



**NTNU – Trondheim**  
Norwegian University of  
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## Partnering inStatsbygg

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Abstract:

This master's thesis is divided into three parts. The process report (part one) along with the article "Partnering in Statsbygg" (part two) presents the equivalent of a regular master's thesis. The appendixes are presented in part three.

To address the adversarial culture of the construction industry, partnering is used as a mean to create a collaborative and flexible building process where each partner achieves their business objectives.

This paper identifies which partnering elements a large Norwegian public client – Statsbygg – has used in their partnering projects. Based on findings the article recommends which elements that should be used in future Statsbygg as well as other partnering projects. The recommendations include elements such as early involvement of the design-builder, key subcontractors and consultants, value based procurement, an intentional agreement, target cost with bonus/malus incentives, open book economy, partnering charter, continuous workshops, partnering measurements, and a predetermined method of dispute resolution.

Partnering is maintained as an important step in the direction of changing the culture characterizing the Norwegian construction industry from an adversarial to a cooperative value based culture. Partnering is Statsbygg's way of facilitating a lean construction process where less time is wasted on disputes, and more value is added to the project.

Keywords:

1. Partnering
2. Partnering elements
3. Public client
4. Integrated project delivery

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(sign.)



# **PART 1**

## **Process report**

Nikolai Haugseth



## Preface

This process report is written for the Department of Civil and Transport Engineering at the Norwegian University of Science and Technology within the project management specialization. The work started 13. January, and ended 10. June 2014. This process report along with the article “Partnering in Statsbygg” presents the equivalent of a regular master’s thesis of 30 study points. The decision to write a scientific article and a process report instead of a regular master’s thesis was based on a request by my scientific supervisor Ola Lædre. It was made possible by the adaptation of this form of master’s thesis by the Department of Civil and Transport Engineering.

The master’s thesis is divided into three parts. Part one is the process report whose purpose is to present an elaboration on the article “Partnering in Statsbygg” as well as to even out the differences between a traditional master’s thesis and a scientific article. Part two is the article “Partnering in Statsbygg” by Nikolai Haugseth, Jardar Lohne, Geir Jensen, and Ola Lædre which is to be published in the proceedings of the 22nd International Group For Lean Construction (IGLC) Conference 2014 in Oslo. The appendixes are presented in part three.

I want to sincerely thank for all the contributions and scientific guidance made by:

Ola Lædre, Associate professor, dr. ing., Department of Civil and Transport Engineering, NTNU

Jardar Lohne, Researcher, dr. art., Department of Civil and Transport Engineering, NTNU

Geir Jensen, Department Director, Client’s department, Statsbygg

Trondheim 10. June

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Nikolai Haugseth





## Summary

This master's thesis is divided into three parts. The process report (part one) along with the article "Partnering in Statsbygg" (part two) presents the equivalent of a regular master's thesis. The appendixes are presented in part three.

To address the adversarial culture of the construction industry, partnering is used as a mean to create a collaborative and flexible building process where each partner achieves their business objectives.

This paper identifies which partnering elements a large Norwegian public client – Statsbygg – has used in their partnering projects. Based on findings the article recommends which elements that should be used in future Statsbygg as well as other partnering projects.

The methodological approach chosen for our investigation was based on 1) a literature study, 2) the distribution and analysis of a questionnaire, and 3) interviews with professionals having experience with partnering.

The recommendations include elements such as early involvement of the design-builder, key subcontractors and consultants, value based procurement, an intentional agreement, target cost with bonus/malus incentives, open book economy, partnering charter, continuous workshops, partnering measurements, co-localization, partnering champions, external facilitators, a predetermined method of dispute resolution, and a contractual right to remove unsuitable people.

Partnering is maintained as an important step in the direction of changing the culture characterizing the Norwegian construction industry from an adversarial to a cooperative value based culture. Partnering is Statsbygg's way of facilitating a lean construction process where less time is wasted on disputes, and more value is added to the project.



## Sammendrag

Denne masteroppgaven er delt i tre deler. Prosessrapporten (del en) sammen med artikkelen "Partnering in Statsbygg" (del to) tilsvarer en vanlig masteroppgave. Vedleggene er presentert i del tre.

For å bøte på den motstridende kulturen i den norske byggenæringen, benyttes partnering for å skape en byggeprosess der fleksibilitet og samarbeid er i fokus og alle parter oppnår sine forretningsmål.

Denne oppgaven identifiserer hvilke partnering elementer en stor norsk byggherre – Statsbygg – har benyttet i sine partneringsprosjekter. Basert på funnene anbefales det hvilke elementer som bør benyttes i fremtidige partneringsprosjekter.

Forskningsmetoden som er benyttet i studiet er basert på 1) et litteraturstudium, 2) distribusjon og analyse av spørreskjemaer, og 3) intervjuer med ledere fra byggherre- og entreprenørsiden med erfaring fra partneringsprosjekter.

Anbefalingene inkluderer elementer som tidlig involvering av totalentreprenøren, prosjekteringsteamet, og de viktigste underentreprenørene, verdibasert kontrahering, intensjonsavtale, målpris med bonus/malus insentiver, åpen bok økonomi, måldokument, kontinuerlige workshops, målinger på samspillet, samlokalisering, partneringsmestere, ekstern fasilitator, forhåndsbestemt metode for konflikthåndtering, samt kontraktsfestet rett til å fjerne personer som er uegnet for partnering.

Partnering fremholdes som et viktig tiltak for å endre den norske byggenæringen over fra en motstridende kultur, og over til en samarbeidende verdibasert kultur. Partnering er Statsbygg sin måte å tilrettelegge for en "lean" byggeprosess der mindre tid sløses på konflikter, og mer verdi tilføres prosjektene.



# Table of Contents

<b>PREFACE</b> .....	<b>I</b>
<b>SUMMARY</b> .....	<b>III</b>
<b>SAMMENDRAG</b> .....	<b>V</b>
<b>TABLE OF CONTENTS</b> .....	<b>VII</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 BACKGROUND .....	1
1.2 PURPOSE.....	1
1.3 LIMITATIONS.....	1
<b>2 METHOD</b> .....	<b>2</b>
2.1 GENERALLY .....	2
2.2 LITERATURE STUDY .....	2
2.3 QUESTIONNAIRES.....	2
2.4 INTERVIEWS .....	3
2.5 RELIABILITY .....	3
2.6 VALIDITY .....	4
2.7 DIVISION OF LABOR .....	4
2.8 SOURCES OF ERROR AND IMPROVEMENTS .....	5
<b>3 THEORY</b> .....	<b>6</b>
3.1 RELATIONAL PROJECT DELIVERY ARRANGEMENTS .....	6
3.2 PARTNERING BACKGROUND .....	6
3.3 STRATEGIC PARTNERING .....	6
3.4 BENEFITS OF PARTNERING.....	8
3.5 INTEGRATED PROJECT DELIVERY (IPD) .....	9
3.6 INCENTIVES.....	12
<b>4 FINDINGS AND DISCUSSION</b> .....	<b>13</b>
4.1 WHY STATSBYGG USE PARTNERING.....	13
4.2 TARGET COST .....	14
4.3 FORM OF PAYMENT .....	16
4.4 PARTNERING IN STATSBYGG AND IPD .....	17
4.5 THE BUDGET MODEL .....	17
4.6 ADVANTAGES.....	18
4.7 POTENTIAL PITFALLS .....	18
<b>5 CONCLUSION</b> .....	<b>19</b>
<b>6 FURTHER WORK</b> .....	<b>20</b>
<b>7 REFERENCES</b> .....	<b>21</b>

# 1 Introduction

## 1.1 Background

Partnering is chosen as theme for this study on the basis of a growing portfolio of partnering projects in Norway in general. Partnering is a result of a wish for change in the Norwegian construction industry culture from an ineffective adversarial culture to a collaborative culture (e.g. Latham (1994), Stortingsmelding-28 (2012), Cabinet-Office (2011)). Further, partnering is considered to be a forward-looking project delivery system that can deal with the fragmentation that has prevented attempts to improve project performance over the years (Male 1988). The use of partnering is increasing, however relatively little research has been conducted upon the Norwegian construction industry. Statsbygg was chosen because of their portfolio of partnering projects as well as their innovative role in the Norwegian construction industry (Statsbygg 2011). Background is further described in the article.

## 1.2 Purpose

The goal for the master's thesis has been to identify which partnering elements Statsbygg has used in their partnering projects and recommend which elements that should be used in future partnering projects. This goal has been reached through the article "Partnering in Statsbygg", which has been accepted to be published in the proceedings of the 22<sup>nd</sup> annual IGLC conference. An oral presentation of the paper will also take place during the conference.

In order to reach the measures of a complete master's thesis the article is supplemented by a process report, presented here. The purpose of this process report is to present an elaboration on the article "Partnering in Statsbygg", as well as to even out the differences between a traditional master's thesis and a scientific article. In addition to elaborate on points made in the article, this report presents additional data and work that did not fit in the article. Further, the data collecting process for the article, as well as the roles of university supervisors and coauthors are described. Lastly, an elaborated discussion, conclusion, and recommendations for further work on the subject are presented.

## 1.3 Limitations

This report elaborate on points already made in the article in addition to present work and data discovered during the interviews and surveys that did not fit in the article. The relational project delivery arrangements investigated in this study are limited to partnering as described in the literature, partnering in Statsbygg, and integrated project delivery. Other arrangements such as alliancing, public private partnership, and joint venture could have provided a broader understanding of the topic, but are not included due to relevance considerations as well as limitations in time as well as scale of the paper.

## 2 Method

### 2.1 Generally

The sociologist Vilhelm Aubert defines method as a way to obtain new knowledge, and a mean to solve a problem (Dalland 2007). To investigate the partnering practice of Statsbygg this study relies on a qualitative study based on a methodological triangulation as recommended by Yin (2009). A qualitative study goes in the depth of the problem, and means to discover connections, entirety, and understanding (Dalland 2007). The purpose of a qualitative method is to acquire knowledge through the subjective understanding and experience of the phenomenon (Stabberud 2002). Nine cases of partnering projects where Statsbygg acted as client were studied. The methodological approach was based on 1) a literature study, 2) the distribution and analysis of a questionnaire, and 3) interviews with professionals having experience with partnering. A pre-study on partnering in Statsbygg was completed in the term leading up to this study as part of the subject *TBA453 Project Management FDP* at NTNU. The pre-study provided the necessary theoretical foundation for this study and consisted of a literature study and the interviewing of two senior managers at Statsbygg. Along with the literature study of the article, the pre-study delivered the partnering elements which are studied in the article.

### 2.2 Literature study

A literature study is a systematic search for published literature. Literature study as a research method was used because it is considered the best way to acquire information about what is already known on the research subject (Robinson & Reed 1998). In the literature study on the topics of the paper, internationally recognized search engines such as Scopus, BISYS Ask, and Google Scholar was used to attain scientific articles, books, reports, etc. from well-known and reliable authors. The Google search engine was used supplementary to obtain literature from industry organizations that could not be reached through the above search engines. Google produces search results with varying quality, but is often useful for obtaining relevant literature. The literature has in every case been assessed in regards to authors and quality of data. The books, reports, and articles included were chosen based on the most relevant and cited publishing found by the search engines when entering search-words such as “partnering”, “relational contract”, “target cost”, “integrated project delivery”, “IPD”, “alliancing”, “multi party contract”, “samspillmodell”, etc. When considering the relevance of the articles the titles and abstracts were read. Because partnering is a relatively new concept in the Norwegian construction industry, mainly foreign references have been used. Literature in languages other than English and Norwegian were excluded.

