SECOND GENERATION PARTNERING

AARHUS VAND A/S

AALBORG UNIVERSITY

SCHOOL OF ENGINEERING AND SCIENCE

MANAGEMENT IN THE BUILDING INDUSTRY

4TH SEMESTER

GROUP 6

AUTUMN 2015

Project Type:
Master`s final report

Title:
Second Generation Partnering

Project Period:
Autumn semester 2015

Place:
Pontoppidanstræde 100, 9000 Aalborg

Supervisor:
Erik Bejder

Project group: 6

Group members:

David Stojan

Encho Petlov

Liliya Pavlova

Editions:

Digitally available,

2 hardcopies

Delivery date:
Wednesday, 6th of January 2015

Main report: 79 pages

Appendix: 24 pages

Annex: 201 pages (CD)

Synopsis:

The following master thesis primary focus is on introducing an alternative approach to current methods applied in the building industry.

The report provides the background of partnering and its development together with crucial elements that determine its success.

Furthermore a study case is provided as a successful example of partnering implemented in a real scenario. The report introduces a model for second generation partnering tailored to the construction industry. A plan, suggesting a right sequence of activities and methods has been established, along with a discussion of the factors that influence the cooperation.

Reports proposal combine the theory with the case findings in order to provide a coherent solution to issues present in the building industry.

Contents

Preface

This report is a master thesis for the 4th semester of Master in Management in the Building industry at Aalborg University.

The group of authors consists of members from Slovenia and Bulgaria, which have come from different backgrounds but have the same background in Architectural Technology and Construction Management. Such a background results in a very consistent and stable flow of ideas for the deployment of this project. This paper is based on the personal experience gained during our previous studies, as well as professional literature, information gathered from the collaboration with Aarhus Vand A/S, EnviDan Gruppen, VAM A/S and our supervisor. The research group agreed on the topic of long-term partnering within the construction industry as the final focus area, as a result of analysis of the construction industry and a common interest within the group. The research was conducted during September 2015 and December 2015.

Acknowledgements

The members of group 6 would like to thank Erik Bejder for his guidance and valuable input during the process of writing the report. His experience and knowledge in the area of interest provided the group with additional sources and contracts that were useful while conducting the research. Erik Bejder also put great efforts to support us with organizing meetings with the revenant companies. Furthermore, the research group would like to thank to the employees of EnviDan, VAM and Aarhus Vand that provided us with crucial materials and inside during the meetings.

Reading guide

The report consists of two parts: main report and additional material (on the CD). All the additional information, which supports statements from the paper are included in the appendix and annex.

The main report is divided into chapters, each starting with an introduction that is providing a red tread throughout the report. Harvard referencing system is used.

Report structure summary

Introduction: provides a brief summary of what the project contains, its purpose and objectives

Methodology: describes how the necessary research was carried out by the research group

Partnering as a concept: includes the background of partnering concept

Problem formulation: states focal problem area is identified and a problem defined

Theoretical basis for partnering: provides the knowledge relevant for partnering implementation

Case description, reflection: provides inside on partnering observing an actual case

Solution: suggests an execution plan of the strategy proposed

Conclusion: states what conclusions can be drawn from the report and highlights the most central findings

Definitions and clarifications

This section provides some definitions and clarifications serving to distinguish few commonly used terms, which close in meaning yet distinguished in some features.

Collaboration versus cooperation

Roschelle and Teaseley (J. Roschelle and S. D. Teasley, 1995) define collaboration as "*a coordinated synchronous activity that is the result of a continued attempt to construct and maintain a shared concept of a problem*". Schrage (Schrage, 1990) describes it as *"a process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own."*

Collaborating can be interpreted to represent a more traditional approach to working together where; two or more entities are working together without establishment of common goals with the primary focus on results instead of the process. In other words collaborators would not get in their way in order to complete the required task. This approach is more suitable for projects where the outcomes are more predictable and the problem-solving does not require creative solutions. (Bohnstedt, 2015) Collaborating is a way of approaching project work that is still firmly anchored in the mind set of individuals working within the building industry.

On the other hand cooperating can be defined as a method where separate entities establish common goals and work together on accomplishing those. This approach is more suitable for projects with unpredictable processes, where problem solving requires more creative approach to problem solving. The problem solving process consists out of discussions and negotiations in order to arrive at the desired goal. (Bohnstedt, 2015)

Effectiveness vs Efficiency

Performing an activity in an efficient manner means that an activity is done in the right way and with a minimum amount of waste. However, that does not necessary mean the right activity is being performed therefore a limited reward can be acquired if the wrong activity is performed. While effective the primary focus lays on the end products completing the task in the most optimal way.

To be effective on the other hand means to perform the right task in the first place. There is no indication on how well the task at hand is performed however. Therefore it is important to establish that the right task is being performed before shifting the focus on efforts towards efficiency. (Bohnstedt, 2015)

Innovation versus Improvement

Generally improvement and innovation are refereed together as in tandem. Nevertheless, they are distinguished as by its definition, innovation adds value. It is an innovative solution that is likely to bring improvement to a process or product.

- Thus, all improvements are innovations, but most innovations are improvements, and at the same time there are some innovations that are not improvements. (J. Keathley, P. Merrill, T. Owens, I. Meggarrey and K. Posey, 2013)

1. Introduction

This chapter presents the focus area of the report together with augmentation for the motivation for the production of the report. Furthermore, it presents the desired objectives of the study.

1.1. Problem background

Fragmentation of the construction industry

The Egan Report, published by the Construction Task Force in 1998, identifies issues of underachievement in the building sector. Sir John Egan and the members of the Construction Task Force find in 1998 that the construction in the UK does not achieve sufficient results to be competitive in the international markets, neither does it satisfy the needs of the clients. In the report on the scope for improving quality and efficiency in UK construction, the members of the Construction Task Force point out several problems that support this conclusion and need to be faced in order to reach better results. Among the problems are the following:

- "it has a low and unreliable rate of profitability. Margins are characteristically very low." This according to the Force prevents the industry from sustaining healthy development.
- For that time, investing in research and development had decreased since 1981, disabling the industry to innovate its processes and technology. There is also skill shortages, due to insufficient number of new trainees to replace the aging skilled workforce. They add that at the time "construction also lacks a proper career structure to develop supervisory and management grades"
- Clients, ignorant to the difference between best value and lowest price, select designers and constructors on the basis of tendered price, and "this is widely seen as one of the greatest barriers to improvement"
- Projects are widely seen as unpredictable in terms of delivery on time, within budget and to the standards of quality expected" where under-achievement is found in the growing dissatisfaction with construction among both private and public sector clients."
- Taxpayers and clients are rarely given best value. (Egan, 1998)

It can be summarized that the construction industry is not functioning to its full capacities and these problems need to be faced with better approaches. What is more, entering in 1990s bring around plenty of changes in industry such as:

- Enhanced legal concerns;

- Increased competition;
- Higher standard for competitive success;
- Dwindling resources;
- The existence of global market/economy;
- Accelerated emergence of new technology;
- The increased risk in construction contracting. (Heng Li; Eddie W. L. Cheng & Peter E.D. Love, 2000)

Construction is complex as it consists of many activities that are included in Porter`s Value Chain. The above mentioned trigger all these activities and their performances. The quality of execution of each activity determines the quality of the project, the ability to reduce time and the overall costs of the construction throughout its whole life and the number of accidents. In a lecture given by the executive director of the Arbitration Board in Denmark, Lene Ahlmann-Ohlsen (see Annex G), it was pointed out that time and money ae crucial for the parties involved. Therefore, they are reasons for disappointments, conflicts and even litigations. The figure(s) below signify the poor performance of departments` and agencies` construction projects, in the United Kingdom, in connection with time and cost estimates. 70% of these projects we delivered late and only 20% of them on time. In Addition, the cost of the projects exceed the tender prices in 73% cases and only 14% had a correct estimate.

