriam, 2009). Observations have different approaches depending on what level of access the researcher has to the group being observed. The observations can be made from a distance, inside the group but not participating and as a participating member of the group. The closer the observer gets, higher levels of details are observable. The problem is that the observer, if getting too involved in the group, might influences the evens in the group and there by influencing the outcome of the study (Yin, 2003).

The next stage is to analyze the collected empirical data. In this stage it is most important to have a plan to ensure that the collected data is analyzed and not just stockpiled (Yin, 2003). The most common technique is to use the theory that initiated the study and then test the theory against the collected data. Another similar way is to test the data for rivaling theories instead. More complex methods like pattern matching, time-series and logic models can be used if it fits the studied case and the direction of the study (Yin, 2003). However is the most important thing that you address all the data collected and all possible rivaling theories in a fashion that the reader can follow and understand (Yin, 2003).

2.5 Reliability and validity for this study

2.5.1 Validity

Validity is hard to construct in case study research, the ever occurring question is how to be sure that what is measured is a fair representation of the studied phenomenon (Yin, 2003). To deal with this there are three methods: Using multiple sources of information, establishing a chain of evidence and report review (Yin, 2003). All three have been used in this study. It's important to note that validity is not an exact thing you achieve in the data but in the way you link the data to the phenomenon. Our perception of what is true and correct changes over time as we get a greater understanding of the context of the phenomenon (Merriam, 2009).

2.5.2 Internal validity

Internal validity is not discussed on the basis of it not being applicable to exploratory research (Yin, 2003).

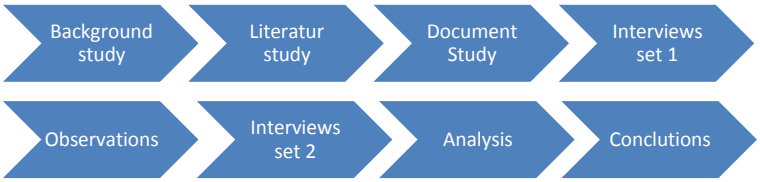
2.5.3 External validity

External validity is a measure of how well the findings in the study are applicable to a more generalized set of circumstances (Yin, 2003) (Merriam, 2009). External validity in this study is achieved by comparing the findings from studies and interviews to the findings from the literature review. This method draws on replication, by linking current events to earlier case study findings, and therefore the results are to be viewed as trustworthy (Yin, 2003).

2.5.4 Reliability

Reliability means that if the study was conducted again under the exact circumstances one would arrive at the same conclusions. A struggle with case study methodology is that the same circumstances can never be produced again making exact replication impossible as a way of achieving reliability (Yin, 2003). The traditional view of reliability has to be replaced by the following question: Are the results consistent with the collected data (Merriam, 2009). A good way to achieve this type of reliability in case studies is by thorough documentation of the process (comp. accounting). This so that the process can be audited (Yin, 2003). This study aims to draw reliability through this method. Another important way to create reliability is by giving enough contextual data to able the reader to make the decision on if he can draw on the results from this study (Merriam, 2009).

2.6 Workflow



2.6.1 Background study

The study began with a background study to form the questions for the study and plan ahead for the study.

2.6.2 Literature study

The actual study was initiated by a literature review of partnering, mega projects and trust in the construction industry in order to gather enough knowledge to be able to form the questions for the interviews. The theory was also used to be able to generalize from the findings in the empirical research.

2.6.3 Documents

A study of the documentation was conducted after the literature review to seek out the context of how the relationship would develop. Extra attention was given to the "Invitation to tender" documents and the winning tender. These two documents form the base on which the relationship will grow and explain the intentions of the two parties going into the relationship. Documents fabricated before the involvement of the contractor were reviewed for plans for information spread and partnering process. The tender was given extra attention since this forms the backbone for the relationship. Documents developed in collaboration with the contractor were reviewed to follow the ongoing relationship development

2.6.4 Interviews

Two sets of interviews were conducted with the client and the contractor. The first set was done before the contractor's organization was merged with the client's. The second set of interviews was done after the merging and development of the unified organization, right before early works began on site. The interviews were conducted as qualitative open end interviews. The interviews were recorded in order to be able to review the answers multiple times. The first set was conducted with a focus of previous experience with partnering, expectations of the partnering process and the project as a whole and the reasons for the choice of partnering. This was done to get a baseline of the relationship between the two parties and the attitude towards the project and the concept of collaboration. The second set was performed with a focus on same expectations and on how the relationship developed. The interviewees are

project managers within the integrated organization and were chosen to get the general picture spanning all construction fields within the project. Five persons were interviewed for the first set of interviews. For the second set of interviews only the four project managers who partaken in the integration were interviewed. The first set of interviews was held with questions in the following areas as a guide: Previous experience with partnering and views on the drawbacks and upsides of partnering. Strengths, weaknesses, opportunities and threats with using partnering in this project. Expectations and fears going into the project on both a construction project level and the ESS project level. The second set was held with these questions as a guide: How well has the integration worked. How far along has the relationship come. Biggest surprises in the process and how has the project delivered according to the expectations going into the project.

2.6.5 Observations

The development of the relationship was monitored with observations at meetings between the two sets of interviews. Observations were made at all types of meetings from unofficial one-on-one meetings in the hallway to project management meetings. The wide span of observations allowed the relationship development to be monitored on all levels of the organizations. The main focus of the observations were the how the participants interacted and the types of questions discussed. Notes were taken at all meetings without a fixed protocol due to the different nature of the meetings being observed. The main areas of interest to record were how trust was being shown, focus on solving the problem at hand, best solution for the project, openness and free communication between meeting participants.

2.6.6 Analysis and conclusions

When all the empirical data was collected were the data analyzed in a deductive way where the theory was used to analyze the data to answer the studies questions. The backbone on the analysis is a chronological presentation of events during the process. Some aspects are presented on their own on because they do not fit the chronological presentation. From the analysis were the conclusions formed to answer the questions posed at the beginning of the study. Topics for further study were also produced from the theory gained from the analysis.

2.7 Presentation of case

ESS, when completed, will be the most powerful neutron source in the world. The accelerator is basically a microscope using neutrons instead of photons. Using neutrons makes it possible to look at and model the smallest particles in the universe in greater detail than ever before. This will help push the boundaries in multiple research areas ranging from pharmaceuticals to engines.
ESS works by accelerating the protons from helium in a linear accelerator to 96 % of the speed of light with electromagnetic fields. The protons then hit a rotating tungsten target which scatters a group of high energy neutrons. This process is called spallation hence the name European Spallation Source. The neutrons are then slowed and focused in to a beam directed at the object you wish to exam. The neutrons bouncing off, passing through and interacting with the object are then registered and a detailed model of the object can be created. The amount of neutrons directed at the object determines the detail level of the model. ESS will be 5 times more powerful than the neutron sources existing today, giving a much more detailed model of the studied object.
ESS is a pan European project with contributions from at least 17 countries with Sweden and Denmark as host nations. ESS will be built in Lund and the data management center in Copenhagen. Construction will according to plan begin in mid-2014 and the facility will be fully operational in 2025.
Building work at ESS will account for approximately a third of the estimated project cost of 18 billion Swedish kroners. The accelerator will be built as a green field development in the northern parts of Lund next to the MAX IV accelerator, creating a new part of the city Lund.

3 Theoretical framework

3.1 Mega projects

There is no unified definition of what mega projects are. Basically they are projects where all elements can be described with superlatives. But contrary to partnering there is not much research done on the area (Zidane, Johansen, & Ekambaram, 2013). The unique sizes of the elements make the mega projects hard to manage and historically are they not very successful projects (Zidane, Johansen, & Ekambaram, 2013). Mega projects are getting more common due to the globalization of industries and the infrastructural needs of the development countries (Kardes, Ozturk, Cavusgil, & Cavusgil, 2013). Even though they are not particularly successful, mega projects are seldom canceled. This because there are many project owners so even if an owner wants to terminate the project he alone can't do it. The vast amount of money invested in the project makes it too expensive to pull out with nothing to show for the investment. Canceling the project would show that the decision-makers made the wrong choices going into the project (Kardes, Ozturk, Cavusgil, & Cavusgil, 2013).