### 2.3 Questionnaires

To examine the factual data of which elements was used in the different Statsbygg partnering projects, a questionnaire was used (appendix 1). A Questionnaire was used because it was considered to be the fastest and easiest way to get factual information about each of the

partnering projects. In accordance with Blumberg et al. (2011) the questionnaires also enabled us to reach participants that otherwise could have been difficult to reach. The questionnaire consisted of yes or no answers with the possibility to make comments for each answer. Many of the responders used the comment section in order to clarify their answer. For the tendering enquiries, the respondents were expected to fill in percentages for each criterion. The questionnaire procedure is further described in the article.

## 2.4 Interviews

Face-to-face interviews with professionals having experience with partnering in practice were chosen because it was considered to be the best way to obtain first-hand information about the partnering projects of Statsbygg. The interviewees were chosen on the basis of them having personal knowledge and experience of partnering from an overview perspective, allowing them to reflect over the different aspects and elements of partnering. The interviewees are further described in the article.

The semi structured interviews were conducted in accordance with Corbin og Strauss (2008) so that the interviewees had the opportunity to focus on the elements they felt was most important. Semi structured interviews were used because of the complexity of the Statsbygg partnering model, and the fact that this form of interviews gave an in-depth investigation of the partnering elements. An interview guide (appendix 2 and 3) was introduced to the interviewees beforehand. This gave the interviewees time to prepare and an indication of how much time they had on each topic. The interview guide was not followed strictly, but rather served as a checklist to make sure all the topics were covered. In accordance with Robson (1993) the same questions were used in all the interviews with Statsbygg in order to cross-verify the results presented by the interviewees. When interviewing the contractors, the interview guide was adapted to suit their point of view. Often follow-up questions were asked in order to cover each topic as wide as possible. Except for one of the interviewees that only had time for 40 minutes, the interviews lasted in the range of 1.5 to 2 hours. Subsequently, two of the interviewees sent information regarding the startup-workshop and measurements for the corresponding partnering projects.

The interviews were audio recorded in order to document the findings as well as to increase the reliability of the interpretations of each interview. The minutes were written down as close to the actual statements as possible to make sure that the meaning was not distorted, and then sent to the corresponding interviewee for approval.

## 2.5 Reliability

The reliability of the information tells us how credible it is, however the readers interpretation of the information and too much focus on one source of information can weaken the reliability (Samset 2008). All the literature used in the study has been critically assessed, and as they are listed in the references section they are easily verifiable. The reliability of the sources is therefore considered to be high. That the number of citations was a criterion for choosing



which literature to include also supports this. The reliability of the findings increased when the same question was set to all the interviewees and they all agreed or disagreed. That the interviewees came from leading positions and had long experience increase the reliability of their statements.

## 2.6 Validity

The need for triangulation arises from the ethical need to confirm the validity of the processes. The validity indicates the connection between reality and the interpretation of it, and also identifies whether the sources fully cover the topic of the study (Samset 2008). How many sources of information used, and which sources that are used influence the validity. In this study this has been done by using multiple sources of data in a methodological triangulation to increase confidence of the interpretation.

A part of the study involved placing Statsbygg partnering practice in the context of partnering in the literature. Due to the divergent and loose definitions of partnering described in the literature, many references were used in order to get a comprehensive picture of the arrangement and hence increase the validity.

## 2.7 Division of labor

An early meeting between Nikolai Haugseth, Ola Lædre and Jardar Lohne established an overview of the division of labor for the article. Haugseth was going to collect data and results, and do the actual writing of the article. Lædre had the role of scientific supervisor within the subject of the article, while Lohne was to contribute with his expert knowledge about how to write good articles.

The article was hence penned by Haugseth with continuous guidance and input from his main counselor Lædre. All data collection and processing of the data for the paper, including the literature study, the interviews, and the administration of the questionnaire were solely carried out by Haugseth.

Lædre acted as Haugseth's main supervisor for the master's thesis and was therefore involved in every stage of the paper. He contributed with guidance concerning the structure of the article along with discussions regarding every part of the article and their consequent presentation. The several meetings with Lædre often resulted in a to-do-list, which Haugseth subsequently executed. Lædre initiated the work with the paper by submitting an abstract to the IGLC Conference based on Haugseth's pre-study on the subject.

At an early stage Lohne proposed that we presented our findings in a matrix for a swift and easy overview of the results for the readers of the article. Lohne was later involved in the time period before submitting the article for the major revision, as well as the final submission of the article. In both cases Lohne contributed with structure, language, and shortening of the article. The method chapter was at first coarsely written by Haugseth, before Lohne revised it

in order to give it a more academic touch. Both Lædre and Lohne contributed with references in the introduction, theory and method chapter.

Geir Jensen was our contact person in Statsbygg and helped with attaining interviewees, as well as sending and collecting the surveys from Statsbygg personnel. Additionally, Jensen functioned as a controller of the information in the article, and made sure it was correct and did not compromise Statsbygg company secrets or interests. Near the time of completion of the article, Geir Jensen and his co-worker Terje Næss made some revision comments in order to make sure that the data was correct.

After we received the major revision feedback from the peer review Lædre, Lohne, and Haugseth discussed the feedback and how we could use them to improve the article. We divided tasks, where all three contributed in providing a definition of partnering, and discussed how we could link Lean Construction, IPD, and Partnering further together. Lohne presented the method chapter with a few more references, and Lædre contributed with layout changes, as well as a review of the “Findings and Discussion” section. Haugseth fulfilled the discussed changes by entering them into the article, and supplemented the article with new theory and discussions revolving IPD elements and partnering elements. The article was far too long for the IGLC conference’s limit and went through four rounds of shortening between Lædre, Lohne and Haugseth. Simultaneously, the language of the article was sharpened. The A3 presentation of the article was discussed by Lædre, Lohne, and Haugseth, before Haugseth penned it. Lohne made a small revision on the A3 presentation before Lædre submitted it to the IGLC conference.

## 2.8 Sources of error and improvements

Since the execution of both partnering and integrated project delivery often vary from project to project and because the arrangements evolve over time, more sources and newer sources could have been used to further strengthen the reliability as well as validity of the information from the literature study. Since only literature in English and Norwegian were used, some relevant literature may also have been left out.

More interviews as well as interviews with people from different roles in the building process could have been carried out to increase the validity and reliability of the study. There are for example risks of coincidences in the uniformity of the answers when there are few interviewees. More interviewees would have reduced this risk. Another possibly source of error is my personal view on the subject in addition to influence from the interviewees.

There has been conducted more interviews with representatives from the client side than from the contractor side. This may have left the focus on some subjects to mainly be from the client’s perspective. More interviews from the contractor side would have addressed this.

The questionnaires were distributed shortly before the interviews were conducted, however the first completed questionnaires were not received before after the last interview were

conducted. Moreover, there was not an opportunity to interview project managers from every Statsbygg partnering projects. This left many unanswered questions concerning why some elements were used on some projects, and not on others. If the questionnaires had been received before the interviews were conducted, at least some of these questions could have been answered.

Although it proved difficult to obtain questionnaires from every Statsbygg partnering project (9 out of 13 were examined), this would have been very desirable to improve both the reliability and the validity of this study.

## 3 Theory

### 3.1 Relational project delivery arrangements

A contract, whose effect is based upon a relationship of trust between the parties, and in which responsibilities and benefits are apportioned fairly and transparently, is called “relational” as opposed to “transactional”. Many such relational arrangements exist today including Partnering, Alliancing, Integrated Project Delivery (IPD), Public Private Partnership, and Joint Venture. Lahdenperä (2012) jointly labels the listed approaches as “relational project delivery arrangements”. Other collective terms for the approaches for the models are «relational production arrangements», «relational contracting», or «approaches based on multi-party contracting practice» (Lahdenperä 2012). For the purpose of this study the term “relational project delivery arrangements” is chosen. Partnering is sometimes used to describe the collaborative building project practice in general, however most describe partnering as a separate relational project delivery arrangement.

### 3.2 Partnering background

Partnering practice was originally a management approach applied in projects based on traditional contractual frameworks such as design-bid-build or design-build. The first partnering projects date back to 1988 when partnering was launched by the US Army Corps of Engineers in pursuit of avoiding construction disputes. It was based on joint workshop practice, and was a voluntary arrangement between the owner and the contractor. The arrangement was applied only after the low-bid selection of the contractor to the project. The practice has evolved and a new contractual practice has developed, making the concept more blurred. Trust and commitment have always been at the core of the philosophy, and tools like the partnering charter and the decision ladder have been important elements in improving cooperation and minimizing the likelihood of destructive disagreements. Other key components were continuous feedback and improvement (Lahdenperä 2012).

### 3.3 Strategic partnering

Naoum (2003) states that partnering has grown out of the development of strategic alliances in order to manage the supply chain in a particular process in the construction industry. The

concept stems from Japan, USA and Australia where it evolved out of the failure of the traditional procurement methods to meet client criteria and to achieve project objectives. Unlike other project delivery systems, partnering focuses upon the importance that all parties have to play in the construction process, as opposed to the top down approach.

Many refer to the alteration of partnering practice over time as an evolution while others talk about generation changes, testifying of the relatively large change the model have gone through (Hagby 2011). Bennett and Jayes (1998) divide partnering into three generations based on the level of integration and sophistication. As partnering is applied over time or to a series of projects, greater and greater benefits may be reaped as partnering is applied over time or to a series of projects. This is called strategic partnering as opposed to project partnering, where partnering only is applied to a single project. While the first generation of partnering relies on project partnering, strategic partnering is introduced by the more sophisticated second generation. Second generation partnering is as described by Bennett and Jayes (1998) underpinned by seven pillars, namely strategy, membership, equity, integration, benchmarks, project processes, and feedback.

The benefits of partnering dramatically increase as the relationship is unified and developed (Thompson & Sanders 1998). Hence, the potential benefits of partnering depend on the level of partnership maturity. A partnership can be said to be fully matured when all boundaries of differentiation has been eliminated between the partnering parties such that one cannot tell one party from the other, and thus all are seen as truly one team (Akhibi 2010). Project partnering is largely tactical and short-term, hence is still largely based on self-interested trust, whereas strategic partnering across projects offers opportunity to develop socially oriented trust (Ronco & Ronco 1996). As the partnership is maturing and objectives are aligned, the benefits of partnering are increasing (Figure 1). Competition is focused on pursuing separate agendas, whereas cooperation, collaboration, and coalescence focus on utilizing partnering techniques to achieve common objectives (Thompson & Sanders 1998). Akhibi (2010) states that it is quite unlikely for coalescence to occur at the level of project partnering basically for the questions of time needed to form such bonding, thus true coalescence can be argued to be possible only in strategic partnering.

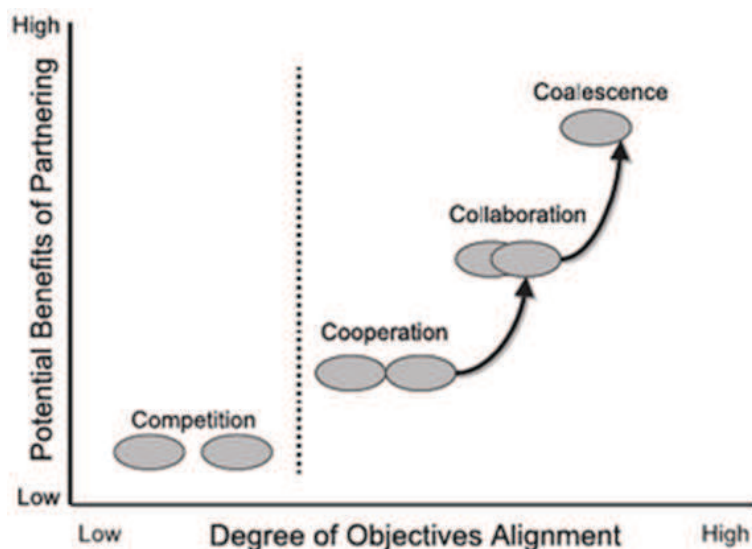


Figure 1: The potential benefits of partnering and the partnership maturity (Thompson & Sanders 1998).