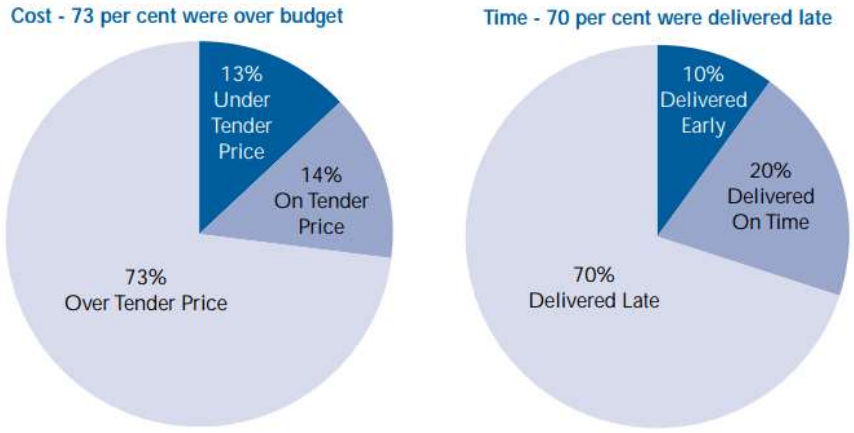


Figure 1. Performance of departments` and agencies` construction projects Source: (Graves A and Rowe D, 1999)

According to her words (Annex G) misunderstandings arising in the disputes and “hurt feelings” are the overall reasons for the parties to seek the assistance of the Board. In the table below it can be seen the number of started and finished arbitration proceedings/cases in the period of 2008 till 2014.

Table 1. Overview of the initiated and finished arbitration cases in Denmark. (See Annex H)

Arbitration cases	2008	2009	2010	2011	2012	2013	2014
Incoming cases	671	625	444	464	362	382	337
Finished cases	634	632	556	592	411	370	415

The cause for distrust can be found in the beginning in the awarding of the contract, as still many tender procedures are putting emphasis on lowest price. As a result some firms have priced work unrealistically low. When hired, these firms are trying to recoup their profit margins through contract cost variations arising from, for example design changes, and other claims leading to disputes and eventually even litigation (National Audit Office, 2001). Denmark encourages and has created tradition to use small contractors. However, they are very often unexperienced and not as professional as bigger enterprises, therefore the likelihood of mistakes is high. Their seemingly low bids, cost much more in the process of their work, because of their insufficient experience with cooperation with clients. No matter what the award criteria is, the client demands value for his/her money. *„Value for money means securing a construction which is fit for purpose, fulfils user needs, and achieves a balance between quality and costs throughout its life"* (National Audit Office, 2001)

Other argumentation for insufficient synergy is that construction projects are generally organized hierarchically by stakeholders with diverse skills (e.g. clients, architects, engineers, surveyors, general and subcontractors, suppliers etc). That typically leads to complex relationships and that clients and the parties involved in the design and construction phase do not work closely and neither do they share enough information. They not only need to work towards an agreed final product, but also clear out and acknowledge the common objectives, share commitment to continuous improvement and to the team. Despite this is considered as relevant only for projects without using competition, it is also achievable in those using tender.

Cases

To illustrate the consequences of lack of communication and early cooperation between the parties, two real life cases of big construction projects will be presented. They are followed by a successful case of cooperation. The cases were presented during interviews with the sales manager of Ambercon, Keld Kristensen, one of the leading manufacturers of precast concrete elements and façade panels in the Danish market. (see Annex C)

Nowadays, prefabrication, pre-assembly, and standardized components and processes are very common in construction projects, but they hide a lot of risks and more attention needs to be given in the use of them. In bigger projects, when tender competition is required, the supplier/subcontractor is involved rather late in the process. That costs both parties a lot sometimes, as the manufacturer has its own know-how, which needs to be deliberated at the early stages of the design.

The New University Hospital Project, Aarhus

Figure 2. University Hospital Project, Aarhus (Ambercon, 2015)

The first case concerns the new university hospital in Aarhus, which will be built and integrated with the already existing Skejby hospital is by far the largest project in the history of Denmark. As of 2011 it is also the largest construction project in Northern Denmark, hence the participation in the execution will be beneficial for any subcontractor or supplier. The desire for Ambercon's involvement in the project has been shared by both the client and Ambercon`s side since the very beginning and only technological and procedural complications have by far prevented this from happening (See Annex C).

The problem in this particular case has been the very late start of the collaboration, when no technical details could have been arranged between the parties. According to Mr. Kristensen, the finished design was made with absolutely no tolerances whatsoever, which left no room for Ambercon's specific input to be implemented.

That by itself made it impossible for Ambercon to produce the elements, due to the fact that the project presented no possibility for application of the company's specific know-how, considering that the requested products were supposed to be custom made wall elements. Again according to the sales manager, Ambercon faced a situation of being unfortunately and almost involuntarily left without a choice, as complications of that scale are in no way desired by the company and are contradictory to their interests and working principles.

As a result, it can be concluded that the situation has led to a considerable lost possibility for both profit and portfolio enrichment for the manufacturer, as so far the project continues without their involvement against the desire of the client.

Semco Maritime Headquarters Project, Esbjerg

Figure 3. Semco Headquarters Project, Esbjerg (Semco, 2014)

The project for the new headquarters for Semco Maritime A/S is executed by NCC Construction Danmark A/S as a turnkey contractor and the consultant engineering company responsible for all structural details and calculations is Rambøll.

Having been chosen as the company to produce the prefabricated wall elements, Ambercon was put in an unbeneficial and unfavorable position, due to serious contract breaches from the consultant's side, resulting also in problems between Ambercon and NCC as the main responsible company for the overall execution of the Semco project.

The problem is underlying in the fact that the engineering team from Rambøll is delaying the drawings, which delays the whole project execution. As a result, Ambercon cannot start producing the required elements and cannot take other projects. That by itself results in significant lost possibilities, due to the fact that the production facilities remain unused during the waiting time. According to Keld Kristensen, the losses have been calculated to 600 DKK/m^2 and a total fine for approximately 1, 2 mil. DKK had been forwarded to NCC. That threatens to compromise the good working relationship Ambercon and NCC have established during the years, even though it has been identified that it is the consultant's fault.