3.1.1 Challenges in mega projects

The challenges in mega projects often stem from their vast size. The size means that there are huge amount of resources poured into the projects, this can alarm the local markets both economically and in the demand for some materials (Capka, 2004). The complexity on both a technical level and a management level requires extremely competent participants. There is also a problem in competence in leading mega projects. Since organizations and companies seldom take part in these large projects the opportunities for employees to learn from experience are sparse. The lack of experience often leads to improvisation when solving management problems (Miller & Hobbs, 2005). The multiple impact points with society make them extra challenging. The often occurring public funding makes them political and requires complex procurements. Projects of this size are often in the public eye as they tend to influence the everyday life of neighbors. Finally they are high in risk and uncertainty as well as poorly defined in terms of scoop making the scoop creep as the project moves along (Capka, 2004).

3.1.2 Reasons for poor performance

According to Flyvbjerg (2007) mega projects are constantly running over budget and with smaller benefits than expected. He finds that this is because there is an optimistic bias among the planners leading to underestimation of cost and an overestimation of benefits from the projects. Some of the interviewed planners in this study also witness about a political pressure to tune the numbers in forecasts in order to get funding. This means that the projects will look like they underperformed even if they perform according to the original forecasts. The underestimation also leads to a strained project climate causing further damage to the project both internally and externally (Van Marrewijk, Clegg, Pitsis, & Veenswijk, 2008). The same authors mean that complexity in mega projects are often underestimated due to the high uncertainty. This causes the managers to overvalue positive information in the project leading to a higher risk of cost overruns and failure to reach expected benefit. They also argue that this is not done intentionally but that it is a result of traditional project management.

3.1.3 Driving successful mega projects

In order to drive a successful project the prerequisites going into the project have to be fair, a situation as seen above, not common today. Better estimates and planning are therefore key in improving mega projects. A way of improving estimates is by using reference class estimation. This system works by comparing estimates of new projects with the outcome of already completed projects. Using this method estimates would be improved leading to a better selection of started mega projects (Flyvbjerg, 2007). The literature is quite coherent in pointing out that the success lies with reforming the governance of mega projects and that further studies are needed in order to find the optimal way (Locatelli, Mancini, & Romano, 2013). The same authors suggest that the way of improving results in highly complex projects is to adopt a more systematical governance of projects. Systems engineering is a way of systematically handling projects by turning the focus from cost, time and scoop and instead work with the requirements the project needs to fulfill. By systematically handling requirements, solutions and dependencies within the project optimal performance of each part and solution can be achieved leading to better customer value (Locatelli, Mancini, & Romano, 2013). A case-study suggests that understanding how the three dimensions of project management (cost, schedule and technical) are influenced by decisions is key in leading successful projects (Lopez del Puerto & Shane, 2014). The projects in the case-study had also adopted partnering. Partnering is viewed as a way to improve the outcome of mega projects (Van Marrewijk, Clegg, Pitsis, & Veenswijk, 2008).

3.2 Partnering

3.2.1 What is partnering?

There is no unified definition of partnering in the construction industry. A widely used definition in the literature is: “Partnering is a long-term commitment between two or more organizations for the purposes of achieving specific business objectives by maximizing the effectiveness of each participant’s resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based on trust, dedication to common goals, and an understanding of each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services” ((CII), 1991). This definition describes strategic partnering (Radziszewska-Zielina, 2010). The same author uses AGC’s definition "a way of achieving an optimum relationship between a customer and a supplier. It is a method of doing business in which a person’s word is his or her bond and where people accept responsibility for their actions. Partnering is not a business contract but a recognition that every contract includes an implied covenant of good faith" ((AGC), 1991) as the definition for project partnering. This definition is more applicable for this report. In the same way as with the definition of partnering, the literature is scattered with regard to the perception of what partnering is. There are some universal factors that most partnering models contain (Kadefors, 2002):

- Measures to build a good relationship between parties.
- Common goals for all participants concerning both project outcome and the process
- Feedback and constant improvement routines
- Routines for conflict and problem management

The various adaptations of partnering don’t have to be a problem. Rhodin (2002) suggests giving each individual factor different attention in different projects, hence the beauty of the variable model. The variable model allows the partnering concept to be tailored to fit the unique context of every project and therefor spending the resources where they are needed the most.

3.2.1 Different types of partnering

There are different levels of partnering. The basic project partnering is over a single project with a minimum of partnering activities. The more aspects and activities added to the concept the higher the level of the partnering. The highest level of partnering is strategic partnering where the relationship lasts over multiple projects and is based on a deep trust of each other (Eriksson, 2010). A view supported by other literature reviewed for this case. The level of the partnering should be matched with the scope of the project or projects. A larger scope is more suited for a higher level of partnering, as it can carry the extra cost that is associated with the higher levels of partnering. One should strive for the right level of partnering rather than the highest level in a project. Unnecessary partnering activities will quickly erase the cost-benefits of partnering (Eriksson, 2010) The higher levels of partnering offer more potential benefit as these tend to last over a larger period of time and include more aspects of the project (Meng, 2012)

3.2.2 Benefits of partnering

When partnering was introduced in construction it was by many seen as the solution to the problems of cost and time overruns. Many early case studies indicate radical improvement. Recent work shows that these expectations are not as easy to achieve as first thought (Gadde & Dubois, 2010). The benefits stem from the better relationship between the parties and that resources spent on conflict and contractual issues can therefore be spent elsewhere. However has the focus been on the performance rather than the relationship in many projects so far, leading to failure to achieve benefits of time and cost reduction (Gadde & Dubois, 2010). Studies show that the benefits that have been actualized so far are: benefits as less adverse partnership and a better understanding of each other due to a better communication with in the project (Black, Akintoye, & Fitzgerald, 2000). These benefits have also lead to less problems with conflicts and opportunism than with ordinary contracts (Bayliss, Cheung, Suen, & Wong, 2004). Hard evidence on the benefits of partnering in time and cost reductions is yet to be presented (Beach, Webster, & Cambell, 2005). Some argue that these benefits will only be actualized when the industry takes the step to strategic partnering over multiple projects (Gadde & Dubois, 2010). Even though project partnering might not lead to better performance it has been shown that it leads to less risk of poor project performance and a better relationship between parties (Meng, 2012).

3.2.3 Implementing partnering and using the partnering concept

Partnering is not going to happen by itself and there are several tools to promote partnering between the parties. Because of the current climate in the construction industry these tools are essential for building the trust and communication required for a successful partnering (Cheung, Ng, Wong, & Suen, 2003). On the other hand measures trying to control the relationship can work in the opposite way by undermining the natural trust building mechanisms resulting in mistrust between the parties and failed collaboration. (Bresnen, 2007). Gadde, L-E and Dubois, A (2010)

suggest that tools can be effective in project based partnering but are insufficient for promoting strategic partnering, hence the slow development toward strategic partnering in construction. A unified understanding between parties of which partnering concept is in use is important. So are sufficient efforts to support the partnering process. Differing views of the partnering concept is a common source of conflict (Adnan, Shamsuddin, Supardi, & Ahmad, 2012). A case-study done on the tools of partnering shows that tools are effective in different stages of the partnering process. Workshops are effective for instilling the partnering sprit in the beginning. Social functions, newsletters and partnering review meetings are effective for fostering and maintaining the partnering spirit. Incentivisation is effective in all stages of the process. (Bayliss, Cheung, Suen, & Wong, 2004) Common for most of the activities are that they are designed to integrate the projects participants and adjust values and goals to one another, an important process if trust is to develop between the parties (Kadefors, 2004). The following tools are often used in partnering projects (Kadefors, 2004):

Incentivisation

Incentivisation has the benefit of making the project more attractive for clients by higher possible returns resulting in better priority among its other projects. It also helps in making the client and contractor more equal through gain/pain-share. This has a positive side effect of promoting open information sharing, resulting in a better context for trust development (Kadefors, 2004).