By having the same team working on several projects, the projects will not only benefit from the individual experiences of each partner, but also their collective experience in working as a team and in surmounting the various challenges previously encountered. It is estimated that learning curves produce a cost and time saving up to 30% for every repeat in production processes (Kerzner (2006), Akhibi (2010)). Figure 2 shows a graphical illustration of the progressive shortening of the learning curve and gradual positioning of complete utilization of previous learning to maintain maximum efficiency (Akhibi 2010).

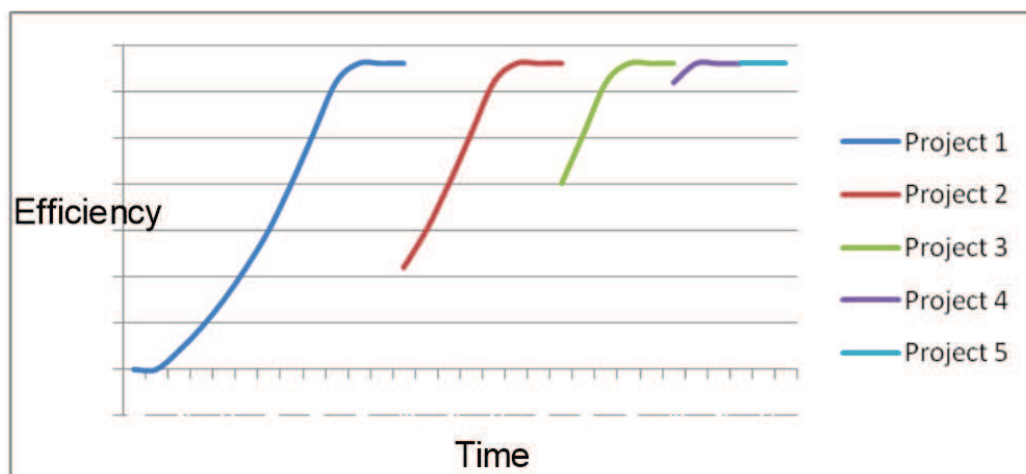


Figure 2: Learning curve in strategic partnering (Akhibi 2010).

### 3.4 Benefits of partnering

The USA Army Corps of Engineers found that using partnering on both large and small contracts resulted in an 80–100% reduction in cost overruns, virtual elimination of time overruns, 75% less paperwork, significant improvements in site safety, and better morale (Naoum 2003). Benchmarking where partnering is compared to traditional construction has

been conducted by the Construction Industry Institute – Partnering II Research team (1996). The results are presented in table 1.

Category	Result Area	Results
Cost	Total Project Cost (TPC)	10% reduction
	Construction Administration	24% reduction
	Marketing	50% reduction
	Engineering	\$10 per hour reduction
	Value Engineering	337% increase
	Claims (% of TPC)	87% reduction
	Profitability	25% increase
Schedule	Overall Project	20% reduction
	Schedule Changes	48% reduction
	Schedule Compliance	Increased from 85% to 100%
Safety	Hours without lost time accidents	3 million vs. 48,000 industry standard
	Lost work days	4 vs. 6.8 industry standard
	No. of Dr. cases	74% reduction
	Safety rating	5% of national average
Quality	Rework	50% reduction
	Change orders	80% reduction
	Direct work rate	42% increase
Claims	Number of claims	83% reduction
	Projects with claims	68% reduction
Other	Job satisfaction	30% improvement

Table 1: Benchmarking (Best of Class) Results: Partnering vs. Traditional Construction (Construction Industry Institute – Partnering II Research team 1996).

In regards to partnering savings Naoum (2003) claims that there in many cases is unclear whether the same results could have been achieved with traditional methods. Even though factors of good partnering practice that yields savings in both time and cost can be identified, there are still too early to conclude whether the savings is a direct result of partnering. Yet, there seems to be proof that most clients are satisfied with the results, and that in many cases continual improvement has been achieved through partnering over time. Analyzes of two pilot projects for the Ministry of Defense in England showed that a reduction of capital costs in regards to Latham's (1994) 30% suggestion is difficult to achieve. However, quality improvements that affect running costs are easier to achieve (Naoum 2003).

### 3.5 Integrated Project Delivery (IPD)

Since the article "Partnering in Statsbygg" was written in a Lean Construction context it was natural to compare Statsbygg partnering arrangement with the Lean Construction based IPD arrangement. When conducting the literature study it became clear that IPD use many of the same elements as partnering, and that the two relational project delivery arrangements have

many similarities. Since IPD was merely described briefly in the paper, the following section will elaborate on the topic in order to provide a broader understanding of the arrangement.

Matthews and Howell (2005) define IPD as a relational contracting approach that aligns project objectives with the interests of key participants. The fundamental principle of IPD is the close collaboration of a team that is focused on optimizing the entire project as opposed to seeking the self-interest of their respective organizations. IPD was developed and trademarked by Westbrook Air Conditioning and Plumbing of Orlando, Florida (Forbes & Ahmed 2010). The Sutter Health project adopted the model and created a single contract called an integrated form of agreement (IFOA) which was signed between the architect, the general contractor, and the owner. As opposed to a design-build contract that has a single point of responsibility, the IFOA relies on a Core Group of representatives of the owner, architect, and contractor to administer the project (Forbes & Ahmed 2010). The project launched by Sutter Health in 2005 has often been said to have started the IPD era although it obviously was not 'pure' IPD (Cohen 2010).

IPD can be considered either as a philosophy or a project delivery system (Lahdenperä 2012). IPD as a philosophy occurs when integrated practices or philosophies are applied to more traditional delivery approaches where the owner is not party to a multi-party contract. IPD as a philosophy is also often referred to as IPD—Lite, IPD-ish, or non multi-party IPD (NASFA et al. 2010). In addition to not having a multi-party contract, IPD as a philosophy is characterized by traditional transactional contracts, some limited risk-sharing, and some application of IPD principles. Integrated Project Delivery as a delivery method (often referred to as pure IPD, true IPD, multi-party contracting, or Lean Project Delivery) is when the owner has elected to sign a multi-party contract with the prime designer, contractor and/or other key members of the project team. In addition to the multi-party contract, IPD as a delivery method is characterized by a contract that incentivizes collaborative behavior, team risk-sharing and other IPD principles and practices (NASFA et al. 2010). Those that implement some but not all of the IPD principles may be IPD-ish and still deliver much of the value of IPD, but cannot deliver the full range of benefits of a true IPD project (Forbes & Ahmed 2010).

Westbrook and their IPD team established two principles for the project. All primary team members (PTM) were responsible for all provisions of the prime contract with the client, and the PTMs shared the risk and profit for total project performance. Figure 3 sum up the model as applied in Westbrook IPD projects (Forbes & Ahmed 2010).

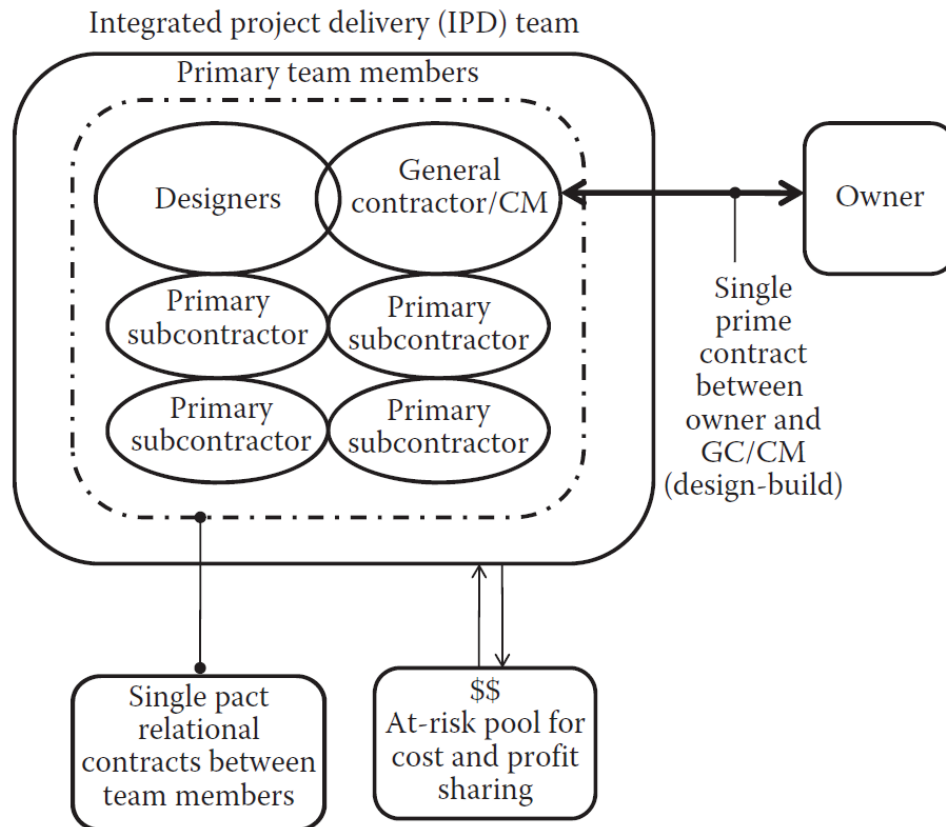


Figure 3: The integrated project delivery team (Forbes & Ahmed 2010).

According to Forbes og Ahmed (2010) the basic requirements of IPD can be met by:

- Creating a business entity by establishing an IPD team that incorporates architects, designers, contractors, and subcontractors. The client has a single prime contract with the IPD team that may be of the traditional type such as design-build or design-bid-build contract.
- Having the parties serve as business entities in their own right and held together through a relational contract or an integrated form of agreement. Some of the parties establish a classic transactional contract with the client and suppliers.

The PTMs include the most important participants, generally the designers, the design-builder, and the main subcontractors. Responsibility is placed on the most able person with decisions being made on a “best for project” basis (IPD definition task group, 2007).

An at-risk pool is established to accumulate any cost and profit savings during the course of the project. The Guaranteed max price risk sharing structure and incentive pool is set up at the beginning of the project. This pool serves as a benchmark for project team members. If money is saved during the project the stakeholders can increase profits and the amount in the pool would get bigger. If risks are realized and money is lost on a job or if a sub-contractor depletes the pool then all stakeholders lose on the project (Raisbeck et al. 2010).



### 3.6 Incentives

Statsbygg partnering projects use a target cost with a bonus/malus incentive. However, in order to link the success of the participants with the business objectives of the client, different kinds of incentives may be used. These extend from a simple charter with no legal status but which encapsulates the parties' aims and aspirations, to numerous contractual methods for aligning the parties' different goals (Naoum 2003). The use of incentives in a partnering environment seems to enhance the benefits of the partnering process. Incentives direct the attention of the parties to mutually-developed goals which allow for win-win results. The client achieves the goals identified, and the contractor increases profit and satisfies its customer (Thompson et al. 1996). The most common examples of motivators are (Naoum 2003):

- Target cost contracts, where a target cost is agreed and the contractor is reimbursed his costs, plus a fee. However, any over-run or under-run is shared in pre-agreed proportions. This gives transparency and aligns the client's and contractors motivations.
- Guaranteed maximum price (Figure 4), where the contractor and owner agree that the contractor will perform an agreed scope of work at a price not to exceed an agreed upon amount. Savings are shared based on an agreed formula, but costs exceeding the GMP are the contractor's risk (Chan et al. 2005).
- An alliance, where the profitability of each party contributing to a project is governed by the overall success of the project and not their individual contract. Thus it is in everybody's interests to cooperate.
- Fee at risk principle, where a consultant ties a certain proportion of his fee to the success of the overall project. If it is not successful he earns less than his normal fee. If it is a success, then his additional fee is financed by some of the overall savings.