It is also important to note, that this situation has been continuing for months in 2014, as the elements had to be delivered during summer and fall time. The group does not have information on the outcome of the dispute. Attached documentation presents the communication, letters sent from Ambercon, calculation and specification of the losses, as well as production schedules showing the delays graphically (See Annex).

Ambercon had actually produced some of the desired wall elements, but faced a new problem; assembly on site could not start and Ambercon is forced to keep elements, which are supposed to be out of their production facility and delivered on site. That was another complication for the company, which needs the storage space for new production.

The above mentioned problems appeared, because of very late cooperation of the parties, as they did not have the sufficient information about intentions and technical know-how from the other side. The effects, as clearly visible are bordering crucial, with considerable financial expression, lost possibilities and complications for Ambercon and from there to NCC.

KKH in Malmö

In further discussion with the salesman of the company, he pointed out a case of a great success. The project is supply of 7000 m^2 of special decorative walls for the city`s new convention, hotel and concert building Malmö Live, more specifically for the center's three concert halls. The schedule planned together with the contractors was followed without deviation from it, and the reason for that was undoubtedly, according to Keld Kristensen`s words, the participation of Ambercon in the planning phase.

Figure 4. KKH in Malmö (Ambercon, 2013)

1.2. Focus Area

Having these problems under the radar, it can be concluded that poor communication and cooperation, between the collaborating parties, results in undesired, by any of the parties, complications. In addition to the mentioned before troubles, it can be added that the whole supply chain will be affected and clients will be greatly dissatisfied. It can result in bad reputation for at least one of the party and would create distrust in future partnering or even prevent some beneficial collaborations. Ultimately, this will work against strengthening the competitive advantage of a company and make it vulnerable against attacks of competitors and unsatisfactory results for all parties involved. Therefore the focus are of the report is:

How can current cooperation practices in the construction industry be improved?

1.3. Objectives of the study

Selecting the right partner in the construction industry and sustaining good cooperation can be achieved in various ways, having the tender rules and mind and the possibility of pre-qualification criteria. The primary goal of the study will be to develop a model for establishing successful partnering and sustain an optometric practice, which can be applied to various strategic partnering projects in the construction industry.

Secondary goals of the study can be summarized as follows:

- To examine current literature on the concept, its key features, procedures, incentives systems and processes in connection with it
- To assess current successfulness of partnering according to the case studies from Danish market

The investigation and proposed solution are only theoretical.

2. Methodology

This chapter contains information about the way the authors made their research and production of the report. It consist of a description of the research design the report is based on and the limitations to the research and investigation that derive from the problem.

2.1. Research strategy

The case study research strategy has been chosen for this report. According to Stake (1995), case studies are a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals. Case studies are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.

Case studies are considered the best strategy when the aim of the research is to answer "why" or "how" questions and when the researcher has limited control over the analysed events (Yin, 2003, p. 1).

Taking into account that the report is based on the investigation of the partnering companies Aarhus Vand, EnviDan, VAM, from September 2015 until December 2015, that the research group has no control of the events analysed and acts as external observer, and that the aim of this report is to answer a specific question, case study has been considered to be the best research strategy.

2.2. Collaboration

The report has been conducted with the assistance of employees of three companies, which are working with the partnering concept, by taking part in interviews conducted by the research group. The three companies are Aarhus Vand, EnviDan and VAM. They provided Group 6 a useful handbook, called "Concept", containing information regarding the partnering organization structure, collaboration and rules that the companies have developed and must respect during the partnering period. The companies assisted not only in the data research by participating in interviews but also providing clarifications through e-mails when needed.

2.3. Data collection

Mixed research design has been used for data collection in the report. The method combines qualitative and quantitative research. The qualitative research involves conducting interviews on the meetings with the companies. Quantitative data analysis elements have been used while conducting the research. In order to determine the problem area relevant literature, books and internet have been used. Furthermore a specific case has been used in order

support out research. Case information was acquired by translating provided documentation from Danish to English language.

Before each interview the research group created questionnaire that are sent to the company in advance. This is made so that the company can prepare better and be informed what kind of interview is going to be.

The first part of the questions is open question where members of the group tried to acquire as much specific knowledge. These questions` aim is to gather general information together with an overview of the company and their tendencies towards partnering.

The second part of the questions are more specific. Their purpose is to concrete the thoughts and doubts of the authors about specific areas. However, the interview consists of all kind of questions: introductory, specifying, direct and interpreting. There have been upcoming questions from the research group members and follow-up questions and discussions, depending on the answers provided during the interview. All the interviews have been conducted in the offices of the companies in an informal way.

All the interviews have been recorded with permission of the members of the companies. This is made for a help to the authors in case of need to refresh the information gained from the interview. All the interviews are transcribed and are attached as an appendix.

2.4. The role of the researcher

There are several important implications that must be mentioned in connection with the scientific research method chosen and the role of the research group.

The choice of qualitative research for the construction of this report means that the research group cannot be seen as neutral and objective. On the contrary, it is important to acknowledge that instead of being objective bystanders the research group participates in the process of constructing knowledge together with the subjects of the research (Moisander, et al., 2009).Furthermore, there is a general agreement within the qualitative field that irrespective of the method used "*research is not a wholly objective activity carried out by detached scientists. It is a social activity powerfully affected by the researcher's own motivation and values*" (Blaxter, et al., 1996, p. 15)

2.5. Limitations

Considering that the partnering framework is applied on infrastructure projects where citizens are the end users we have to mention that the paper is in fact limited to sources available to the research group. Having access to additional parties involved in the process would researchers multiple points of view. That would result in findings from practice going beyond the theoretical point of view. For future development of the topic the researches

could take into consideration companies from additional contractors and developers in order to analyze the differences in the partnering processes.

3. Partnering as a concept

3.1. History of partnering

Both Latham (Latham, 1994) and Egan (Egan, 1998) point out the presence or absence of trust among the working teams, to be a great success or failure factor for the projects. Therefore, they seek to improve the efficiency of UK construction, and for that the supply chain has critical role, advocating long-term relationships based on trust. Unfortunately, supply chain, which delivers the construction product, is highly fragmented. The fragmentation of work involves high transaction costs, but what is more important, is a prerequisite for mistakes of a different nature. Faults are much more likely to appear in cases, in which specialists and technicians do not work closely with each other or/and do not show adequate trust, hence do not communicate the specifics of the projects in a detailed enough manner.

Fragmentation of the supply chain, which includes clients, professional advisers, designers, contractors, sub-contractors and suppliers of materials, sets risks and waste within the processes and the whole project. Integration of the whole supply chain is required to develop designs which improve the "buildability" and value of projects and encourage innovation. The successful innovation of products and processes, which is prominently valued in the building sector, is also influenced by the development and integration of new knowledge in the process of making innovation. Only through cooperation between the individual firms of the supply chain will knowledge develop and even provide greater certainty of project time and budgeted costs and result in more sustainable construction.