Workshops

A partnering project is often started with a workshop. This workshop serves to set common goals for the project and create a common frame of reference. This also serves as an opportunity for the project participants to mingle and begin to build personal relationships (Kadefors, 2004). The start of the relationship is very important for a positive development of trust (Wong & Cheung, 2004). Workshops include the key persons of the project and should be continued throughout the project to further strengthen the relationship (Rhodin, 2002).

Teambuilding

Workshops can be a part of the teambuilding activities. Teambuilding activities are designed to strengthen the relationship between parties. The literature doesn't mention any specific activities but highlights the importance of including all team members in these activities (Rhodin, 2002).

Conflict management

A jointly agreed system for managing conflicts helps prevent conflicts from damaging project performance (Wong & Cheung, 2004). These systems are often based on trying to solve the conflict on an as low as possible level to prevent the conflict from growing (Meng, 2012).

3.2.4 Success factors for partnering

In order to receive the benefits of partnering a few factors are of greater importance. Trust, good communication, commitment, a clear understanding of roles, consistency and a flexible attitude has to be fulfilled (Black, Akintoye, & Fitzgerald, 2000). Trust and commitment are repeated as crucial factors by Cheung, Ng, Wong and Suen (2003). In a survey done by Hagberg and Hjelt (2011) communication, commitment and shared goals stand out as the most important factors according to the Swedish building industry.

3.2.5 Drawbacks and risks with partnering

The literature is thorough in pointing out that partnering is not a guarantee for success and requires hard work. The partnering concept has the potential drawback of project participants taking failed agreements personal, causing more damage to the project (Kadefors, 2004) .In order for organizations to trust each other time have to be spent on aligning goals and values between the two organizations. This time would not have to be spent with a normal contract. Extra care has to be taken if organizations have different values and cultural differences on account of the strain on the relationship this can have (Wong & Cheung, 2004). A study in China emphasizes the large amounts of time that have to be spent on reaching collective decisions as one of the major drawbacks of partnering. It also highlights the risk of partnering becoming "cozy" accepting lower quality and damaging competition (Zuo, Chan, Zhao, Zillante, & Xia, 2013). The same report also indicates that public procurement law can make partnering hard to implement due to problematic tender processes, a view supported by Bygballe, Jahre and Swärd (2010). Investments in a relationship can be very costly if it fails and there are inadequate formal agreements (Alderman & Ivory, 2007).

3.2.6 Building trust

As seen above and as pointed out by a large portion of the literature, trust is a central factor for partnering and the collaboration within the partnering arrangement (Kadefors, 2004). Even though collaboration is possible without trust, and trust can occur without collaboration, trust is making collaboration easier since parties don't have to worry about hidden motives and risk of formal responsibility for errors (Kadefors, 2004).

Case study results from Laan, Noorderhaven, Voordijk and Dewulf (2011) show that in order to get trust you have to show trust. A problem when the industries general state of mind is suspiciousness (Kadefors, 2004). The case study also shows that there is no difference between interpersonal trust and interorganizational trust, the trust between the organizations being based on the trust between the people of the organizations. This means that in order to build trust you might have to remove people that can't adapt to the concept of trust-based contracts in order to be successful in the trust-building between the organizations.

Kadefors (2004) argues that there is no simple five step method for building trust. Trust-building has to be managed according to the context of the particular project and its participants. This view is supported by Wong and Cheung (2004) who also argue that clear and equitable contracts are an important base for trust-building. They also argue that the normal personal trust can to some extent be replaced with a "systematical trust". In this case legal commitment and contracts take a role as trust in a more systematical way than trust between individuals allow. Even though trust building is hard, the reward can be good project results even in project partnering (Kadefors, 2004)

3.3 Early contractor involvement

ECI have recently been adopted as a new type of project management system (Rahman & Alhassan, 2012). ECI is a way of bridging the gap of design and construction by early involvement of the contractor. (Rahman & Alhassan, 2012). The problem of the separation of design and construction in traditional contracts has been known to cause problems since the 1960s. However, until now the question has not been addressed. (Mosley, 2011). ECI works by a two-step tendering process were the contractor at an early stage is included to assist in the design process and to come up with a target price for the second stage of the contract (Rahman & Alhassan, 2012). The contract is partnering based and can be seen as a development of the already existing partnering contracts (Mosley, 2011).

During the first part the contractor can also assist in questions of buildability leading to a more buildable project. A more buildable product can generate cost savings of 2 % ((PLCTG), 2012). ECI also aids the partnering concept by allowing it to be implemented at an earlier stage, allowing the organization more time to adjust to the concept of partnering (Chan, Chan, Fan, Lam, & Yeung, 2006). The concept of ECI also generates further benefits from allowing the client to be a part of the tendering of sub-contractors and enhancing communication as the contractor's and client's relationship is prolonged. Finally it does help from the contractor blaming inadequate design work for problems in the construction phase (Mosley, 2011).

4 Empirical data

4.1 ESS's ITT

4.1.1 Procurement C101

The construction work at ESS will be made by one main contractor in collaboration with Conventional Facilities (CF) under the infrastructure division of ESS. The procurement was made under the European public procurement law. First contractors had to prequalify in order to tender. The approved contractors were then able to compete with a tender. The focus of the tendering process was to find a contractor suitable for the complex project and collaboration by demanding detailed descriptions of management systems, quality systems and the collaboration plan.

4.1.2 Collaboration

The main reasons for the collaboration contract are the complexity of the project, ability to cope with changes, better quality, time reductions, early start time and risk allocation. Trying to cut cost is not a main objective but collaboration is seen as a way to reduce the risk of cost overruns.

4.1.3 Contract

The contract is split in two parts with two phases in each part. The first phase of the first part is a design contract on the early parts of the facility including the accelerator tunnel. The designs are on a preliminary stage when the contractor is engaged. The contractor's design organization will be merged with the already existing design organization at ESS. The joint organization will move the design from a preliminary stage to a ready-to-build stage and come up with a target price for the construction works in part one. The creation of a performance plan handling how the project should proceed during part one is also a major element of phase one. The performance plan shall state the following:

- Purpose, goals and strategies for the continued work.
- Scope of the works to be conducted under the collaboration agreement
- Organization and cooperation
- Design
- Time schedule
- Cost control
- Risk management
- Communication
- Resources and procurement
- Occupational health
- Environment and sustainability
- Quality

- Commissioning, completion and turn over.

Construction of facilities in part one is phase two of part one in the contract. Construction will begin when the target price has been agreed. Part two of the contract is also split in two phases, design and construction. The same procedures are followed with an agreed target price before construction can start. The difference between the two parts is the scope of the works. The time is longer for part two and the design is at an earlier stage. If the negotiations should fail for the target price, the client is still able to use the designs and the contractor can be used on a cost contract. The close-collaboration agreement is a large part of the contract. It states the following:

- The parties will appoint a joint organization for the project.
- The work in the organization will be governed by a leading group of representatives from both parties.
- Through the joint organization shall both parties experience be used through open collaboration with a focus of wholesome solutions to increase efficiency and here by aiding both parties business related goals.
- The organizations work and attitude shall be defined by: Total openness, constructivism, proactivity, responsiveness, respect, pragmatism, professionalism and an understanding of business integrity on both sides.
- It is the intension and understanding that collaboration according to these terms will lead to good rela3tions, efficient and developed procedures, an innovative and solution based work climate leading to fulfillment of time and cost goals.

4.1.4 Organization

Each party will be represented by one representative. These representatives will form the highest level in the collaboration organization. Level two is the steering group, which will delegate the governance of the construction project to the project management team which forms level three. Below the project management team is the rest of the collaboration organization.