Thompson et al. (1996) recommends this process; Align relationship objectives → Develop measures based on objectives → Develop incentives based on measures. These measures can for instance be linked to objectives within timeliness, quality, responsiveness, rework, schedule, or safety. The client's management personnel are then responsible for evaluating the defined performance criteria, allowing for additional fees to be earned.

All the incentives have their strength and weaknesses. The challenge lies in formulating the incentives so they balance the client's goals for the project and the contractor's distribution of profit. Every project is unique, and the client's interests and goals for the projects will vary (Naoum 2003).

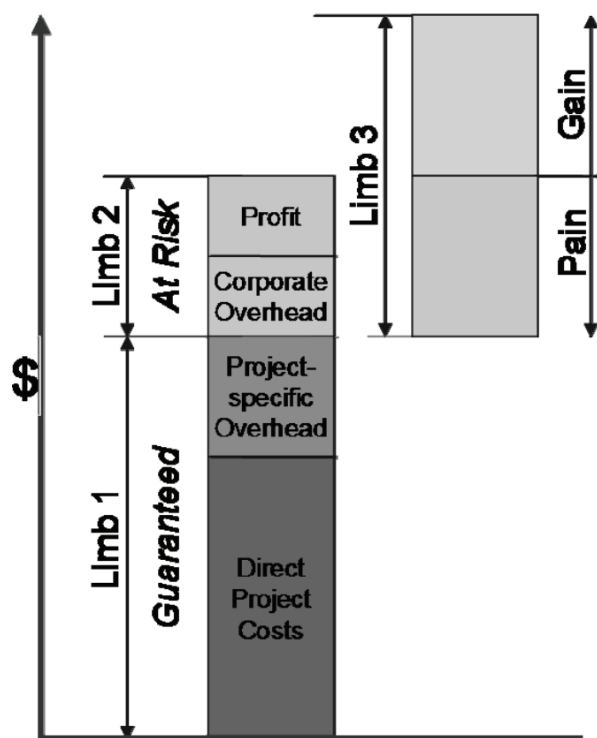


Figure 4: Guaranteed max price (GMP) with pain-share/gain-share incentive (Raisbeck et al. 2010).

## 4 Findings and discussion

Which partnering elements that Statsbygg has used in their partnering projects, as well as the partnering elements recommended for future partnering projects are presented in the article “Partnering in Statsbygg”. Although some of the partnering elements only had been used on a few or even individual projects, there were predominantly positive experiences amongst the interviewees with the use of the different partnering elements. In this process report there are not presented any new partnering elements. Instead, this section presents an elaboration on some of the partnering elements presented in the article, as well giving a further explanation of some of the points made in the article.

### 4.1 Why Statsbygg use partnering

Statsbygg’s partnering efforts started in 2001 after attending the international The Workplace Network (TWN) conference for large public clients. People with experiences from the U.S.A., Denmark as well as other countries spoke of benefits of partnering such as lower costs, reduced schedule, and more satisfied customers. From Sweden the word was that projects that could not be done the traditional way were made possible with partnering. Statsbygg then decided that partnering was something they could not leave untried.

One of the interviewees states that the traditional project delivery arrangements generate conflicts by having too much focus on the contract and the change order regime. Further,

every participant has their focus on documenting everything in case there will be a trial, and the project suffers from this. Ultimately the client has to pay for this stack of documentation. Statsbygg has experienced an increasing level of conflicts that compromise the projects along with the people, and the families of the people involved. To address the situation a workshop with 90 people from the industry were held. The attendants came to the client had to take the initiative and that partnering with its embedded focus on relations and close collaboration could serve as a remedy to the adversarial culture.

Statsbygg calls their version of partnering for «samspillsmodellen». The terms “partnering” and “samspillsmodell” are often used interchangeably in the Norwegian construction industry. One separates between early partnering and late partnering, where the difference is when the main contractor is contracted. In late partnering the main contractor is contracted after the design has started. Compared to early partnering, some of the interviewees maintained that late partnering is harder to do well. In their experience, all the participants of the partnering group should be contracted at the same time, and as early as possible.

A design competition in connection to the procurement process was considered by two of the interviewees as a good approach for producing the best project solutions. They upheld that an architectural design competition should be used when the project is of some size, have special challenges connected to it, or is intended to result in a signature building.

The Statsbygg interviewees maintain that their partnering efforts have resulted in a greatly reduced number of change orders, as well as a significant reduction in disputes and conflicts. Additionally they state that partnering is better for the people involved as it creates a work environment that is more positive and collaborative oriented than the traditional project delivery systems.

## 4.2 Target cost

All of the interviewees emphasize how partnering provides a more smooth design and construction process where it is much easier to make changes as you go. In a traditional contract a change in design is much more expensive after the contractor has been contracted. Where in a traditional design-build or design-bid-build contract every solution is considered to be locked, the partnering model is much more flexible in regard to adjustments and changes. Early involvement of the design-builder and technical subcontractors involves them in the choice of solutions, and gives them the opportunity to make suggestions for changes as well as to control constructability before the target cost is determined. This greatly reduces the number of change orders in the projects, complying with the partnering benefits listed in the literature (Construction Industry Institute – Partnering II Research team 1996). The disadvantage of early involvement is the extra cost it entails. However the interviewees all agree that the benefits overshadow the extra cost. This also applies to the workshops, and for the interviewees that applied measurements on the partnership.

Many of the interviewees stated that the target price negotiation was too long and hard because the design-builder started too high. It was equally recognized by some of the interviewees that the only bargaining chip the client has when trying to force down the target cost is to threaten to abort the partnership and run a tender for a traditional design-build contract instead. The interviewees all appreciate that in order for the price to be fair the design-builder needs to have the opportunity to collect a bonus if they make good purchases, come up with smart solutions that save money, or do the work on fewer hours than budgeted. It is then important to make fair assessments when budgeting, which often is extremely difficult. One of the Statsbygg interviewees often says to the design-builder that since they are sharing risk they should be given good prices. Both the client and the contractors state that partnering is more demanding than traditional project delivery systems, as they both need to be more forward leaning in order to create smart solutions that can save money without affecting the client's values.

Even with partnering's embedded main principals of cooperation and trust; a lot of time is spent arguing about money, at least during the target cost negotiation phase. It was implied during the interviews that in some cases the initial "high" pricing from the contractor could be a result of the contractor having difficulty adapting to this new way of pricing. The design-builder needs to adjust the level of risk reserve to accommodate the 50/50 shared risk for the target price. Other explanations could be a deficient quality control by the design-builder of market prices from the subcontractors, risk aversion, or even a lack of incentive for the design-builder to pursue best possible prices at this stage. However, most of the Statsbygg interviewees stated that they had gotten good value for money in the partnering projects, witnessing ultimately fair pricing. Most of the interviewees claim that they eventually managed to agree on a fair target cost for the project. Equally, most of the projects ended on a small shared bonus of the total project cost, which supports the notion they were not too far off the actual cost.

What is to be considered a change that results in an increase of the target cost, or what is solely the client's or the design-builders risk should be agreed at an early stage to avoid discussions for every case. For instance may examples of possible incidents be unveiled in an uncertainty analysis for then to be described in the target cost agreement. It is impossible to foresee every incident that may affect the target cost, but some ground rules have to be established to ease these discussions. To keep the participants focus on the project goals, one of the interviewees emphasized the importance of having an effective and fair decision processes for judging whether or not the target price should increase.

A couple of the interviewees stated that the client in many cases simply needs to know if it is a good price or not. Both for setting a target cost and for evaluating changes, the client needs to have more knowledge of how much things cost and how long it takes in partnering than in a traditional design-build or design-bid-build contract. Partnering requires more resources of the client in this respect. A traditional design-bid contract can much easier be remote controlled by the client and does not need the close presence and follow-up that partnering requires.

One of the partnering projects had a project manager with extensive experience in risk management. This proved to be a good asset when negotiating the target cost. In other partnering projects Statsbygg obtained external help from various risk analysis/calculation firms in addition to the internal calculation department in Statsbygg in order to make a fair assessment of the project prices during the negotiations. An external firm proved very useful as a “neutral” part in deciding what the correct/fair price was. The interviewees emphasized that this assistance was vital for landing a fair target cost.

How the design-builder divides the bonus/malus with the subcontractors that also are involved in the bonus/malus is left for the design-builder to decide. One of the projects divide the bonus solely based on the execution of the subcontractor’s contract, with no regard of the total cost of the project. The interviewee on this project states that it may be more ideal with a combination of the two. This would give the participants an incentive to work together instead of having a single minded focus on their own contract.

Whereas strategic partnering across projects offers opportunity to develop socially oriented trust, Statsbygg has so far only used project partnering which is largely based on self-interested trust (Ronco & Ronco 1996). On these short term projects incentives that align the goals of the parties is important to quickly establish an arena for trust. For designers, architects and subcontractors that choose to stay out of the bonus/malus arrangement because they lack the economical coverage for a substantial malus, other incentive arrangements such as the “fee at risk principle” or “incentives based on measures” as described by Thompson et al. (1996) may be tried out.

### 4.3 Form of payment

The interviewees maintained that when using an open book along with a bonus/malus arrangement, a majority of the work should be contracted as cost plus. This way the pain-share/gain-share incentives stimulate efficiency. Of course, the participants need to be part of the open book and the bonus/malus arrangement in order to have an incentive to do the work on fewer hours than estimated. If the subcontractors are not part of the partnering arrangement, the only figures the client sees are the ones invoiced to the design-builder. These figures include an unknown profit percentage. It was stated by one of the interviewees that while the technical subcontractor’s work is highly suitable for a cost plus contract with bonus/malus incentive, some repetitive work such as paint works and parquet adding prove more suitable for a fixed price contract. It was also stated by several of the interviewees that the bonus/malus arrangement makes the technical subcontractors more motivated to participate in the planning, and that they use their resources more effectively. When included in the partnering group, the technical subcontractors are described by the interviewees as very positive to the partnering model due to their opportunity to influence the technical solutions at an early stage.

#### 4.4 Partnering in Statsbygg and IPD

IPD is a relational project delivery arrangement that has many similarities with Statsbygg's partnering model. One of the differences between partnering and IPD is IPD's explicit emphasis on Lean Design and Construction and BIM. Additionally the multi-party agreement where the PTMs are held together through a relational contract or an integrated form of agreement is also different from Statsbygg's partnering projects where there is a single point responsibility on the design-builder. Although the subcontractors and the design team have been included in the bonus/malus arrangement on one partnering project each, the design-builder has been responsible for the contract with Statsbygg. This differs from IPD, where all the PTMs are responsible for the provisions of the prime contract with the client, aligning all the PTMs interests into a common goal (Wang 2008).

Statsbygg has included some or all the technical subcontractors in the partnering group in most of their partnering projects. This entails that that the technical subcontractors are involved early in the project together with the design-builder and the design team. However, only in one of the studied project have the technical subcontractors been part of the bonus/malus arrangement. The same applies for the design team which in every project has been part of the partnering group, but has equally only been part of the bonus/malus arrangement on one of the studied partnering projects. In other words the participants do not need to be part of the bonus/malus arrangement to attend workshops, sign the partnering charter, participate in partnering measurements, and otherwise take part in the partnering principles such as trust and openness. In IPD all the PTMs are part of the bonus/malus arrangement, giving them a more clear incentive to take an active part in such efforts to improve the collaboration.