Stakeholders in the construction industry are constantly trying to introduce enhancements in the construction industry. Nevertheless, other industries have experienced a significant development, while the building industry work is performed the same way as years ago (Danmarks Statistik 2007). Stakeholders are determined to improve the quality and costs and time of the construction processes. Naturally, it had been recognized that for achieving better results and delivering higher quality to the client, united efforts of every team member is required.

A large part of the prerequisites for the focus on partnering in these years, together with reasoning and support, can be found in the Latham`s (Latham, 1994) and Egan`s (Egan, 1998) reports on the construction industry later in the 1990s. They highlighted that the UK construction industry was suffering from cost overruns, project delays and poor productivity.

Both reports suggested that the supply chain should be more integrated and more attention should be paid to the use of partnering. (Out-law, 2012)

All these changes in combination with the problems, create the need in construction businesses to establish their own core competences, in order to provide quality services and products to the customers and create competitive advantage. Companies are adopting trying different approaches, such as Total Quality Management (TQM) and Business Process Re-engineering (BRP) and partnering, in order to strengthen the firms` competitive advantage and bring customer satisfaction, a great indicator of business success (see Figure 1). What makes partnering more preferable in comparison to TQM and BRP is that it requires less initial investment, also of time, and provides quick results (Wilson, 1995).

The knowledge of when the partnering emerged is vague. Many agree on the "assumption" that partnering dates back to the emerging of the construction industry. Nevertheless, partnering as a management concept, and the term we are going to use in this report, has appeared in the middle of 1980s and is referred to the work of the Construction Industry Institute of the United States (CII) and the adaptation of it by the US Army Corps of Engineers (McGeorge, 2012).

Prerequisites for it were, as mentioned previously, the problems and cost overruns emerging from the traditional methods of competitive tendering, one-sided contracts, ineffective administration and litigation (Skeggs, n.d.) Since then it is considered to have become "a primary management strategy for improving organizational relations and project performance" (Lærdre, u.d.).

Partnering in the supply chain creates a much stronger and bigger unit which establishes new means for competition, namely supply chain against supply chain rather than a single company against another. There are different reported cases of big companies which applied partnering in 1995-98, whose good results promoted the concept into using it further. Partnering as a strategy in different guises started spreading these years in the United Kingdom and USA as its substantial effectiveness was identified continuously and in different cases. (Ogunlan, 1999)

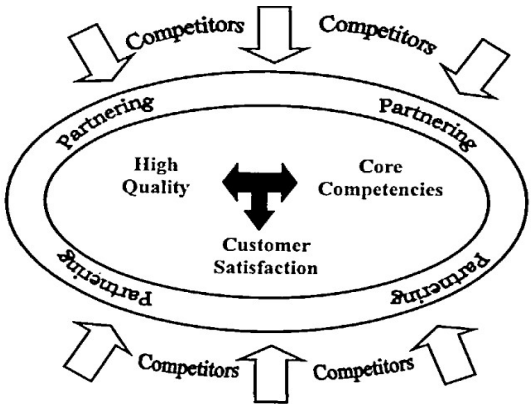


Figure 5. Partnering as a cohesive boundary (Badger and Muligan, 1995)

3.2. Definition of partnering

While determining for how long partnering has been present, the definition of it is even vaguer. Various articles, reports and literature provide agreement on some overall view of the term but nevertheless, different definitions. This can be explained with respect to the fact that it is relatively new model, yet to mature. In his report "The definition of partnering as a Wittgenstein family-resemblance concept" (Nystrom, 2005), Johan Nystrom also adds that it is a multi-faceted concept and therefore a single definition is impossible to be given. In addition partnering projects differ from each other and there can be distinguished different partnering practices. According to the types of partnering the group works with in this report, the definitions will be presented in the paper in the next section.

Generally partnering captures a spirit of collaboration, an ongoing process of team work, which primary advantage is increasing productivity, and which is aiming at certain results. Secondary advantages such as increased profit, reduced delivery time, increase qualities etc. are also high on the agenda when partnering is being established. There is also more pragmatic view on the concept which has led to a list of procedures and systems the participating companies should follow in order to enter into partnering agreement. These include: charters and dispute resolution mechanisms; teambuilding exercises and facilitation workshops; continuous improvement processes; total quality management; business process mapping; and benchmarking. (NEDO, et al., 1991, 1993, 1995, 1996)

Construction has fragmented nature, as projects are dependent on organizations, which work independently (architects, engineers, sub-contractors, suppliers). Nevertheless, for the completion of a project, it is required their cooperation. That suggests some kind of cooperation in every construction project, which makes it difficult to distinguish between

partnering as a distinctive practice and partnering as managerial rhetoric (Hinks, 1996). Partnering in the construction industry has to be distinguished from the typical partnership, as the former promotes advantages such as risk sharing and joint problem solving. (Cowan, 1992).

The following part presents several definitions, by few authors, and has the aim is to provide a broader scope of understanding of the concept and how it will be used in this report.

The Seven Pillars of Partnering

"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"

Partnering in Europe Incentive Based alliancing for projects defines it as:

"Partnering is a relationship between two or more companies or organizations which is formed with the express intent of improving performance in the delivery of projects"

Cowan in Strategy for partnering in the public sector

"Cowan defined partnering as a co-operative approach to contract management for the purpose of reducing costs, litigation and stress" (Cowan, 1991).

Partnering: a team building approach to quality construction management

"Osama Abudayyeh on the other hand, defined it as a commitment to recognize owner–contractor relationships as integral parts of the daily operations involved in construction" (Abudayyeh, 1994).

Construction Industry Institute (CII)

"a long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based upon trust, dedication to common goals, and an understanding of each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services."

Although the definitions are similar and based on similar idea it is clear that different perceptions prevail. The research group will focus the research mostly on the concept as the Construction industry Institute defined it.

A definition itself means: "a statement or description of the fundamental character or scope of something." If that is missing, an understanding can be gained by looking at the mechanisms of partnering, as it is a process of teamwork. In his paper, Johan Nystrom also

distinguishes general prerequisites, goals and components of partnering, where he points out that the essence of partnering can be searched in components of the concept. Literature review reveals the components as *trust* and *mutual understanding.*

3.3. Benefits of partnering

As mentioned before, the partnering concept brings a number of benefits to the projects and stakeholders. Generally both contractors and customers are obtaining good results from partnering projects and some of the benefits are general perception of the management tool. The benefits can be classified as tangible and intangible.