4.1.5 Conflict management

The contract states that conflicts should be managed at an as low as possible level. Should the unofficial negotiations fail shall the matter be resolved at a steering group meeting. If no solution can be found shall the matter be turned over to the representatives for resolution. As a last resort is the matter to be resolved by a special Swedish court called “skiljedomstol”.

4.1.6 Payment

For phase one of both parts of the contract the contractor is getting paid on a cost contract. For phase two the contractor is getting paid for his direct expenses. The overhead cost, risk and profit will be paid as a percentage of the target price. This will serve as an incentive for the contractor to stay within the target price. If the outcome is below the target price the difference is to be split 50/50 between the parties. In case of cost overruns, the overruns will be split 30/70 between the contractor and the client.

4.1.7 Collaboration plan

The main features of the collaboration process are the joint project management team and the incentive. Management of the collaboration process will be done and driven jointly and tailored to fit this specific project. External champions and facilitators will not be used on a regular basis but are available if needed. Thus keeping the process in control and fit to the engaged parties. Experience of collaboration is high in both organizations which are thought to minimize the need of efforts to drive the collaboration process. Joint goals and a performance plan for the collaboration organization will be set collectively when the contractor is in place.

4.1.8 Unique features

Aside from the fact that ESS is a complex mega project, there are a few unique features. The building part of the project is only one part of the entire project. This means that there is already a large organization in place on the client's side. This also means that the building works are not the primary objective and that the facilities have to be modified to fit the machine and not the other way around which is the common case in building projects of this scale. The standards are set high which means that there are extensive control plans and nearly all construction work has to be self-reviewed to validate that it meets the set standards. The complexity of the facility requires a systematical approach to the demands of the different parts of the facility. Systems engineering has therefore been adopted, a feature that is uncommon in the construction industry.

4.2 Winning tender

The winning tender was produced by Skanska and will be presented below in parts deemed influential for the study.

4.2.1 Collaboration plan

The collaboration plan is split in eight different sections, the first being: Establish and maintain a close collaboration. Under this section the nine tools Skanska uses for collaboration are described. These are:

Behavioral development workshops and activities:
This tool is used for getting the individuals included in the project in the right mindset for collaboration through workshops and training.

Building high performing teams:
This tool is used for getting the right people on the right teams ensuring the right man for the job.

Human Environment for collaboration:
This tool's main feature is co-locating the project participants to strengthen the collaboration and informal relationships.

Collaboration Charter:
This tool is about creating a common ground for the collaboration, making sure that everybody has the same understanding of the outline of the collaboration.

Collaborative Planning:
This tool makes sure that thought processes within the project are being aligned to make everyone pull in the same direction.

Relationship Management:
This tool strives to highlight the owners of different relationships, making sure that someone feels responsible for the management of all relationships.

Building Information Modelling (BIM)
This tool is used to visualize the information behind every decision, helping everyone to understand the context and reasons for decisions.

Supply chain integration
This tool aims to make subcontractors a part of the collaboration, making Skanska's role clear as one part of the organization and not trying to play the part of both contractor and client. By integrating sub-contractors, risk visibility and communication will become better in the project, aiding the collaborative spirit.

Third Party Facilitation
This tool is to make sure that a constructive and open dialogue is kept between the parties in the collaboration.

The section continues by discussing the factors that need to be aligned in both organizations to make use of the above presented tools. The first alignment factor is the creation of common goals for the organizations. The proposed goals are under phase 1: Finding the lowest possible target price. And under phase 2: delivering the project within the target price. The second alignment factor is getting the business models aligned to reach a satisfactory target price for both parties. The third alignment factor is getting the responsibilities for leading the collaboration process

right. Skanska proposes the use of the BS11000 standard highlighting certain factors. The collaboration spirit has to flourish top-down with the management team as a leading star. An activity plan for the collaboration has to be created. New members to the project have to be introduced by training in the collaborative ways. The collaboration focus has to shift depending on phase, making sure that performance is delivered in phase 2. The collaboration is proposed to be reviewed in the phase changes. To measure, develop and manage the collaboration Key Performance Indicators (KPI's) have to be decided and monitored. The collaboration has to be reviewed continuously to make sure a close-collaboration culture is held with the following values:

- Open partnership
- Common goals
- Collaborative behaviors
- Excellent relationships
- Effective and fulfilling work processes
- An innovative and solution orientated working environment
- Fulfilment of the established scheduling and cost targets

4.2.2 Communicating within the project

The communication part begins with a section of how important communication is to build a sense of identity and getting participants engaged in the project. By communicating goals down through the organization the people at the bottom feel that they are contributing to the project. Next section is about the need for one identity for the project so that people can relate to the project as their employer and not the mother-company. This will help build a unified project organization. Leaders play an important role in communication. Skanska therefore highlights how their leaders receive training in communication.

Next in the document is the section about organization structure which proposes a relatively standard project organization with one line manager in the project and one in the home organization. The home line manager is ultimately accountable for the performance of the employee and therefore a monthly feedback between the line managers is suggested. Skanska builds their business model on continuous feedback and that the personal development goals for their leaders are aligned with the corporate goal. The same approach is suggested for the ESS-project.

To achieve good communication is extra hard in large complex projects. In Skanska's opinion a good way to handle the problem is employee engagement. This is fostered by a good corporate culture that values the input from all employees on all levels making all employees feel that their opinion is valued. Regular teambuilding activities are also proposed for enhancing the team spirit.
The tools proposed for aiding communication range from a newsletter and large social project gatherings to a systematical communications plan. Extra focus is given to a shared digital workspace with a good webpage and 3D-models.

4.2.2 Conflict management

Conflict management is described as something that is essential to have but you hope never to make use of, much like the life vests on an airplane. Skanska proposes that all conflicts shall be managed at an as low as possible level as far as possible. Should it not be solvable at the lower level should it be escalated through the organization until a solution can be found. The escalation, even though not to be taken lightly, should be quick to prevent the conflict from growing.
To prevent conflicts from arising, a seminar in the beginning of the process is proposed. At the seminar the contract will be discussed with the legal departments of both parties to make sure that both sides understand the legal implications of the agreement. A role-play to simulate issues that may arise during the project is also a part of the seminar. By simulating issues during "safe" conditions it is hoped that real issues will not lead to unconstructive conflict.

4.2.3 Establishing the total work costs (TWC)

As mentioned above the TWC is viewed as one of the crucial factors for a good collaboration. In this section the process for reaching the target price is described. The following factors are viewed as the essential ones for getting the TWC right:

- Transparency of systems
- Scope of work agreement
- Risk
- Role of the risk manager

ESS's involvement in the process is discussed and it stands clear that through a joint program for the TWC with common goals and objectives fair incentives can be decided. A clear understanding of the TWC and its program will form the base for collaboration in the construction phases of part one and two.

4.2.4 Identification of, and establishing other goals within the project

It is recognized that the following primary goals are set for the different phases of the project:

Phase 1:

1. The main goal is to achieve an agreed Total Works Cost – this is without doubt fundamental since we will not reach an agreed TWC without an integrated collaboration. If the TWC cannot be agreed it will not be possible to establish a collaborative organization.
2. To have established a base line for the design and schedule
3. To have within the first 100 days (a BS11000 recommendation) set the key dates for the toolkit stages in setting the culture

Phase 2:

1. Delivering the project within time and cost.

These goals are viewed as set and not discussed further. The focus is instead directed at the secondary goals to be set jointly between the parties. It is argued that in the process of finding the secondary goals the overall success factors can be found, as presented below.

1. Finding the areas for joint and individual successes.
2. Developing a definition of what success is in this project.
3. Defining the KPI's that will drive this success
4. Harnessing the required skills for success.

By working with the common secondary goals both the project and the collaboration outcome will be enhanced.

4.2.5 Collaboration within project management, design, construction management, risk management, procurement, scheduling, cost control, OHS, environment.