#### 4.5 The Budget model

Instead of a design-build contract including a target cost with bonus/malus, one of the interviewees state that Statsbygg wish to try out a different form of partnering called the "budget model" based on experience from the Swedish construction industry. The budget-model entails self-cost prices from the design-builder, with only a small fee percentage to cover profit and overhead. The idea is to avoid the hard negotiation that setting the target cost often brings. Compared to a traditional model, the client and users would be free to make changes and adjustments to the scope during the construction process. While everything is locked in a design-build contract, everything is flexible in a budget model. In the tender competition, the fee percentage along with hourly rates and competence of personnel should be assessed. After procurement, the client and design-builder make a budget together. For the design-builder this model would generate a very low risk of losing money on the project, and a low fee should equally be sufficient. The design-builders with experience from this model had a long term focus on establishing a good continuing relationship with the client where the incentive was to get more work in the future. Statsbygg have no experience with the budget model in practice, but want to try it out on a suitable project. To select the right firms and

avoid exploitation, hourly rates on actual personnel and competence have to be assessed in the procurement.

A drawback with the budget model is that the law of public procurement makes it difficult, due to rules for competition and equal treatment, for a public client such as Statsbygg to promise a contract to a design-builder. This can make the incentive of more work in the future hard to follow through. The same law makes strategic partnering difficult to conduct for public clients (Lie 2006). It is however imaginable that much of the same effects of these arrangements can be achieved on a large project with multiple stages, or if a project lasts over a long period of time. Based on the potential benefits of strategic partnering, it is however recommended that Statsbygg investigate if there is possible to conduct strategic partnering without breaking the law of public procurement.

#### 4.6 Advantages

In addition to the advantages listed in the article, the following advantages of partnering were revealed. As a criterion for inclusion in the article, the listed advantages had to be agreed upon by all or most of the interviewees. In contrast, the advantages listed here are only mentioned individually amongst the interviewees:

- Rarely a need to run hard on the contractual provisions.
- More certain that the client and users get the quality and the project they want.
- More motivated and satisfied technical subcontractors that can use their resources more effectively.
- Reduced sick leave, improved HSE, and reduced number of warranty claims.

#### 4.7 Potential pitfalls

In addition to the potential pitfalls of partnering listed in the article, the following were revealed. As a criterion for inclusion in the article, the listed potential pitfalls had to be agreed upon by all or most of the interviewees. In contrast, the potential pitfalls listed here are only mentioned individually amongst the interviewees:

- Persons that create a conflict the minute something is not in accordance with the contract is incompatible with partnering.
- The client project manager needs to have the ability to make quick decisions. Partnering is demanding of the client in terms of construction phase follow up on cost as well as involvement in choice of solutions that requires quick decisions.
- Trust between the participants needs to be established and maintained.
- The participants need to mutually agree and fully understand how the economy is broken down and managed.

## 5 Conclusion

This process report has evened out the differences between a traditional master's thesis and a scientific article by elaborating on points made in the article, presenting additional data and work, as well as describing the research method and the role of the coauthors of the article in further detail.

The partnering elements as used by Statsbygg have been identified and based on the predominantly positive experiences amongst the interviewees, all of the Statsbygg partnering elements listed in the article are recommended for future partnering projects. Additionally, based on recommendations from the literature, the use of an external facilitator as well as to appoint a partnering champion in each organization is recommended.

One of the most important elements of partnering is the early involvement of the key participants. This allows for the client to utilize the design-builder's competence in constructability, as well as the subcontractor's competence in the latest technology in the market. There are best experiences from projects where all the participants of the partnering group are contracted at the same time, and as early as possible.

To keep the participants focus on the project goals and prevent discussions for every incident, it is important to establish some ground rules for effectively and fairly decide if an incident results in an increase of the target cost or not. Further, the target cost negotiation is considered to be demanding for the client, who should have deep knowledge of market prices.

In order to reap the benefits of strategic partnering it is recommended that Statsbygg investigate the possibility for conducting strategic partnering without breaking the law of public procurement.

IPD and partnering in Statsbygg have many similarities, however differences include IPD's explicit emphasis on Lean Construction and BIM, as well as that IPD goes further in tying more of the participants to the project goals through economic incentives.

Statsbygg initiated their partnering efforts in order to address the traditional project delivery systems embedded adversarial goals, which generates a high number of conflicts and has a dominant focus on the change order regime. Opposed to this, partnering presents a more open-minded, positive, and forward leaning culture, where the participants have less focus on the contractual provisions. Instead, the participants have an increased focus on finding solutions to problems in a collaborative way.

The interviewees have experienced a significant reduction in the number of conflicts as well as in the number of change orders. Additionally, partnering has created a work environment that is better for the people involved. In this sense, from Statsbygg's point of view the partnering efforts have been successful, and partnering elements will be used in future projects when suitable.



## 6 Further work

Further work on the subject of partnering is highly recommended in order to establish how to best achieve successful projects through partnering. Both theory and the interviewees state that the benefits of partnering may best be achieved through customizing partnering based on local conditions. However, which partnering elements that should be applied on which project setting is still an area that needs further research. Moreover, further research on how to best practice each of the elements such as workshops, measurements and method of resolving disputes is needed.

As of today Statsbygg interviewees think it is a bit early to say anything about the overall savings of their partnering efforts. However, partnering has a growing portfolio of projects both in Statsbygg and in Norway in general. Eventually quantitative research on the partnering projects in Statsbygg, as well as the Norwegian construction industry in general, should be able to determine statistically whether partnering truly pays off. Through benchmarking and statistical analyzes, the best practice within the partnering projects should then be able to be identified.

If more partnering projects are followed over time with researcher presence other findings than the ones presented in this paper may be revealed. To cover every participant's perspective, more interviews with representatives from other public clients and contractors, as well as interviews with subcontractors, consultants and architects should be conducted. This will give a broader and perhaps more nuanced understanding of partnering as practiced in the Norwegian construction industry.

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## **PART 2**

### **Article**

Nikolai Haugseth, Jardar Lohne, Geir Jensen, Ola Lædre

# PARTNERING IN STATSBYGG

Nikolai Haugseth<sup>1</sup>, Jardar Lohne<sup>2</sup>, Geir Jensen<sup>3</sup> and Ola Lædre<sup>4</sup>,

## ABSTRACT

To address the adversarial culture of the construction industry, partnering is used as a mean to create a collaborative and flexible building process where each partner achieves their business objectives.

This paper identifies which partnering elements - understood as contractual elements included in order to create win-win situations for the contracting parties - a large Norwegian public client – Statsbygg - has used in their partnering projects. Based on findings the article recommends which elements that should be used in future Statsbygg as well as other partnering projects.

The recommendations include elements such as; early involvement of design-builder, key subcontractors and consultants, value based procurement, an intentional agreement, target cost with bonus/malus incentives, open book economy, partnering charter, continuous workshops, partnering measurements, co-localisation, partnering champions, external facilitators, a predetermined method of dispute resolution, and a contractual right to remove unsuitable people.

The methodological approach chosen for our investigation was based on 1) a literature study, 2) the distribution and analysis of a questionnaire, and 3) interviews with professionals having experience with partnering.

The interviewees maintained partnering as an important step in the direction of changing the culture characterizing the Norwegian construction industry from an adversarial to a cooperative value based culture. Partnering is Statsbygg's way of facilitating a lean construction process where less time is wasted on disputes, and more value is added to the project.

## KEYWORDS

Partnering, public client, partnering elements, recommendations

## INTRODUCTION

The Latham report (1994) identifies the UK construction industry's existing industry practices as adversarial, ineffective, fragmented, and incapable of delivering for its clients. It urged for reform and advocated as well partnering as other manners of collaboration. Today, there is still a widespread acknowledgement that the UK does not get full value and has failed to exploit the potential for public construction and infrastructure projects to drive growth (Cabinet-Office, 2011).

A report to the Norwegian parliament in 2011-2012 states that fragmentation and adversarial behaviour resulting in a decline in productivity equally characterize the Norwegian construction industry. The report requests a priority on cost efficiency,

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smart building and improved quality, and upholds the government's role in the development of the construction industry (Stortingsmelding-28, 2012). Statsbygg is the Norwegian Government's key advisor in construction and property affairs, building commissioner, property manager and property developer. One of its five main business objectives for 2011-2015 states that it shall "deliver within budget, on time and to the agreed standard". The matching key strategy for this objective is to "guarantee results through systematic work and continuous improvement". Equally, having a long-term, innovative perspective that contributes to development of the industry Statsbygg should be a role model for the building, construction and property management industry (Statsbygg, 2011). Statsbygg's role as well as their growing portfolio of partnering projects is the reason for their focus in this study.

Statsbygg initiated their partnering effort in 2001 to contribute to a change of the culture from adversarial to cooperative, and give both faster completion and more value for money. In this way partnering is Statsbygg's way of reducing waste and increasing the value of their construction projects. The close link between partnering and lean construction has been much described in the literature. Barlow (1996) stated for instance that partnering itself may have acted as a catalyst for the spread of new work systems in the construction industry. Cain (2004) upholds partnering as a mechanism that enables lean thinking to flourish.

At present time Statsbygg have initiated a total of thirteen partnering projects. Out of these thirteen, five have been completed, two are in the construction phase, two are in the design phase, and four are awaiting finance. This paper identifies the partnering elements Statsbygg has used in their partnering projects, and based on findings recommend which elements should be used in future projects. Understanding these features underline, in our view, the organizational context in which contemporary work organizing efforts need to be able to operate.

## **METHOD**

The partnering elements investigated in this study were identified in a pre-study, including a literature study and interviews with two senior directors at Statsbygg. The methodological approach was based on 1) a literature study, 2) the distribution and analysis of a questionnaire, and 3) interviews with professionals having experience with partnering in practice. The research was designed in order to include different sources of data, thereby strengthening the analysis as described in Yin (2009).

The literature study carried out was based on a systematic search in internationally recognized databases according to key words such as "partnering", "relational contract", and "target cost". On our request Statsbygg distributed a self-administered questionnaire to each project manager that so far has lead partnering projects in Statsbygg. We selected this approach, since the most appropriate application for a survey is where the participants are uniquely qualified to provide the desired information and that questionnaires let the researchers contact participants who might otherwise be difficult to reach (Blumberg et al., 2011). Six out of thirteen questionnaires were received. It proved difficult to obtain the questionnaires completed from all of Statsbygg's partnering projects, mainly due to the long timeframe in question, which made four of the project managers unavailable at present time. The interviewer filled out a further three questionnaires based on

information given in the interviews. To clarify on some answers in the questionnaire, a follow-up email was sent to some of the interviewees.

A total of eight interviews were carried out based on a semi-structured interview guide as described in Corbin and Strauss (2008). Five project managers from different partnering projects where Statsbygg acted as client were interviewed. Equally, two interviewees from large contracting companies with experience in partnering were interviewed. One of these latter had worked as a project manager with Statsbygg on the initial partnering project. The other was not a project manager, but had experience from various roles on partnering projects with another large public. A last interview was carried out with a senior director with experience from most of the partnering projects at an overview perspective.

The choice to select project managers was based on the presumption that they typically had a general overview over the model as it was intended to work in Statsbygg, as well as hands-on experience in everyday dealings. Interviews with more project managers, sub-contractors, designers, architects, site managers, etc. could have provided deeper insight into the phenomenon. However, due to the limits imposed by a narrow time frame, other interviews have not been conducted at this stage of our research.