Independent of what the circumstances and type of collaboration are, most of the projects with using the concept are aiming at the tangible benefits, which are cost and time reduction. The intangible are often part of strategic partnering, as they bring positive results to the business in the long term. Nevertheless, the positive outcomes of projects are highly dependent on the type of partnering and are mainly generated from strategic partnering (where same group of people is working on multiple projects) rather than from a single project. As intangible benefits obtained from partnering are considered:

- *"enhanced practices, processes and procedures that are transferable to future projects"* (Scott, 2001)
- a reduction in the number of disputes
- rationalized project procedures lead to a simpler organization and reduce resource requirement
- employees gain communication and problem-solving mechanisms which are of help in their future work
- learning from partnering improves overall company competitiveness
- employees are more motivated and more focused on performance improvement
- employees are much happier in their work
- the creation of an environment where skills, expertise and knowledge are valued allows individuals at all levels to make a positive contribution and to achieve self-development
- company`s reputation and profile are enhanced
- a much better understanding is achieved of the totality of the risks associated with projects and how to manage these more effectively. (Scott, 2001)

While the former mentioned benefits are general, there are certain aspects of the approach, of which the building owner has a great advantage. Such are:

- Achieve an optimal combination of terms of architecture, use-value, constructional quality and economy
- Opportunity to achieve the most advantageous project
- Good opportunities both to preserve the architectural quality and ensure build ability

- More secure management of economy , scope and quality
- Jointly identify project risks and mitigate the negative consequences of these when drafting a thorough risk strategy
- Better respond to users wish and needs, and partners ca focus their energies on the project itself
- Fewer misunderstandings when transferring the project to the contractors
- Fewer additional requirements because the contractors through participation in the optimization of the design process, is guaranteed a buildable project material, in particular fewer design errors, omissions and ambiguities
- More time for the parties for the planning of the construction process
- Use of partnering in the construction phase can help reduce wasted time, errors and omissions in the execution and delivery
- Opportunities for time savings in the execution phase, because the contractors through participation in the design stage, supports a more through execution planning
- Disagreements are resolved in a dialogue so that disagreements do not develop into disputes that must be resolved by expert opinion and arbitration
- BOs have the opportunity to create and be part of an overall team, which work together to achieve project objectives

Disadvantages

However extremely beneficial, the approach is associated with few disadvantages:

- *"the partnering process can be abused by one of the parties;*
- *to be most effective, partnering needs to be practised and learnt over a series of projects and typically requires an early commitment in terms of management resources and direct costs;*
- *there are the direct costs of workshops, of training staff and of the more intensive early involvement of management in establishing the partnering approach."* (RICS, 2013)
- Relatively long selection procedure for accurate and reliable private partner

3.4. Types of partnering

"Partnering is becoming increasingly well understood in the building industry as a way of working with clients to jointly deliver costly improved construction project". (John Bennett and Sarah Jayes, 1998)

It has been established that partnering agreements emerge out of the specific circumstances and conditions defined by the involved parties. The following section is to provide an overview on what types of partnering have emerged in the industry over the years and will be relevant for the research conducted in this paper. Furthermore it will comment on the general advantages and disadvantages of each partnering agreement.

Overall, partnering can be distinguished as two broad categories, which are project-specific partnering and long-term partnering (often referred to as strategic partnering)

Project-specific partnering

Project partnering is a cooperation method where commitment extends over a single project. If there is potential for multiple projects, this is the first step. Benefits come as a result of project team's efforts towards effectiveness, in other words how to make a project in the right way. In construction, one-off projects are prevailing, so they are the ones that can promote closer relationship in construction projects (Matthews, 1996).

Strategic partnering

"The development of sustainable relationships between two or more organizations, to work in cooperation for their mutual benefit in the requisition and delivery of works, goods and/or services over specified period to achieve continuous performance improvement." (Heng Li; Eddie W. L. Cheng & Peter E.D. Love, 2000)

Strategic partnering is a cooperation agreement between parities of interest, which extend over a period and include multiple projects. The benefits of this approach are more extensive, and can secure long-term benefits, because of the improved efficiency of collaboration between involved parties. Like in other types of partnering the aim is to minimize waste and provide an improved final result for a reduced price. In these cases the efforts are continuous and performance is improved over multiple projects. Naturally the extent of benefits becomes greater comparing to shorter partnering agreements. (Heng Li; Eddie W. L. Cheng & Peter E.D. Love, 2000)

Partnering generations

As described in the paper "*Seven pillars of partnering",* partnering generations capture the development of the cooperative relationship between numerous parties of interest, from its early simplistic stages of first generation, up to the sophisticated mechanisms of third generation partnering.

Bennett and Jayes (Bennett, 2013) made a research in 1998 based on 200 case studies. They state that efficient partnering can be built up only step-by-step over many years. In connection with that, they describe three distinct stages, or three generations, in the process.

First generation partnering

The first stage/generation is essentially a project-based approach and even when it is applied to a series of projects. It is established between construction business and their clients. It has been found that it can provide cost savings up to 30% and time reduction up to 40%.

From the early stages of partnering, three principles are mainly applied by project teams. These are:

- Mutual objectives that capture interests of all parties involved in the process
- Open decision making and joint decision making according to the agreed terms
- Measurable targets that are to drive continues improvement from project

These principles can be applied on the level of project and strategic partnering. However when applied on multiple projects (strategic partnering) benefits like improved quality, faster construction times and cost saving become more significant.

While partnering can offer significant benefits, it is not always the appropriate procurement strategy. According to the article; partnering is most appropriate when a project is of high value and risk for the client or offers the prospect large secure profits. When agreements are established it is important that an identification of risk. Through discussion most suitable party to manage a particular risk is identified. This creates a firm foundation on which cooperative relationship can be established. It is cooperative relationships that make it worthwhile to seek where a batter solution could be found. (John Bennett and Sarah Jayes, 1998)

Second generation partnering

The second generation is established amongst group of firms working together on series of projects for a major client. It consists of partnering by a group of consultants and contractors who work on regular long-term strategic dimension to a series of projects for one customer. Cases have been reported by Bennett and Jayes (John Bennett and Sarah Jayes, 1998) where second generation partnering delivered cost savings of 40% and time reduction up to 50%.

If second generation partnership is to be established a sustained commitment from the top management together with cooperative behavior between involved parties is needed. Furthermore a deeper understanding of essential elements forming first generation partnering is needed. It is a strategic approach that produces a significantly gather benefits.

That stage of partnering could be defined in the following terms: *"Partnering is a set of strategic actions which embody mutual objectives of a number of firms achieved by cooperative decision making aimed at using feedback to continuously improve joint performance."* (John Bennett and Sarah Jayes, 1998)

Strategic decision-making includes the client, consultants, contractors and specialists. Jointly they form the strategic team that is working on a serious of ongoing projects.