Skanska is prepared to offer full integration and transparency throughout all teams mentioned above. To set the collaborative spirit in the teams, the following activities are suggested:

1. Familiarity with the team's experience, personalities, strengths and development areas.
2. Establishment of a common view of the team's mission.
3. Agreement on a common view on what success looks like.
4. Identification of key contributors for success.
5. Identification of KPIs for the team and the team's collaboration with other groups.
6. Creation of a group collaboration plan.
7. Involvement key contributors in this plan.

As the project progresses into phase two the following activities are also suggested:

- Sending out quarterly collaboration questionnaires based on KPIs
- Collate and analyze data
- Benchmark against best practice data
- Identify relationship owners to take accountability for key relationships and interfaces
- Use facilitators to open up and drive communications

- Capture actions to meet the agreed needs of Alliance partners and key stakeholders

- Quarterly review of progress and developments measured again initial analysis

The integration and collaboration is important not only because collaborative spirit flows top down in the organization, but also because a more integrated team will provide better grounds for decision on a higher level on the account of the team sharing the same view of the problem.

In the table below the key aspects for collaboration for each team is outlined:

Sub group	Collaboration aspects
Project Management	Leadership and drive for collaboration and culture; shared goals
Design	Clarity and responsibility; Participation and involvement; monitoring and mitigating
Construction Management	Respect for ESS goals; shared goals
Risk Management	Complete visibility; Transparency
Procurement	Participation; formalised approval process; integration of key suppliers
Scheduling	Shared roles; shared responsibility
Cost control	Shared roles; shared responsibility
OHS	Shared behaviour; Culture and common understanding
Environment	Common Ground; Shared values; joint Goals

4.2.6 Transparency, (financial; procurement; management, etc.)

Transparency is achieved and guaranteed by it being a major part of Skanska's business system. An ethics council acts as an anonymous ethics support to make sure all business is handled professionally and all employees receive training in moral and ethics. Therefore Skanska is able to offer full transparency in the project.

4.2.7 Other approaches or ideas that will add value to the collaboration approach envisaged

Under this section a few other activities for enhancing collaboration are presented. There are two that stand out: The Activity Based Workplaces (ABW) and change council. The bearing idea of ABW is that instead of personal workspaces you choose your workplace depending on what you are doing at the moment. The ABW promotes short communication routes and spontaneous meeting, hence enhancing collaboration. The change council is a group of two people from each organization, reviewing proposed changes before they are discussed at a higher level. This prevents poorly planned changes from taking time at project meetings.

The other documents of the tender are focused on different aspects within the collaboration agreement and not the collaboration itself. The other documents mostly state that the decisions and plans should be made in collaboration. The importance of a co-located office reappears in some of the documents and so does the need for communication throughout the project.

Even if all the other tendering documents and proceedings have an impact on the relationship, they are viewed to have little impact on the development of the relationship between the parties. Therefore they are not accounted for in this study.

4.3 ESS early interviews

All interviewees have experience from partnering projects in the past and are overall positive to the concept of partnering even if one emphasizes that it is not right for all projects. They all share experience from large projects and they all think that partnering have been relatively or very successful in previous projects. Overall the soft parameters are the most important ones. All interviewees have concluded that the work climate gets much better with partnering. The common belief is that if you focus on the relationship you will get the time and cost reductions as a bonus.

The outlooks for this collaboration are viewed as very good because of the design of the contract and the experience and will of the project members from ESS. The tender is described to give the same view of the project members from the contractor. One member even thought that the complexity of the project would help develop a strong relationship between the project members. On the other hand the soft parameters are viewed as the biggest threat to the partnering concept as described by one interviewee: "You can put four horses in a paddock with the intent of them getting along but if they don't, you can't force them "

This highlights the concern that even if you have the intention of making people cooperate it comes down to the chemistry between the involved people. The negotiation of the target prices is also viewed as a make or break for the project. A failure to reach a target price that both parties are content with is feared to undermine the continued collaboration.

The hopes for the project vary between the interviewees. For some it is the opportunity to be a part of such a large project and the experience from a well-developed collaboration that tickles. Others are looking forward to getting to work together with the contractor, solving problems together as the project goes along.

The worries for the project are more unified in that no one fears anything special. They all seem quite confident that they will be able to cope with what is thrown at them as long as the collaboration works out. It will be though and hard work during the project but they will be able to look back at a successful project.

4.4 Skanska early interviews

The two interviewees from Skanska are both experienced in the collaboration processes and have been a part of projects where the collaboration process has been developed to a higher level during the project. The view on the collaboration is positive and they both think that it is the right way for both this project and larger project over all.
Generally the view on the upside of collaboration is that it is a good way of preventing contractual conflicts from taking focus from the goals of the project. A positive effect on the work climate is also viewed as one of the major upsides. Being able to allocate the risk to the part most suitable to carry it, is also a big upside and one of the reasons that Skanska was able to tender.
On the downside of collaboration is the extra time and energy that have to be put into the projects to manage the collaboration process. This makes both interviewees draw the conclusion that it might not be suitable for smaller more straight forward projects.
One of the interviewees also raises the concern of how collaboration will affect the industry over a longer time. His concern is that there is a large difference between what is being purchased in the tendering process and what is being delivered due to negotiations after the tendering process. This might lead to the development of "competitive documents" only used in the tendering process and the loss of confidence in the tendering process within the industry.
The project-specific opportunities for collaboration are viewed as very good due to the fact that the whole tendering process and the construction management organization within ESS have been optimized for it. The dedication of ESS's CM-organization is also viewed as a success factor. Furthermore the sheer complexity of the project is a good opportunity. The complexity makes collaboration a necessary tool to be able to cope with the project and not just a project management tool. There is also lots of confidence in the plan for collaboration presented by Skanska and both interviewees are under the impression that as long as you stick to the plan with its procedures and tools there is a good outlook for collaboration.
One threat to the collaboration process is the early integration of the organization because the integration will take place before common goals on cost can be set. This approach is feared to give the impression of the organization being more integrated than it really is, hence undermining the relationship. The short time to integrate and get the organization in place is also viewed as a risk. Finally is the risk of not getting the right people on the right places viewed as a threat though it in the end comes down to personal chemistry between the people in the organization
The target price is viewed by both interviewees as a make or break for the project. A target price with a fair chance for the contractor to make a fair profit is key in making the collaboration work. One of the interviewees argues that the collaboration and the target price are dependent. A good target price will lead to a good collaboration and a bad target price will lead to a poor collaboration and vice versa. One of the benefits of collaboration is that you can put the home organizational economic issues aside. But if one of the parts of the collaboration does not make money, and the project is doing well, that part will have problems from the home organization affecting both collaboration and the project as a hole, hence the importance of a fair target price.

The hopes for the project as a hole are that it will be very rewarding to be a part of the future and a piece in such an important project for the region. One of the interviewees hopes that the construction work will not be too isolated from the rest of the project, and that it will generate opportunities to learn from the rest of the ESS organization. Both interviewees see time as a challenge in the project as a whole. One fear is that delays and changes will not push the finishing time but squeeze the timetable for the construction work and forcing a lot of the work to be done simultaneously. The other fear is that after a good start in the beginning delays will make the construction part of the project loose its momentum, making it hard to keep senior staff in the construction organization.
The unique features of the project regarding the collaboration part, late contractor involvement and the construction parts dependence upon the machine, are not viewed as a problem. The difference in knowledge is thought to be easily overbridged and changes can be managed as long as the methodology is in place.

4.5 Observations

4.5.1 First month

The contract with collaboration seems to have a good effect on people arriving. This far it is hard to tell which original organization people belong to. The mood is good and jokes are frequent. However this far the project is just starting and target price and definitive decisions are still to come. This means that discussions are still at a concept stage where differences of opinions are scares and different understandings of the situation are hard to spot.