## **THEORETICAL FRAMEWORK**

The understanding of partnering has been growing since the 1980s and 1990s – but it is still difficult to define in a clear and unambiguous manner. Bennett and Jayes (1998) defines partnering as “a set of strategic actions which embody the mutual objectives of a number of firms achieved by cooperative decision making aimed at using feedback to continuously improve their joint performance”. Bennet and Jayes (1995;1998) maintain that performance in terms of cost, time, quality, constructability, and a whole range of other criteria can be dramatically improved if participants adopt more collaborative ways of working. During the 1980s, partnering and related forms of collaboration were identified as a way of dealing with the fragmentation that has prevented attempts to improve project performance (NEDO, 1988). Weston and Edward (1993) state that the central objective of partnering is to encourage contracting parties to a more cooperative, team-based approach.

Besides partnering, many other relational project delivery arrangements such as Alliancing, Integrated Project Delivery (IPD), Public Private Partnership, and Joint Venture exist today. None of these arrangements are a clearly defined operational model that cannot be modified (Lahdenperä, 2012). When assessing Statsbygg partnering practice within the context of lean construction, we find the similarities between this practice and IPD relevant. IPD definition task group (2007) defines IPD as “a project delivery method that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste and optimize efficiency through all phases of design, fabrication and construction”. IPD is characterized by a contractual agreement between a minimum of the owner, design professional, and builder (Cohen, 2010). It includes shared financial risk and reward based on project outcome, liability waivers, fiscal transparency, and early involvement of key participants, intensified design, jointly developed project target criteria, and collaborative decision-making. The catalysts for IPD are listed as a multi-party agreement, building information

modeling, lean design and construction, and co-location of team (NASFA et al. 2010). Within Statsbygg practice, IPD has not been used, rather partnering has been applied in order to achieve similar effects. While IPD includes lean design and construction and building information modeling as mandatory elements, partnering merely facilitate such efforts by establishing an arena for teamwork with a win-win culture, and openness and trust between the parties. According to Naoum (2003), partnering is based in whole or in part on:

- Value-based procurement: Value can only be truly assessed by the client. Thus the client's principal criteria must be set out in the tender documents together with their relative emphasis or ranking, to enable transparency and engender trust.
- Single point responsibility: The fragmentation of design and construction is removed and replaced by teamwork.
- Inter-organizational partnership: A partnership between organizations to achieve common goals is essential to success.
- Means of dispute or issue resolution: In the short term most agree that there should be a predetermined method of resolving problems which is non-adversarial.
- All partnerships should focus on continuous improvement.
- Longer-term relationships instead of project by project: Dealing with a customer over medium to long term, has greater benefits due to shared experience and knowledge.
- Mutual gains for all participants to the process i.e. win-win culture.

Such a non-essential approach to the phenomena reveals in fact a sound skepticism to strict terminological limitations. An ultimate hope of standardizing a 'best practice' partnering model may be somewhat misplaced. Rather, the real benefits can be achieved through customizing partnering, based upon salient local conditions (Bresnen and Marshall, 2000). To address the complexity of the term we in the following base our analysis on a minimum definition of partnering as "contractual elements included in order to create win-win situations for the contracting parties".

Numerous publications address the benefits of partnering and the results achieved. Bennett and Jayes (1998) divide partnering into three generations based on the level of integration and sophistication. The basic approach, with mutual objectives, joint decision-making, and measurable continuous improvement from project to project produces a range of benefits on individual projects (Project Partnering). Far more significant benefits can be achieved when applied to a series of projects (Strategic Partnering). The benefits of project partnering include faster construction times, improved quality, less litigation, improved safety, better teamwork, more innovation and cost savings of 30%. A second generation strategic approach can deliver cost savings of up to 40% and reduce timeframes by 50% or more. A third generation is a vision of delivering cost saving of 50% and a reduction in timeframes by 80% (Bennet and Jayes, 1998).

Benchmarking of partnering compared with traditional construction show 10 % reduction in total project cost, 83% reduction in number of claims, 20% reduced timeframe, 50% reduction in rework, 80% reduction in change orders, 30% improvement in job satisfaction, and remarkable improvements in safety (Construction Industry Institute, 1996).



Ng et al. (2002) maintain that the majority of problematic issues experienced in project partnering arrangements stem from the actual commitment to the attitudinal change and procedural implementation required. As the clients are in the position of head facilitator in the arrangement, they must take a leadership role, and ensure that they are fully committed to compromise. The client should ensure that contractors have an adequate level of understanding of the partnering concept and what is required for its successful implementation. Where any or all stakeholders lack experience in partnering, an independent facilitator could be employed throughout the entire project.

Premature insistence on the presence of inter-organizational trust as a precursor to collaborative behavior between owner and contractor may actually be fatal to the development of a successful partnering relationship. Partnering is a process with great stress being laid upon trust-building activities. Therefore, partnering workshops need to be continuous and not once-off at the project start (Lazar, 2000). The arrangement accepts that problems will be resolved without recourse to legal remedies but through joint problem solving. While the environment does deliver mutual benefits it falls short of guaranteeing that each party will equally benefit (Walker et al., 2002).

## **FINDINGS AND DISCUSSION**

The partnering model in Statsbygg is under development. A central part of this effort consists in an assessment of which elements generate the best process. According to the interviews conducted, senior personnel believe that the model provides more overall value for money and a more rational building process. The main idea is that time can be spent on productive activities, instead of arguing over change orders and placing of blame. There is consensus for the model being more demanding in regards to involvement from both the client and the contractor, and that people with the right mindset is a key prerequisite to its success.

The interviewees maintain that as a main rule, partnering should be considered if the project scope is complex and hard to define. Secondly partnering should be considered when it is believed to be beneficial to develop the project together with the contractors, for instance if there are special difficulties linked to the design and/or production. The interviewees all maintain that rehabilitation is especially suited for partnering due to the models' flexibility regarding scope changes with the embedded ability to solve problems as you go. Many equally stated that a design-build contract typically prove better suited if the project scope is easy to define clearly.

The interviewees underline how you have to take the local contractor situation into account. As partnering is a relatively new concept for the Norwegian construction industry, most regional contractors are not used to work in this manner. The industry is still characterized by a traditional adversarial mindset, which is highly incompatible with the partnering mindset of openness and mutual benefit. Therefore, the interviewees expressed that much thought has to be provided in the selection process of the partners.

Both because Statsbygg is in a trial and error phase when it comes to partnering and because every project is unique, the different elements of the model are customized for each project. Some are used on all the projects, and some have only been tested on a project or two. The elements included in the different partnering projects are presented in table 1.

Included Elements	The National archives	Oslo Court-house	Saemien sijte	Equestrian corps	University in Bergen	College in Sør-Trøndelag	Health-archive in Tynset	College in Gjøvik	The supreme court
Start/finished	March 03/ Sept05	July 05/ Sept 06	Sept 05/ On hold	April06 / July08	Jan 10/ Aug 15	March 11/ Sept13	Nov 11/ On hold	March12/ April 14	Feb13/ Jan14
Value-based procurement	X	X	X	X	X	X	X	X	X
Functional description	X	X	X	X	Conceptual design phase as basis for procurement	Conceptual design phase as basis for procurement	X	X	X
Intention agreement before establishment of the target cost	X	X	X	X	X	X	X	X	X
Target cost with bonus/malus	X	X	X	X	X	X	X	X	X
Open book economy	X	X	X	X	X	X	X	X	X
Design-build contract with additional partnering regulations	X	X	X	X	X	X	X	X	X
Startup workshop	X	X	X	X	X	X	X	X	X
Use of a partnering charter	X	X	Unknown	X	X	X	X	X	X
Early involvement of design-builder	X	X	After Outline conceptual design	X	At startup of detailed design phase	At startup of detailed design phase	X	X	
Inclusion of subcontractors in the partnering group	Technical subcontractors	Lighting and Cladding			Technical coordinator	X	Technical subcontractors	Technical subcontractors	
Inclusion of consultants in the partnering group	X	X	X	X	X	Transported to design-builder	X	X	
Inclusion of the architect in the partnering group	X	X	X	X	X	Transported to design-builder	X	X	
Inclusion of subcontractors in bonus/malus			Didn't want to			Didn't want to		X	
Inclusion of consultants in bonus/malus		X	Didn't want to						
Inclusion of the architect in bonus/malus		X	Didn't want to						
Workshops to improve cooperation during the project					X	X	X	X	
Workshop to sum up experiences.	X	X	Some summary		X		X	X	
Measurements during project	Only economy	Only economy			X	X	X	X	
Predetermined method of resolving disputes	Dispute counsel				Dispute counsel			Dispute counsel	
Contractual right to replace people from the project	X	X		X	X	X	X	X	
Contractual right to replace firms from the project				X	X				
Architectural Design Competition with compensation	X								
Colocation of partnering group					X			Partly	
Form of payment, C= Cost plus, F= Fixed prices	F+C	C	C before target cost	C	F+C	About 50/50 F+C	Unknown	Around $\frac{3}{4}$ C+ $\frac{1}{4}$ F	C before target cost

Table 1: The matrix presents the partnering elements that have been used in 9 different Statsbygg projects.

## ELEMENTS USED IN EVERY PARTNERING PROJECT

A **Value-based procurement** of a design-builder, a design team and in some cases technical subcontractors are used to procure the best partnering group. The group must have proper knowledge and experience, and understand the partnering idea. The award criteria in the tender documents are customized for each project, but hourly rates and fee percentage of the key participants are always included. This is also in accordance with Egan (1998) who recommends clients and the construction industry to rely less on competitive tendering and formal construction contracts.

The basis for procurement is always a **functional description** of the project. Sometimes the design-builder has been contracted on the basis of work done in the conceptual design phase<sup>5</sup>.

After procurement an **intention agreement** is signed, and the group work is based on hourly fees. This agreement last until a mutually agreed target cost is established. The client can abort the project at any time, pay the group for their efforts, and keep the project material.

The **target cost with bonus/malus** is used in every Statsbygg partnering project. The target cost is landed after a negotiation, where both parties should be content with the pricing of the project and the incorporated risk reserve. The negotiations are considered to be difficult, as the design-builder will have unilateral incentives for adding as much risk premium and profit to the prices as possible. However, after the target cost is landed the design-builder has a strong incentive to chase best possible deals with subcontractors and increase productivity.

At the end of the project, everything between the target cost and the actual cost is shared 50/50 between the contract parties. Statsbygg uses an **open book economy** in all their partnering projects. With an open book economy, the client can see where money is spent, something considered by the interviewees to be an important basis for trust. The interviewees state that there are more rational discussions concerning changes in partnering than in a traditional project, and that focus is on how to find solutions to problems efficiently.

Statsbygg always use a standardized **design-build contract (NS8407) with additional partnering regulations**. The design-builder is their only contractual partner in the partnering projects.

A **startup workshop** is held in each partnering project. Here, the parties do teambuilding activities and sign a **partnering charter with** the goals for the process and the project. The charter is then hung up in each project office as a reminder.

## ELEMENTS USED IN SOME PARTNERING PROJECTS

At what stage the design-builder is contracted varies from right after the feasibility study or after outline of the conceptual design, to startup of detailed design phase. Most of the interviewees emphasized the importance of **early involvement of the design-builder**. Getting the design-builders competence in constructability involved at an early stage, makes it easier to jump straight to the right solution instead of

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<sup>5</sup> Statsbygg operates with own definitions of the phases in the building process, notably feasibility study, conceptual design phase, detailed design phase, and construction and operational phase. The conceptual design phase can be split into outline conceptual design and full conceptual design.

having lots of costly design iterations. Early involvement also provides the contractor with a greater sense of ownership to the project. By requesting **early involvement of the technical subcontractors** (particularly on electrical and ventilation works), they can participate in the initial partnering group and contribute to constructability within their respective disciplines. There is consensus among the interviewees that the benefits of early involvement of the contractors greatly overshadow the extra cost.

To some degree, different participants are included in **the partnering group**. The client and the user committee are always part of the partnering group. In most projects the partnering group includes the design-builder with his design team of consultants and architects. In some projects key subcontractors also participated.