The sophisticated framework is captured by seven the Seven Pillars of Partnering:

- Strategy – development of client objectives and how the strategic team can meet those based on the feedback
- Membership – identification of firms to ensure all needed skills are developed and available
- Equity – rewards according to contribution, fair price, fair profits
- Integration – improvement of cooperation methods and building trust
- Benchmarks – measured targets that lead to constant improvement from project to project
- Project processes – standards and procedures that embody best practices
- Feedback – guide the strategy through capturing lessons from projects

Working together the pillars provide the basis for individual projects to be carried out effective (the right way) as well as efficient (elimination of waste). Furthermore it provides the tools for the strategic team to systematically improve from project to project. Developing the habit of strategic thinking together with the culture of continuous improvement is to provide a significant boost to strategic team's performance and the final product. (John Bennett and Sarah Jayes, 1998)

Third generation partnering

When all pillars are in place and the involved construction companies work cooperatively, some move on to the third generation partnering. The third stage of partnering goes beyond the goals of strategic team, it emerges when multiple companies within an industry use their resources in virtual enterprises. Using resource basins represents an alternative that ensures that best teams, individuals are selected to perform a job. It is taking the principles of second generation partnering and applying them on "industrial scale". The only difference in this approach is the exclusion of clients in the strategic team. Third generation modernized firms are to cooperate through their supply chains to build up virtual organizations that have the ability to respond to rapidly changing markets. Harnessing technologies, innovation and combining efficiency of standardized processes with flexibility of innovation. Dramatic improvement in cost, performance and a significantly greater ability to satisfy customer needs together with the ability to respond to changing markets would be just some of the potential benefits. (John Bennett and Sarah Jayes, 1998)

In this stage, collaborating construction firms organize their business to provide continuity in their workloads. Construction is mainly market oriented. They are doing this by using partnering throughout their supply chains to produce products designed for specific categories of customers. Decisions about buildings and services to produce are driven by

market research. According to Bennett and Jayes (John Bennett and Sarah Jayes, 1998), it can be achieved 80% time reduction and cost reduction of 50% or more with the third generation. In addition, this generation is beneficial for one-off projects that require innovation and new ideas, individual creativity. It takes different form here, as a group of partnering firms collaborate and invest in long-term in developing creative methods, technology and information systems that support one-off design, and modern methods of managing innovative design processes. (Bennett, 2001)

4. Problem formulation

Business partnering usually starts with enthusiasm and anticipation of the good results. The reason for this is that it is known that a business partner can add a lot to a venture. Nevertheless, the success of projects with partnering is immensely depending on what kind of partner one has and the relationships between the parties, both on corporate level and between project teams. Partners with incompatible skills and experience for the projects, can be very risky.

As mentioned previously, partnering in the construction industry has emerged from the need to eliminate unnecessary costs, improve effectiveness and productivity. Having that, bad experience in partnering may appear more costly than not being involved in any, as the results can be much more harming than not increasing the profit. A choice of improper partner can end in unfinished project, bad experience during the collaboration, not achieving the set goals by each of the participants, neither the common ones. Nevertheless, the nature of the cooperation depends on more elements than just the choice of a partner.

Therefore, to foster synergistic teamwork among the parties and to orient themselves toward a “win-win” outcome, companies must approach carefully the plan to work with others. Some sort of foundation, efforts on the behalf of all parties is compulsory to build the blocks that eventually will bring the cooperation to success. A relationship albeit good, would become strained when project delays or dispute about money arise.

In public-private partnering (PPP) projects, the parties are bound by contract according to the law. In the urge to avoid new tender process, which involves more bureaucracy, waste of time and money, and ultimately litigation, partners would certainly benefit to avoid the emergence of problems within the collaboration in the first place.

Literature analysis shows some common major problems within partnering in the construction industry. Thomson and Sanders (P. J. Thompson and S. R. Sanders, 1998) have found that redundant efforts, disappointing termination of relationships and too much supervisory activities are existing in the partnering. Crowley, L. and Karim, A. (L. Crowley and

A. Karim, 1995), have focused their attention on detrimental outcomes, such as litigation, lost time, wasted money and poor morale.

Partnering is always an ongoing process. Relationship, albeit good from the beginning, requires hard work, valuable for making the shared efforts success and reach the common goals, set in the beginning of the collaboration. And a good relationship without proper management can get to the same bad outcomes and disappointments as a bad one.

As it can be seen in the problem tree, the core problem that has been identified by the group, is the unsuccessful partnering projects, which result in a chain of bad scenarios in regard to the participants. As we know from the literature for LFA, the core problem can be eliminated by solving the issues causing it. In the objective tree, the negative statements are transformed to positive ones. It indicates how the problems are transformed into development objectives and provides steps on how to achieve them. This report has the focal aim, and main research question, to identify the main causes and find the right approach for:

How to successfully implement and manage the partnering concept in the construction industry?

The following secondary research questions have been identified to support the main question:

1. What are the most important elements of a good partnering concept?
2. How to establish and manage a long-term partnering?
3. How to maintain and monitor the partnering?

Delimitation:

-Based only on one case study

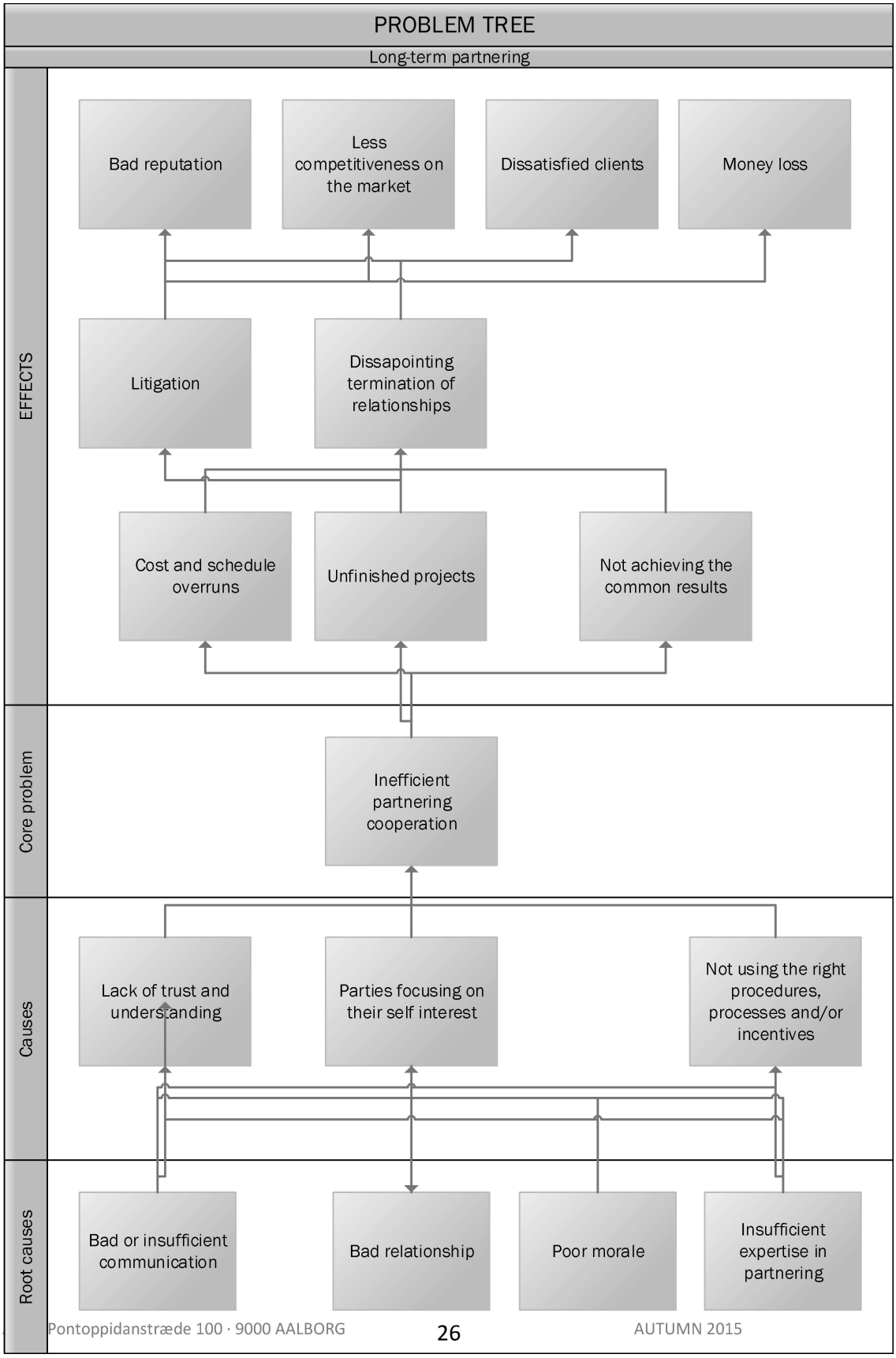
-Interviews with three members out of many participating in the partnering agreement- Aarhus Vand A/S, EnviDan Gruppen and VAM A/S