The first month of the integration process has been dominated by people dropping in to the organization and getting up to speed on the project. For the project management group the main objective has been the performance plan. This document controls the process of the collaboration and the process of reaching the target cost. This plan is reviewed in the document section. Information workshops have been held as a part of briefing the new arrived parts of the organization. The quality has shifted between the workshops and the opinion seems to be that they are good for an overview of project parts but that the groups are too large to stimulate discussion and feedback. The workshops have been quite traditional with one way communication and PP-presentations.

Work has also begun with the early works planning. The early works are scheduled to start on the second of June and will be done by Skanska. The early works will be sort of a stand-alone project where Skanska's management system will be used though the collaborative management system will not be in place till June. In the planning work, early-work group's changes to the original design have already been made to enhance buildability. Meetings on the changes and other issues have been conducted in smaller groups with a clear focus on solutions and simplicity for the project. Mandates to find solutions are delegated freely within the organization without concern for which original organization people belongs to. The feeling at this point is that people already sees the C101 organization as their "home" organization. No conflicts have been observed at this stage.

Administrative procedures are being discussed and work with creating project specific guidelines and a common computer environment are on the way.

4.5.2 Second month

The involvement in the workshops has increased as participants are more informed on the project. But the groups are still too large to allow for a detailed discussion on topics presented at the workshop. Most of the questions are postponed for later discussion.

In the early-work group the higher level of project awareness is also visible. Detailed decisions close to final decisions are being made and solutions to problems at hand are being discussed at a detailed level. Integration within the group is still very good and this group seems to be tightening as time goes along. There is a sense of "we and them" between the design team and the early-work group as details concerning for example soil stabilization have not been worked out yet. This is highlighted by a faint attitude of having to fight to get their way. Management issues and money is not discussed to a large extent and there is a feeling of trust that participants will get credit for their efforts.

Sustainability issues are discussed and reviewed for the environmental court negotiations. These issues require more contact with CF as the sustainability function is not fully integrated in to the C101 organization. The interaction between CF and C101 is still a bit stiff and the level of interaction seems a bit unclear within the group. Even if the roles are a bit confused work is still progressing as the group seems to share the same values on the topic. The major integration work seems to be to integrate the sustainability issues into the rest of the organization as this is mostly viewed as "requirements to meet" by the rest of the organization.

The project management group has two major processes at hand. Driving the project forward and establishing the organization with collaboration. The tight time schedule is causing problems as the driving of the project takes a lot of time and issues related to this are often urgent. On the other hand the organizational issues are important to lay down to ensure a solid foundation for future work. On the more urgent project-driving related questions the group is well integrated and all members seem to trust each other's judgment and motives. On the collaborative and organizational issues the group is more scattered and as issues arise the need for aligning work and group development becomes apparent.

As the group begins to scratch the surface of the collaboration issues, it becomes apparent that all participants have their own view of collaboration and own interpretation of the meaning of expressions. The importance of aligning these factors becomes clear as the discussion heats over misinterpretations of the same expressions. As the discussion heats a dedication to each home organization becomes more visible and the trust within the group begins to fail. One particular issue is that it's not yet clear how the collaboration should be managed and at what level. The two conflicting standpoints are where the focus should be placed. ESS-participants are more focused on creating a custom collaboration where the actual needs are the central focus, whereas the Skanska representatives are more focused on implementing the tools to make sure a collaborative spirit is reached.

Another issue has been to find the identity of the organization. Even if it is a simple build contract in the bottom of the collaboration contract, there is still a design part and a integration to take into concern. This puts the organization in the middle ground of contractor and client. The group concluded that it is a delivering organization for the buildings with a responsibility for driving the project forward.

Both these issues have stemmed from the open descriptions in the ITT. These were meant to inspire the contractors to give their view on collaboration rather than trying to fit their organization in to the needs of ESS to win the tendering process. This approach has left many decisions to be decided together.

Other issues in integrating the organization have been to agree on a common work calendar, getting the IT-environment to work for both parties, staffing the organization to its needs, branding the project and getting the performance plan for early works to be coherent with the coming performance plan for C101.

Overall individuals are becoming more and more integrated as they work together and there seems to be a mutual trust that the collaboration will work and benefit both organizations. The organizational integration is still limping with issues of integrating IT-solutions and delegating responsibilities within the organization. A common question is still if groups are allowed to decide on matters or if it has to be delegated to a higher level and if so who to go to. Another issue causing frustration is the lack of information on which solutions can be changed. This causes new opportunities to change solutions to appear as the project goes along. This is delaying the preparation of works. On the same topic some participants are still finding it hard to grasp the full scope of the project.

4.5.3 Kick off

The observation phase was concluded with a kick off for the collaboration. The kick off begun with a presentation of the technical background of ESS and then moved on to “getting to know each other”-exercises. The afternoon was spent working with values, goals and common expressions in collaboration to create a common platform for people within the project.

Participants were very engaged in the activities even though it is a busy time for the project. The overall mood seems to be that these issues are very important to the members of the project and the participants even evolved some of the exercises to be more general. At large people are very excited to be working in a collaboration project and seem to trust the concept. The most anticipated parts are to be able to work openly with each other and not have to focus on securing a profit for the home organization. Participants worked closely together throughout the day regardless of home organization and outlined goals and values of importance for both parties.

4.6 Late Interviews

The late interviews are quite coherent in valuing the integration of individuals as successful and not to have caused any problems. The reasons for this are believed to be a good choice of people for the project, work with the spirit of the project and that it is common in the industry to be put together with people you do not know.

The integration on an organizational level has caused more problems than expected and has required a lot of work. Different cultures and policies together have proven difficult to bridge in an effective manner as decisions have to be anchored in both home organizations. However the interviewees are certain that this work is necessary to create a lasting collaborative spirit and that sufficient effort has been and will be put into solving the problems in this area. The workload in this area has also meant that the collaboration plan is a bit delayed and the systematical work with collaboration is just beginning as these interviews are held.

The view on where the relationship stands in terms of trust, communication and integration is that it is halfway there. Trust is evolving in the areas where the work has been focused and there are no obvious obstacles in less prioritized areas. Communication is good within the project and there is no sense of information being held back but the systematical routines are not in place yet. For the integration aspect the common goals are in place and relationships among individuals are being formed but there is still work left with establishing clear roles. All interviewees are thorough in pointing out that the true strength of these aspects is hard to value until actual work has begun in the organization.

When it comes to the relationship with the rest of ESS and CF, the opinion differs as to how collaborative this relationship should be and what role CF should play. The opinion ranges from that CF should take the role as the client to that CF should be fully integrated in the collaboration. The pros with having CF as a client are viewed to be that CF then can help to review the project and keep it on track. The cons are viewed as the risk of ending up in a traditional client – contractor relationship in the entire project. Connected to this question is the scope of the collaboration where the difference in the view of the collaboration concept is still visible. One of the interviewees argues that in order to be truly collaborative all of the subcontractors should be involved in the collaboration as this is the right way to do collaboration according to BS 11 000. The other interviewees are more focused on creating a tight bond inside C101.

The biggest surprises in the process are all connected to the different aspects of the integration on an organizational level. The different views on the collaboration concept and how much work that is required in the beginning have been the major surprises.

The view overall is that most aspects have worked well, especially the good spirit that has been created in the project. The intentions are viewed as genuine from both sides and the overall opinion is that the heading of the project is right but that there is still a long way to go. The matters that have been more problematic are: The IT- solution, which has caused unnecessary problems. The staffing of the project, which could have been done differently getting the right people in at an earlier stage. The systematical work with collaboration, which could have started a bit earlier. The connection with the partnering concept in these matters is the slower pace of decisions as decisions have to be reached together.

The personal views on collaboration have not changed during the process but the views on how it should be implemented in this project have begun to be aligned. In this question most of the interviewees seem happy with the form the collaboration is beginning to take.

The hopes for the project so far have been fulfilled but as with the plans for the project it has been hard to have a clear picture as this project is a first off. The fears and hopes for the future are still centered on getting the continued collaboration right.