**Inclusion of the subcontractors in the bonus/malus:** Two of the examined Statsbygg partnering projects included the technical subcontractors in the bonus/malus. It was up to the design-builders to decide whether or not to include the subcontractors in the bonus/malus. One of the interviewees upholds that this inclusion strengthens the partnering arrangement, and that it in some cases should be considered mandatory. Yet - when given the choice – many subcontractors choose to stay out of this arrangement because of the risk and that they do not want to reveal their figures according to the open book arrangement. It is recommended in literature to include the key subcontractors as well as consultants in the bonus/malus, as it has been adopted in some of the most successful partnering arrangements (Naoum, 2003). **Consultants and the architect have only been included in bonus/malus** in one partnering project in Statsbygg. It was maintained by one of the interviewees that if they were included they would have a stronger ownership to the project's overall success, as well as be discouraged to overspend hours on the project. Some of the interviewees point out that there are not many consultants with financial solidity to be part of a substantial malus, so therefore they usually decline.

**Workshops to improve cooperation during the project** and a **workshop to sum up experiences** are used in roughly half of Statsbygg's partnering projects. The interviewees that regularly used workshops emphasized the importance of openness, trust, and communication to maintain a functional partnership. There should be an efficient monitoring of team goals throughout the project to ensure that stakeholders' commitment is strong, and if not, procedures should be implemented to improve the situation (Ng et.al 2002). In some of the latest projects, Statsbygg initiated **measurements during project** on the partnering spirit among the participants. The measurements were related to cooperation, openness, honesty, trust, response times, attitude towards dealing with uncertainty, communication-flow with informal contact, attitudes towards profitability for all parties, work environment and job satisfaction, and everyone's active contribution. The project managers responsible for this initiative considered it critical to maintain focus on the partnering idea over time. Feedback and continuous improvement is one of the key elements of partnering (Naoum, 2003), and by measuring the project managers know if they are on the right track or if they are falling back into adversarial habits.

Statsbygg uses a **predetermined method of resolving disputes** that says disputes shall be resolved at the lowest possible level. In addition, some projects have established a dispute counsel where senior management from each firm meets regularly to resolve issues that need to be elevated above project level. Ng et al.

(2002) found that a preparedness to address problems quickly at the lowest possible level will promote effective project partnering.

**A contractual right to replace people** from the project was used in seven out of nine projects. The interviewees emphasized the importance of the people in the partnering projects. Participants should be open-minded, solution oriented and able to communicate clearly without hidden agendas. To remove a person that undermines the partnering ideas can be smart at the time, but will leave a gap in the project information history.

**A contractual right to replace firms** from the project was used in two of nine projects, but none of the interviewees had any experience from use of this.

In two of the initial partnering projects, an **architectural design competition** with compensation for design proposals was used in the procurement process. Even though Statsbygg has good experiences with this, design competitions have not been used in the latest projects due to the belief that things would work out by themselves when the right team was appointed. In retrospect, design competition was considered as a good approach for producing the best project solutions.

Only one of the partnering projects has a full **colocation of the partnering group**. The project manager on this project emphasizes the importance of face to face communication in order to have a successful partnership. This is also upheld in the literature as the most effective form of communication (Cockburn, 2002).

**Form of payment:** The interviewees maintained that when using an open book along with a bonus/malus arrangement, a majority of the work should be contracted as cost plus. If subcontractors are not included in the open book nor in the bonus/malus arrangement, the form of payment should be adapted to whether the design-builder or the subcontractor favor management by fixed prices or by cost plus.

#### **ELEMENTS NOT USED IN STATSBYGG'S PARTNERING PROJECTS**

The partnering process is sensitive to changes in key staff. Because the partnering process is lubricated by people's close communication and open relationship, it is hard to start from fresh and build up a new relationship, for instance if a key person gets sick or change job position. Therefore, one of the interviewees recommends a **doubling of key personnel** in partnering projects in order to reduce the vulnerability.

In some projects Statsbygg has taken the responsibility for leading the partnering process, while in other projects the design-builder or everyone is considered responsible. Ng et al. (2002) recommends that an **external facilitator** should be used throughout the project if the different stakeholders lack partnering experience. One of the interviewees from a project where neither client nor contractors had any former partnering experience supported this view. The facilitator should ask the proper and often difficult questions necessary to lead the partnering process.

Bennett and Jayes (1998) recommend appointing a **partnering champion** in each firm. The partnering champion is to lead by example, and promote the partnering process in his or her own organization. Partnering champions often have to overcome resistance to change from powerful colleagues responsible for finance, administration, purchasing, etc. By making them aware of the ideas of partnering, they are more likely to join the search for more effective ways of working. The essential internal preparation usually needs to take place in parallel with developing external partnering.

Naoum’s (2003) description of the key elements of partnering – listed earlier – corresponds with Statsbygg’s partnering efforts, except for Statsbygg’s use of project partnering instead of a long term strategic partnering.

There are many similarities between partnering and IPD. Many contractual elements that characterize IPD are also included in the Statsbygg partnering projects. These include shared financial risk and reward, fiscal transparency between key participants, early involvement of key participants, intensified design (to some degree), and jointly developed project target criteria. Elements characterizing IPD that are not included in Statsbygg’s partnering projects include liability waivers between key participants, a multi-party agreement, and collaborative decision-making. Thus, IPD goes further than Statsbygg in tying the key participants to the projects goals.

## RECOMMENDATIONS

Based on findings from the literature study, interviews and questionnaires, our recommendations for future partnering projects in Statsbygg as well as for other clients are listed in table 2.

Elements	Recommendation
Value-based procurement	X
Functional description	X
Intention agreement before establishment of the target cost	X
Target cost with bonus/malus	X
Open book economy	X
Design-build contract with additional partnering regulations	X
Startup workshop	X
Use of a partnering charter	X
Early involvement of design-builder	X
Inclusion of subcontractors in the partnering group	At least the technical subcontractors
Inclusion of consultants in the partnering group	X
Inclusion of the architect in the partnering group	X
Inclusion of subcontractors in bonus/malus	X
Inclusion of consultants in bonus/malus	X
Inclusion of the architect in bonus/malus	X
Workshops to improve cooperation during the project	X
Workshop to sum up experiences.	X
Measurements during project	X
Predetermined method of resolving disputes	Dispute counsel
Contractual right to replace people from the project	X
Contractual right to replace firms from the project	X
Architectural Design Competition with compensation	X
Colocation of partnering group	X
Form of payment for subcontractors, C = Cost plus, F = Fixed prices	C>F

Table 2: Recommended elements for future partnering projects.

Additionally we recommend the use of an external facilitator when the parties lack experience with partnering, a doubling of key personnel, and that each organization appoints a partnering champion responsible for promoting the partnering process in his or her own organization.

Based on the categorization of elements from the partnering initiatives as utilized by Statsbygg, the major advantages and potential pitfalls of partnering as experienced by the interviewees can be summarized as follows:

## **ADVANTAGES OF PARTNERING**

- The client can utilize the design-builder's competence in constructability early in the design process, and hence eliminating a lot of re-design.
- The client can utilize the subcontractor's competence in the latest technology in the market, often resulting in smart solutions to problems.
- The client, users, design team, design-builder, and subcontractors design the building together, committing the parties more to the end product.
- It is easier to change and adjust the project scope during the process.
- Reduced number of conflicts and litigations
- A positive work environment.
- Better communication flow
- Reduced uncertainty of the project cost at an early stage
- Closer involvement of the users, preventing changes and last minute re-design.

## **POTENTIAL PITFALLS OF PARTNERING**

- Partnering is demanding for the client. The client has to be more active and use more resources than they would with another project delivery system.
- There is a risk of failure if the cooperation fails or the target cost is not reached.
- The partnering ideas are dependent of top management support.
- It is difficult to set a fair target cost.
- Few contractors fully understand the concept. Often the process of teaching people how to partner starts afresh for each project. That a firm has previous experience in partnering does not necessarily mean that the key persons offered to the project have experience in partnering.
- Partnering success depends on the participants, and is vulnerable for changes in key staff.

Partnering is still a rather new concept in the Norwegian construction industry, but the use of partnering is increasing. The interviewees uphold partnering as an important step towards a cooperative culture. However, this cultural change will not occur overnight. Partnering is Statsbygg's way of facilitating a lean construction process where less time is wasted on disputes, and more value is added to the project. The partnering efforts have been successful from Statsbygg's point of view, and partnering elements will be used in future projects when suitable. IPD may be considered as the next logical step in creating further win-win situations for the participants in future projects.

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**PART 3**  
**Appendixes**

Appendix 1: Questionnaire

Utfyllingsskjema for partneringsprosjekt

Appendix 2: Interview guide Statsbygg

Intervjuguide Statsbygg

Appendix 3: Interview guide Contractors

Intervjuguide Entreprenør

Appendix 4: Master's thesis contract

Masteroppgavekontrakt

## Appendix 1: Questionnaire

Utfyllingsskjema for partneringsprosjekt: \_\_\_\_\_

	ja/nei	Kommentarer
Tidlig kontrahering av entreprenør		
Prekvalifisering		
Funksjonsbeskrivelse		
Mengdebeskrivelse		
Tildeling kun etter lavest pris		
Målpris med incentiver for deling av bonus/malus		
Inkludering av leverandører i partneringsgruppa		Hvis ja, hvilke:
Inkludering av leverandører i insentivene		
Inkludering av rådgivere i partneringsgruppa		Hvis ja, hvilke:
Inkludering av rådgivere i insentivene		
Inkludering av arkitekt i partneringsgruppa		
Inkludering av arkitekt i insentivene		
Intensjonsavtale med partneringsgruppa frem til endt forprosjekt og fastsettelse av målpris		
Åpen bok/økonomi		
Oppstartsseminar		
Bruk av workshops for å bedre samarbeidet underveis		
Bruk av avsluttende workshop med oppsummering av erfaringer		
Målinger underveis i prosjektet		Hvis ja, hvilke:
Bruk av verktøy for konflikthåndtering (eks beslutningstrapp)		Hvis ja, hvilke:
Bruk av samarbeidsavtale		
Bruk av måldokument		
Kontraktsfestet rett til å bytte ut personer		
Kontraktsfestet rett til å bytte ut firmaer		
Godtgjørelse/betaling til partneringsgruppa for godkjent tilbud		
Samlokalisering av partneringsgruppa		
Totalentreprise		Hvis nei, hvilke:
Kontraktsform/vederlagsform (eks fastpris, fikssum, regningsarbeid)	Svar:	

	Ja/nei	Prosentvis vektning
Tildeling etter økonomisk mest fordelaktig tilbud		
Hvis ja, tildeling basert på:		
Gruppas kompetanse		
Oppgaveforståelse (dokumentasjon på at de har forstått hva partnering innebærer)		
Tilbudt personell		
Totalpris på prosjektet		
Påslagsprosjenter og timespriser		
Pris på rigg og drift		
Ikke bindende referansepris for prosjektet		
Vurdering av gruppens idé/løsning		
Annet:		

## Appendix 2: Interview guide Statsbygg

### Intervjuguide Statsbygg

#### Mål:

Kartlegge hvordan Statsbygg har gjennomført sine partneringsprosjekter, og om Statsbygg har lært noe og utviklet modellen. Er Statsbygg i nærheten av en standardisering av samspillsmodellen?

Få et overblikk av hvordan partnering ble gjennomført i prosjektene på et overordnet nivå, og spørre prosjektledere hvordan det fungerte i praksis.

#### Spørsmål:

##### Partneringsmodellen

Hva er Statsbygg hovedårsak for å gjennomføre partnering?

Har hvordan Statsbygg gjennomfører partnering utviklet seg siden de første prosjektene?