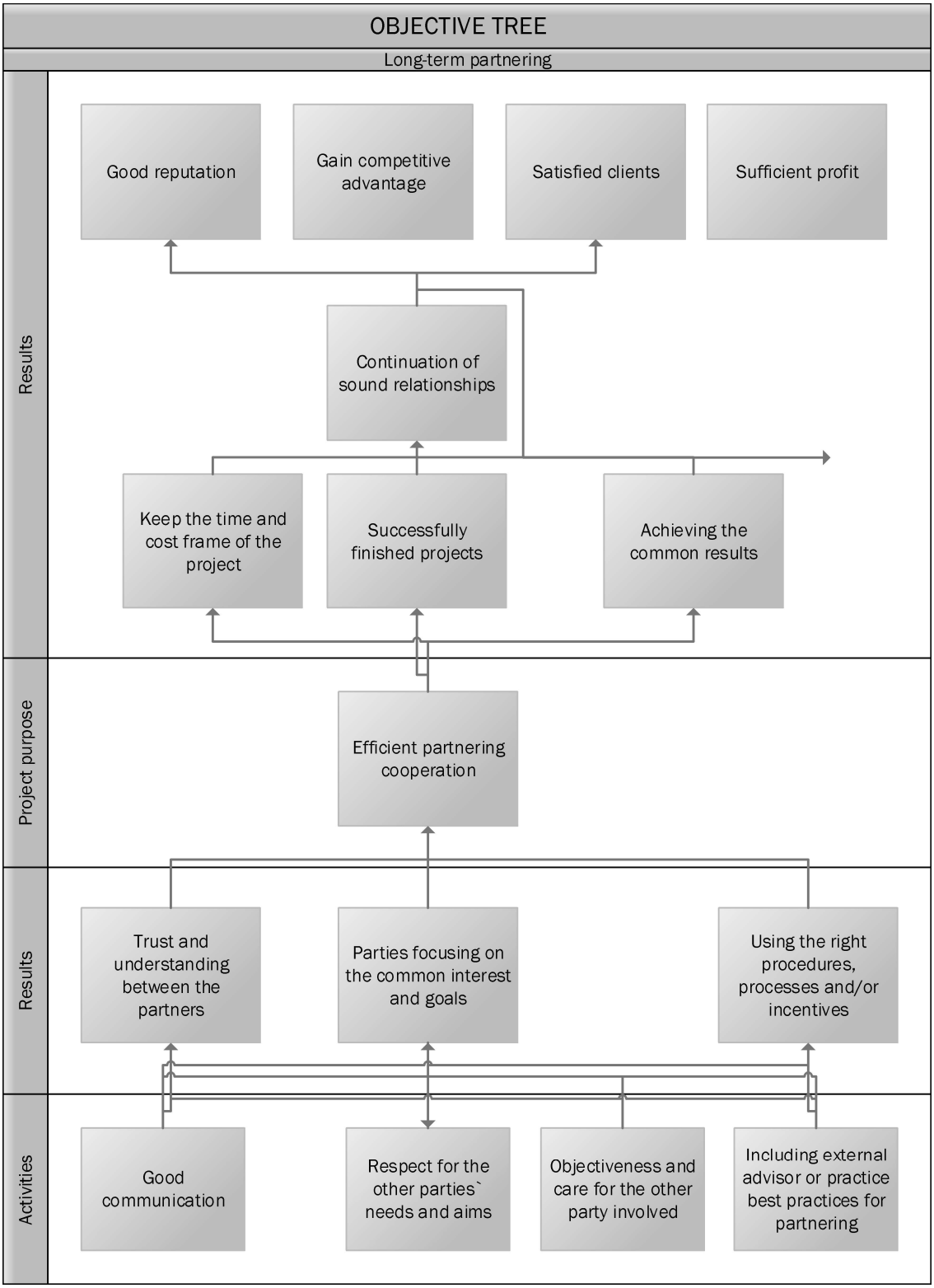
-Based on the Danish market

-Concentrated in overall theoretical solution (process oriented)

Table 2. Logical Framework Matrix

Goal
Successful partnering model
Purpose
- Have a productive environment - Satisfied partners - Good results - Satisfied customers
Outputs/objectives
- Have an optimal relationship - Motivated co-workers - Overview of the common goals - Clear on tasks - Keep on the right track - Improvement and innovation
Activities
- Select the right partners - Incentive contracts - Develop a coherent strategy - Designated responsibilities to appropriate parties - Create a platform for dispute resolution - Follow up in the goals - Constant revision of action plans


PROBLEM TREE
Long-term partnering
EFFECTS
Bad reputation
Less competitiveness on the market
Dissatisfied clients
Money loss
Litigation
Dissapointing termination of relationships
Cost and schedule overruns
Unfinished projects
Not achieving the common results
Core problem
Inefficient partnering cooperation
Causes
Lack of trust and understanding
Parties focusing on their self interest
Not using the right procedures, processes and/or incentives
Root causes
Bad or insufficient communication
Bad relationship
Poor morale
Insufficient expertise in partnering


OBJECTIVE TREE
Long-term partnering
Results
Good reputation
Gain competitive advantage
Satisfied clients
Sufficient profit
Continuation of sound relationships
Keep the time and cost frame of the project
Successfully finished projects
Achieving the common results
Project purpose
Efficient partnering cooperation
Results
Trust and understanding between the partners
Parties focusing on the common interest and goals
Using the right procedures, processes and/or incentives
Activities
Good communication
Respect for the other parties` needs and aims
Objectiveness and care for the other party involved
Including external advisor or practice best practices for partnering

5. Theoretical background

5.1. Key components for partnering agreements

The establishment of partnering cooperation entails some fundamental elements, but the parties are obliged to work with them further, in order to develop a good relationship. The following section comprises the key components of partnering, according to the theory, in addition it indicates what the partners should consider in order for the cooperation to be more successful.