4.7 Documents created in collaboration

3.7.1 Performance plan phase 1

The performance plan outlines the work for phase 1 under the three major areas of Target cost, Collaboration and Early Works. The plan has been developed and agreed in collaboration.

3.7.2 Collaboration

This section begins with the statement that ESS and Skanska have agreed to work in close collaboration. Goals for the collaboration begin with "the overreaching goal is to establish a sound platform to become a role model for collaborative working in the Swedish construction sector". This goal is then broken down into goals for phase one which are:

- To agree on a collaboration plan
- That the C101 organization has started working together in collaboration
- That each member of the project feels loyal to the project and comfortable in the organization.

The scope of works is to define a structured process for the building of a successful organization. The work of finding cornerstones and tools for this process has begun with parts of the BS11000 system as a guideline. The collaboration process can be divided into two processes: Integration of individuals and integration of the organization on a company level. The company level of collaboration is mostly about integrating processes and goals, whereas on an individual level extra concern is placed on integrating the individuals.

The common goals will be set on three levels from the steering group level down to an individual level via the project management level. Milestones will help guide the collaboration goals.

The following cornerstones have been identified for the success of the collaboration:

- Common goals will be established
- Establish a working culture based on
    - Team spirit based on openness, honesty and mutual respect
    - Innovative problem solving working environment
    - Well-informed organization with open, clear communication
- Integration of the project members by establishing a clear role for each member in C101 organization and each member preforming the tasks this role entitles regardless of which organization the member is original from.
- Dissolving mistrust by creating transparency by both parties being involved in the project working side by side in their daily work.
- Creating possibilities to take fast and accurate decisions through having an information level that is common within the organization regarding details of the project such as risk, schedule and production methods.

- Establishing close collaboration between the design team and the C101
- Working with the design chain in collaboration

To reach the goals and cornerstones the following tools have already been identified:

• Committed leaders who lead by example and continually work with the organization to create and maintain a good project culture.
• A brand for the project that lets the organization work under a common name and identity.
• Careful selection of the right people to be part of the organization. This is more important than the system also in creating project culture.
• A thorough introduction of all new project members incl. Sub-contractors and Side-contractors to make sure that they feel welcomed and as part of the team.
• Information about the project.
• Information about C101 goals and execution plan.
• We will use our current team members in this introduction as a way of creating team spirit.
• The Performance Plan for Phase 2 will be our Collaboration Charter. This will be the foundation for C101 way of working and building the ESS facility.
• Establishing the Target Price jointly will be used as a driver for planning Phase 2 and to learn how to execute the building of the ESS facility and together set the Target Price.
• Activities and workshops with the aim to create a C101 culture and build a team.
• Creating an office where not only C101 team members have a place to work but also Sub-contractors, Side-contractors and the Design Team.
• Collaboration planning will be the basis for our planning.

5 Analysis

The ESS project is a mega project based on its size and complexity. Further does the large number of international stakeholders add to the complexity, making it for this study a clear example of a mega project. This factor also connects to the problems of governance described by the literature of mega projects. Even though the study is being performed on part of the whole project, not clearly on its own to be regarded as a mega project, the context of a mega project is kept as a parameter affecting the project. This position is taken due to the fact that the smaller construction project is a central part of the bigger one making them highly interactional with each other. This dependency of one and other argues that the same context will apply for both projects.

The collaboration organization has the intention of becoming the leading star in partnering within the Swedish construction industry. Based on the documents (Tender, ITT and Performance plan) they are ticking the boxes set by the literature for partnering. This makes this project on paper and in context a fair shot at being a partnering project, making it a good project to study. The use of "collaboration" instead of "partnering" to describe the concept in the documents is not given any concern as the concept described as "collaboration" matches the concept of "partnering" in the literature. This is simply a case of many ways of naming the same thing.

5.1 The prerequisites going into the project

The documents from each part are quite similar. The ITT is fairly general in describing what is asked of the contractor and states that most decisions will be made together when the contractor is in place. This was a way for ESS to make the contractor describe their view on collaboration in order to not get the same tender from all contractors. Asking very specifically for processes connected to collaboration was thought to yield answers from the contractor trying to satisfy ESS rather than reflecting their view on collaboration.

The winning tender is a bit like a menu for collaboration, stating what can be done but also keeping the door open for other solutions. Much like the ITT there is a focus on deciding together and keeping the processes general. The biggest difference is how to achieve good collaboration. ESS has stated an organic process where actions are taken when needed and mainly driven by the project management team. Skanska's tender focuses much more on procedures and plans. External facilitators and a very planned route is their way of achieving good collaboration.

The early interviews paint the same picture. In most cases people from the two organizations are unified. All of them have a positive view on collaboration and think that it is right for this project. The upside of collaboration is viewed as getting people to focus on what is best for the project and creating a good work climate where as little energy as possible is used for conflicts and claims and can instead be used on boosting the project. The focus from both parties is on creating good soft parameters

and the hard ones will follow. The complexity of the project is viewed as an opportunity because it will need collaboration to be successful making the collaboration an integrated part of the project. The parties are unanimous in singling out the TWC and the personal integration of staff as the biggest threats to the collaboration.

The interviewees differ in hopes, procedures and fears. The hopes differ on a personal level regardless of organizational belonging. The ESS employees don't fear anything in particular whereas the Skanska employees fear the tight time schedule, where delays will affect both the pace of production and the ability to keep the best staff on the project. The same differences on how to achieve collaboration are visible in the documents. Skanska's personnel is more focused on procedures and plans while ESS personnel is more focused on the mindset and keeping this mindset through actions where they are needed.

Compared to the current theory on partnering most pieces are in place for a good relationship development. The contract is of a pain/gain-share type and fairly equal to both parties. ESS has some bail-outs, but using these will severely damage the time schedule and therefore the contract is keeping ESS committed to the collaboration. The collaborative way of working has influenced the whole project and has been a part of the scope since day one. Another key aspect confirmed by the interviews is that it would have been close to impossible to procure and drive the project in another way. The risks are too great for a fixed price contract and the design process is not at a level where it would be possible to procure on it. Adding to this there is a continuous change process which would be extremely lucrative for a contractor using the standard contracts. This makes this project a first-off, where partnering is used not only to gain benefits but as an enabling factor for the project.

The difference from theory is on how to achieve a good relationship. ESS's way is a little bit too far out on the organic side and runs the risk of the relationship getting to little attention. Skanska's proposal is on the other hand focused on procedures and may cause the process to feel forced which will damage the natural relationship-building mechanism. The difference in the perception of what partnering is may also be a source of conflict according to the literature. Taking the time in the beginning to straighten these differences out will be key in building a good relationship.

5.2 Coming together

The open ITT caused problems straight away as Skanska was under the impression that the integration should take place when the TWC was set. This caused the first weeks of the integration to be dominated by people dropping in to the organization delaying the planned information transfer with workshops. This also meant that a lot of the first workshops were held for people who had not had a chance to grip the project yet and the discussion parts of the workshop were therefore not utilized. The projects status as a collaboration project seems to have had good impact on the people arriving. The personal integration into the project has been instantaneous. People have

entered the project with an open spirit trusting that the collaboration will work. If this is a "honey-moon effect" time will have to tell.

From the start there have been two major processes going on: Driving the project forward and building the organization. The later seems to take up more time than expected due to the postponing of decisions during the tendering process from both parts for decision-taking together.

In the organizational building process there are two processes: Individual integration and organizational integration. The first one is running smoothly and the open spirit and focus on the project is in place from day one. There is no evidence of suspiciousness between parties as suggested by the literature. The reasons for this might be that the Swedish construction industry is a bit friendlier than that of other countries and that the integration makes it quite similar to a normal contractor's organization which people are used to. There is also a trust among participants that the concept will work and yield a profit for both organizations. The lack of hard contractual boundaries in the beginning of the integration may also help this spirit by allowing participants to divide the workload between them regardless of organizational belonging. However it is important that the coming project plans honor these unofficial agreements in order to maintain the trust between individuals.