Har du noen kommentarer om hvilke tiltak som har fungert, og hvilke tiltak som dere har kuttet ut?

Har det vært en utvikling av noen av partneringstiltakene?

Er Statsbygg i nærheten av en standardisering av samspillsmodellen?

Hva vil du si er forskjellen ved å være prosjektleder på et partneringsprosjekt i forhold til prosjekter med tradisjonell gjennomføring?

Har partnering gitt suksessfulle prosjekter?

Hvilke størrelsesorden har det vært på prosjektene dere har gjennomført hittil?

Holder dere igjen på å bruke partnering på de aller største prosjektene?

Hvem drev partneringsprosessen i prosjektet du var med på?

I hvilken grad ble partneringsfilosofien og årsaken for å gjennomføre partnering ført nedover i de forskjellige aktørenes organisasjoner?

Var personer på alle nivåer i bedriftene med på partneringsprinsippene? I hvilken grad forstod alle partneringsfilosofien?

Har dere egne personer som passer til forskjellige gjennomføringsmodeller?

##### Samspillsprosessen

Er det mulig å samle inn data for om partnering har lønnet seg økonomisk, kvalitetsmessig, forbedret HMS-resultat, fremdriftsmessig, reduserte antall konflikter, osv.?

Fra prosjektet du var med på, er det mulig å si noe om besparelser eller tap i forhold til en tradisjonell gjennomføring? (sluttsum i forhold til første anslag/sammenlignbart med andre tilsvarende prosjekter – pris/m<sup>2</sup>?)

Er det flere, færre, eller uendret antall konflikter i partneringsprosjekter? Har dere målinger for dette?

Har partnering noe å si for samarbeidsklimaet på prosjektet?/I hvilken grad opplevdes det en merkbar endring i holdninger fra motstridende til samarbeidende? Er det gjort noen kvalitative målinger på dette?

Har samarbeidsavtalen hatt noen påvirkning på prosjektet i forhold til en tradisjonell gjennomføring?

Ble det utformet en spesiell samarbeidsavtale for hvert prosjekt?

Ble det utformet et spesielt og tilpasset måldokument for hvert prosjekt?

Hvordan foregikk prosessen for å finne prosjektmålene til måldokumentet? I hvilken grad ble prosjektmålene i måldokumentet vektlagt i forhold til firmaenes individuelle mål?

Var andre parter enn Statsbygg med på å formulere målene i måldokumentet?

Hva står i samarbeidsavtalen og måldokumentet? Står det det samme i alle partneringsprosjektene?

Ble konflikthåndtering nevnt i samarbeidsavtalen?

Ble det gjort målinger for å følge opp prosjektmålene? Kvalitative/kvantitative?

Hadde partneringsgruppa incentiver for å tilfredsstille eller overgå disse målene?

Fløt kommunikasjonen lettere i partneringsprosjektene enn i andre tradisjonelle prosjekter?

## **Økonomi**

Hvordan er Statsbygg sin risiko ved å benytte partnering fremfor totalentrepriser?

Hvilke vederlagsform benyttes på partneringsprosjektene? Hvordan foregår betalingen til entreprenøren?

Hvordan fastsettes målprisen? Selvkost + usikkerhet + indirekte kostnader+ fortjeneste? Er det samme som forventet kostnad i en hovedentreprise, eller en totalentreprise? Likt i alle prosjekter?

Hvordan opplevdes prosessen mellom dere og entreprenøren i forhold til fastsettelse av målprisen?

Hva legges i åpen bok prinsippet? Hadde for eksempel Statsbygg åpen tilgang til all økonomi relatert til prosjektet? (påslag, risiko/usikkerhetsavsetning ved prising, indirekte kostnader innbakt i påslag?)

Ble det signert en konfidensialitetserklæring i forhold til bruk av åpen bok?

Lik usikkerhetsavsetning for postene ved partneringsprosjekter og tradisjonell totalentreprise?

Hvor stor fortjeneste til entreprenøren legges inn? Hvordan fastsettes denne?

Fikk dere nytte av entreprenørens gode priser/avtaler og smarte endringer i detaljprosjekteringsfasen og byggefasen?

Har det alltid blitt benyttet en gruppeavtale der en totalentreprenør har ansvar for hele gruppen?

Kan partnering tenkes å kunne gjennomføres med hovedentrepriser i stedet for totalentreprise?

Bygges det billigere ved å benytte partnering?

### **Oppsummering**

Gir partnering bedre prosjekter enn ved tradisjonelle gjennomføringer?

Hvilke partneringstiltak er mest viktig?

Hva er erfaringene i forhold til pris, kvalitet, fremdrift, HMS, antall endringer?

Fordeler ved å benytte partnering

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Ulemper ved å benytte partnering

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Hva mener du må gjøres/ hva skal til i partneringsprosjekter for at prosjektet skal suksessfullt?(Suksessfaktorer)

- 
- 

Hva må unngås i partneringsprosjekter for å få suksess? (fiaskoprediktorer)

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## **Appendix 3: Interview guide Contractor**

### **Intervjuguide Entreprenør**

#### **Innledning**

Hvilke erfaring har du fra partneringsprosjekter?

Hva er firmaets erfaringer med partnering? Har det gitt suksessfulle prosjekter? Har dere gjort kvantitative eller kvalitative målinger for å dokumentere suksessen?

#### **Partnering i Statsbygg**

På hvilke partneringsprosjekt(er) har du samarbeidet med Statsbygg?

Hva var din rolle/stilling på dette prosjektet?

Hvordan gikk prosjektet generelt?

Var det en spesiell utfordring eller kompleksitet ved prosjektet som krevde ekstra godt samarbeid?

Når og hvordan ble dere kontrahert til prosjektet? (litt kort om prekvalifisering og tildelingskriterier: for eksempel påslagsprosjekter, timespriser, totalkostnad for prosjekt, kvalitet, erfaringer, etc.)

Var det en intensjonsavtale frem til endt forprosjekt før kontraktsinngåelse?

Var det en kontrakt basert på totalentreprisestandarden NS 8407 med tilleggsbestemmelser for samspillet?

Ble dere presentert for en beskrivelse/modell for partneringsprosessen, hva som kjennetegnet den, og hva som ble forventet av dere, etc.?’

Var det dere eller byggherren som var den største pådriveren for samarbeid fremfor motstridende tankegang ved oppstart? Hva med underveis?

Forstod alle hva partnering gikk ut på?

I hvilken grad ble partneringsfilosofien og årsaken for å gjennomføre partnering ført nedover i deres og andres organisasjon?

Var det en person i deres firma som tok på seg et spesielt ansvar for å spre partneringsfilosofien nedover i organisasjonen?

Hadde partnering noen effekt på leverandørene og underentreprenørene? (f.eks bedre kommunikasjon, bedre hverdag, fikk arbeide mer effektivt, etc.).

Hvordan fungerte kommunikasjonen og samarbeidet i forhold til tradisjonelle prosjekter?

Har dere egne personer i firmaet som er partneringspersoner, mens andre personer er totalentreprise- eller hovedentreprise-personer?

Hvordan er det for dere som entreprenør å arbeide på partneringsprosjekter?

Kreves det noen spesielle egenskaper av personene som arbeider sammen i et partneringsprosjekt?

Ble det benyttet åpen bok? Erfaringer rundt dette? Ble det signert en konfidensialitetserklæring?

Var det en oppstartsworkshop? Hvem var med på denne?

Ble det benyttet oppfølgende workshops? Hvor ofte? Hvor omfattende?

Ble det benyttet et verktøy for konflikthåndtering?

Ble det benyttet en samarbeidsavtale og et måldokument i prosjektet, og var dere med på å utforme disse?

Hvilken effekt hadde samarbeidsavtalen på de involverte i prosjektet?

Hvilken effekt hadde måldokumentet på de involverte i prosjektet?

Ble det gjort målinger i prosjektet? I så fall: Målinger underveis, eller kun til slutt?

## **Målpris**

Kan du si litt om hvordan dere kom frem til målprisen?

Hvordan opplevdes prosessen mellom dere og Statsbygg i forhold til fastsettelse av målprisen?

Hvordan ser dere på risikoen ved å gå inn i en partneringskontrakt i forhold til en tradisjonell totalentreprisekontrakt?

Hvilke vederlagsform var det? (fastpris, regningsarbeid). Fikk dere betalt fortløpende, eller faste beløper?

Hvis fastpris: Hvorfor brukes ikke regningsarbeid?

Hvilke usikkerhetsavsetning ligger inne i målprisen? Er denne like stor som i en totalentreprise?

Har dere noe insentiv i partnering for å overgå byggherrens forventninger om kvalitet, HMS, eller fremdrift?

Får Statsbygg nytte av deres gode avtaler med leverandører i partnering, eller blir dette ekstra fortjeneste til dere? Er dette annerledes enn ved totalentreprise?

Ble leverandørene og de rådgivende inkludert i insentivene for bonus/malus under/over målpris?

Hva er deres syn på å inkludere rådgivere, underentreprenører og leverandører i insentivene?

Er det lavere risiko for dere å være med på partneringsprosjekter?

Tjener dere mer på partneringsprosjekter enn på en tradisjonell gjennomføring?

Bygger dere billigere med partnering?



## Oppsummering

Gir partnering bedre prosjekter enn ved tradisjonelle gjennomføringer?

Hva er erfaringene i forhold til pris, kvalitet, fremdrift, HMS, antall endringer?

Fordeler ved å benytte partnering

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Ulemper ved å benytte partnering

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Hva mener du må gjøres/ hva skal til i partneringsprosjekter for at prosjektet skal suksessfullt?(Suksessfaktorer)

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Hva må unngås i partneringsprosjekter for å få suksess? (fiaskoprediktorer)

- 
-

# MASTERKONTRAKT

## - uttak av masteroppgave

### 1. Studentens personalia

Etternavn, fornavn <b>Haugseth, Nikolai</b>	Fødselsdato <b>09. jan 1989</b>
E-post	Telefon <b>97084207</b>

### 2. Studieopplysninger

Fakultet <b>Fakultet for ingeniørvitenskap og teknologi</b>	
Institutt <b>Institutt for bygg, anlegg og transport</b>	
Studieprogram <b>Bygg- og miljøteknikk (2-årig)</b>	Studieretning <b>Prosjektledelse</b>

### 3. Masteroppgave

Oppstartsdato <b>13. jan 2014</b>	Innleveringsfrist <b>09. jun 2014</b>
Oppgavens (foreløpige) tittel <b>Partnering i Statsbygg</b>	
Oppgavetekst/Problembeskrivelse Oppgaven undersøker hvordan Statsbygg gjennomfører partneringsprosjekter, og sammenligner denne gjennomøringen med hva litteraturen anbefaler. Videre ses det på fordeler, ulemper, suksessfaktorer, og fiaskoprediktorer ved å gjennomføre prosjekter på denne måten.	
Hovedveileder ved institutt <b>Førsteamanuensis Ola Lædre</b>	Medveileder(e) ved institutt
Merknader <b>1 uke ekstra p.g.a påske.</b>	

#### 4. Underskrift

**Student:** Jeg erklærer herved at jeg har satt meg inn i gjeldende bestemmelser for mastergradsstudiet og at jeg oppfyller kravene for adgang til å påbegynne oppgaven, herunder eventuelle praksiskrav.

Partene er gjort kjent med avtalens vilkår, samt kapitlene i studiehåndboken om generelle regler og aktuell studieplan for masterstudiet.

20/1-14 Trondheim  
.....  
Sted og dato

Nikolai Hauge  
.....  
Student

Ola Haugen  
.....  
Hovedveileder

Originalen lagres i NTNUs elektroniske arkiv. Kopi av avtalen sendes til instituttet og studenten.