The organizational integration is not running as smoothly. To create a common IT-environment has proven problematic as this involves changing policies in both mother organizations to work. This has not been fully resolved after two months of working together. Creating the same schedules for employees has faced the same problem.
The different views on how to collaborate and the need to align these views have become more apparent as work progresses. This issue is a little bit charged as all participants have their own view of what is the right way and is personally engaged in getting it this way. This causes the discussion to be heated and misunderstandings frequent. The basics and goals are the same in all views but the terminology and the path to achieve it differs. To take the time to align these factors is necessary. It is very evident that a different view on collaboration can undermine the entire project. This is supported by the theory which mentions a different view of collaboration as a common source of conflict. The open ITT and Tender is the source of this problem as both parties have kept as many doors as possible open in order to find the optimal solution. This has led to a situation where many decisions have to be made together in the early stages of the project and a freedom for participants to form their own idea of the collaboration concept.

The differences in the ITT and the Tender on collaboration have been handled in the performance plan for phase one. The plan is still on a general level but has started to form the outlines for the collaboration. The plan is hitting the middle ground on how to achieve collaboration, saying that a collaboration plan should be developed. The collaboration plan is to be shaped a bit more after the organization and focused more on goals and a wanted situation. This to keep the plan open to be formed after the needs at the moment. The question about third party facilitation is not mention in the

performance plan. Overall a lot of the actual collaboration work is pushed to phase two.

Even if both parties have been positive to partnering, have good experience with partnering and right mindset going into the project, it is obvious that partnering has to be worked with together. Small differences in the perception of different terms are enough to light little sparks of mistrust. This might not cause problems in the beginning of a relationship but when parties act according to their own interpretation of partnering later on in the project. These actions, if they do not match the counterpart's expectations, create mistrust. This means that the tools and procedures described in the theory chapter to create the right mindset are important to go through, even if the mindset is right from the beginning. Partnering has to be achieved together even if each part has the right intentions and mindset going into the project.

5.3 Problematic issues of this concept

The collaboration concept adapted in this project has offered some problematic issues due to the technical layout of the concept. Information transfer to the contractor has not been used to its full potential. Some of the workshops have been poorly prepared due to tight time schedules and others have been on the wrong level. This has led to a situation where it is unclear which design features can be changed and which cannot. This has caused some frustration and an unnecessary sense of having to fight to get to do it in a better way. A better transfer of the requirements behind the design and production choices would probably eliminate this problem.

The at the moment partial integration of the support functions within CF has led to a new interface where CF support is not co-located and has a more traditional client role in for example QA- issues. This interaction has not been given much attention and it has been a bit unclear what level of collaboration that is expected in this interface. This is an area where it is easy to slip into a traditional relationship where the client tries to push as much of the responsibilities on to the contractor. Some tendencies of this phenomenon have been observed but it has been hindered by individual participants from both parties.

The open ITT made it impossible for Skanska and ESS to plan the organization until the integration had begun. This meant that there were no plans for how to drive the project in the early stages of the integration. This has made it hard for the different groups to take decisions as the authority to take decisions has not been delegated. This has made work slow in the beginning for groups having to take decisions in the early stages.

An observed behavior suitable for further research is that the openness between parties has resulted in a lack of decisions and standpoints from the client's side before the contractor was in place. Instead of making a decision or taking a standpoint, and

being open to change it, the decision has been postponed. This has led to a situation where the consequences of the decision have not been reviewed as no decision has been made making a lot of consequences unhandled. This however requires further research to be linked to the concept itself.

5.4 Already working well

Even if there has been and still are some problems connected to the collaborative way of working in this project, which there are in all projects, some benefits are already visible. The spirit in the project is very good as people are working together trying to overcome arising problems instead of trying to place blame for problems. The focus on meetings is to find solutions that are the best for the project regardless of which home organization it may benefit. There is an openness between parties on problems which means that they can be solved instead of priced by either part. A lot of these benefits are to be attributed to competent leaders and participants on both sides making the best of the situation and trying to embrace the spirit of collaboration.

The problem of the openness of the ITT and the Tender also has the positive side of being able to together find the best way forward. The lack of hard limitations makes it possible to quite freely create suitable plans and together create the rules of the game making the concept both adaptable and securing the plans and rules with the participants of the project.

5.5 Painting the bigger picture

Looking at the project from a mega project perspective with its typical problems it is unclear if the steps taken in the smaller project of C101 within partnering will and can have any effect on these problems. The partnering concept is limited to the interactions between CF and Skanska within the scope of the contract C101. Outside the project the relationships are traditional.

The partnering concept focuses on creating a strong bond between Skanska and CF and looking at the steps taken so far will probably be successful in doing so. The problem is that the C101 organization will be faced with the problems of the larger project of constructing ESS which are mostly out of the control of C101. In order to counter the typical problems of mega projects the scope of the partnering concept would have to be expanded into covering the whole of the ESS project.

Some caution will have to be taken when comparing this project with other partnering projects. In this project partnering is being used as an enabling factor to cope with the context of driving a construction project with in a highly changing other project. The partnering concept in this project is in place to create the flexibility and dynamics required to cope with the challenging context rather than gaining efficiency and time performance. This means that the driving factors behind the concept are a bit different than in other projects and that the evaluation of the successfulness of the project has to be based on these factors.

6 Conclusions

ESS and Skanska's relationship has developed in a linear way, pointing upwards, as the project have moved along. At this stage, no major setbacks in the relationship have been observed. The integration of the organizations and the openness of the contract have allowed the people to work side by side solving problems as one organization, which seems to have had a good effect on the building of the relationship. Furthermore is the positive bias a factor for the good relationship developed so far. However are the relationship building largely affected by the persons in the project, their good efforts in the beginning of this project has led to the, so far, successful development of the relationship. If the persons had lacked the positive bias towards the concept the result would probably not have been as successful.

The primary fear on both sides was to get the personal integration right, which has proven not to be a problem. The personal integration has worked very well in this project. Participants seem to trust the concept which allows people to be open and work together to find the best solution for the project without being suspicious of the other's agenda. The problems have arisen on a management level where the different proceedings and policies in the home organizations have made it hard to create common policies and proceedings for the project. The hopes from the client's side have been to create a good working environment and an opportunity to learn from the contractor. The contractor's hopes were that it will be very rewarding to be a part of the future and a piece in such an important project for the region. The hope and goal for the joint organization is to become a role model for collaborative working in the Swedish construction sector.

The openness of both the ITT and the Tender has meant that a lot of work has already been spent, and will have to be spent, on defining what is expected of the collaboration and how to get there together. This because the openness of the ITT has made it possible for each participant in the management group to form their own idea of the collaboration concept, prior to entering into the project. Work in this area is essential, as small differences in the perception of the partnering concept can undermine the relationship further down the road. The openness has also meant that the work of the different work groups has been slowed because of uncertainty of who has the authority to make decisions. The handing-over of the current design has caused some trouble. An insufficient briefing on which designs are changeable has caused unnecessary frustration about unpractical design decision. It is also clear that the open concept requires competent leaders and participants in the beginning of the project to navigate the first period without strict plans and a set organization.

The concept has so far worked well in getting a contractor in place and beginning working together. It is doubtable if this would have happened in this time, if a more traditional approach had been chosen. All indicators are so far pointing at a good development of trust, communication and integration between the two parties. However it is questionable if the concept will have any impact on the problems associated with mega projects or if it rather will allow the contract to work within the context of these problems.

6.1 Further studies

As it is too early to evaluate how well the collaboration works under pressure, further studies are suggested into how well the concept works under pressure. A study to see what type of collaboration that comes out of the relatively open boundaries set by this project would further increase knowledge. Finally a study to determine if the collaboration concept has generated the problems with decisions described in the analysis is suggested.

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