In his report (Nystrom, 2005) Johan Nystrom is analyzing the different components in order to understand the concept better. He studies various well-reputed reports and articles from scientific journals which constitute the empirical data of his study. The materials he uses discuss the subject of partnering generally, not just a specific part of the concept. From the thirteen reports and scientific articles on partnering in the construction, nine components have been identified that are shared and contribute successful partnering. Among them, trust and mutual understanding stand out to be most essential within cooperation. Table 1 below indicates the most commonly met features of partnering and in how many of the thirteen sources of literature they appear as such.

Papers/Components	Trust	Mutual understanding	Economic incentive contracts	Relationship building activities	Continuous and structured meetings	Facilitator	Choosing working partners	Predeterm. dispute resolution method	Open-ness
Barlow 2000	X	X	X			X			
Cheng et al. 2000	X	X			X	X		X	
Crane et al. 1999	X	X					X		
Kadefors 2002	X	X	X	X	X	X	X	X	X
Kemi 2001	X	X	X	X		X			
Koraltan and Dikbas 2002	X	X			X			X	
Kwan and Ofori 2001	X	X							
Larson 1995	X	X		X	X			X	X
Naoum 2003	X	X	X					X	
Ng et al. 2002	X	X				X		X	X
Packham et al. 2003	X	X	X	X	X				
Rhodin 2002	X	X		X	X	X		X	
Thompson and Sanders 1998	X	X	X	X				X	X
	13	13	6	6	6	6	2	8	4

Figure 6. Categorizing Partnering literature (Nystrom, 2005)

Trust

Almost any source of literature examined about partnering asserts that *trust* is an essential element of success. The Construction Industry Institute created definition of "trust" which provides better understanding on the term means. It is based on the following:

Trust is the confidence and reliance one party has in the professional competence and integrity of the other party (parties) to contribute to the successful execution of a project in a spirit of openness, fairness and cooperation.

Trust is desirable in all kind of business relationships as the lack of it results in undesirable transaction costs. Trust in partnering is especially important as it prevents continuous renegotiations. The literature distinguishes three ways for trust to be established in a collaboration: it can pre-exist the relationship based on reputation (1), appear spontaneously (2) and develop over time (3). Alternative (1) and (2) do not require repeated interactions and can be established for a single construction project. Client and contractor can be with good reputation on the market (1) and two contractors can easily find themselves compatible as way of working, principles etc. (2). More often trust is developed and strengthen over time and that can be explained with the *Prisoner`s dilemma game* where the conditions for stable cooperation suggest indefinite number of interactions and cooperation based on reciprocity (Axelfod, 1984). Therefore trust should not be regarded as prerequisite to adopt partnering but rather a "leap of faith" is required initially.

Nevertheless, it is also necessary to develop trust between the staff rapidly, as the planning stages of a project have relatively short time spans and are particularly important. Early development of trust promotes other key features as openness, sharing and commitment to each other, hence it is a tool for creating a truly effective working team.

Mutual understanding, "Common goals"

Firms are trying to maximize their profit, in the long term perspective and often client and contractors have different commercial interests. That can be seen as a condition for a conflict in partnering between a client and a contractor, as a higher contribution margin means higher cost for the client and that means that they cannot have a common goal for a higher profit. Nevertheless, mutual understanding suggests respect and understanding of the needs and objectives of the other party. To create an equitable relationship, both parties need to develop agreed objectives and find ways to accommodate individual objectives. Partnering creates situations where one party's marginal benefit is much higher than other`s marginal loss - and it might be the other way around next time, so it is easier to make a compromise. In a long-term partnering that eventually brings the desired outcome of a higher profit for both sides. Hence it is considered of common economic interest that all partner`s financial objectives are valued and regarded as equally important.

In addition, even if companies have conflicting economical goals, they can have intangible objectives, such as reputation, satisfied employees, safety, enhancement of profiles and quality and others. Regarding the significance of establishing a common set of objectives and values, it is considered as another element of the partnering concept. (Bohnstedt, n.d.)

Incentive contracts

Incentive agreements, both for implicit and explicit incentives, have been focus of research in several economic and organizational fields of studies (Scherer, 1964) (Weitzman, 1980) (J-J Laffont and D. Martimort, 2002). The main purpose of incentive contracts, according to

(Wisdom Kwawu and Samuel Laryea, 2013) is to appeal to a contractor`s self-interest to perform in a particular way to maximize its profit by adopting the client`s objectives to an extent (X. Meng and B. Gallagher, 2012). Another author, (Stukhart, 1984),suggests that "contract incentives are the means by which an owner intends to secure certain project goals through the contracting process" and adds that incentive contracting is designed primarily to reduce costs in negotiated contracts through profit sharing ratios.

A deviation from a predetermined target cost can be shared by a percentage factor between both parties. In that case the contractor should consider both quality and cost (Scherer, 1964). Monetary incentives can also be given to other important issues e.g. project duration, quality, safety, technical development, cooperation and less utilization of resources. In these cases the contractor receives a bonus if a predetermined level is exceeded (or underachieved in the case of duration and utilization).

Nevertheless contractual relationships based on such kind of incentives might create conflicts between economic goals and other goals. Other sources for motivation than money are often underestimated, when talking about business (Mike Bresnen and Nick Marshall, 2000). Non-financial incentives like personal development, influence, appreciation, a feeling of meaningful assignments etc. can also improve efforts. What is more, intrinsic rewards like the latter tend to result in better outcomes than financial rewards (M. Bresnen and N. Marshall, 2000). These intrinsic incentives to work harder are often portrayed as the intangible advantages in connection with partnering.

When setting a partnering agreement the following are typically to be included and structured as follows:

1. Preamble-this document can contain a circumscription about the following:
    - Motivation for establishing the partnering
    - Prerequisites
2. A common vision statement, goal and objectives
3. Representatives of each partner and their respective role
4. Organization structure
    - Roles and responsibility of each partner
    - Establishment of secretariat
5. Decision-making principles
6. Operational plan
7. Funding agreements (Anon., n.d.)

Relationship building activities

The Evolution of Cooperation- Robert Axelford- (Axelfod, 1984) ***inspiration***

Having an effective integrated project team is crucial for success. The overall level of cooperation tends to go up and down. In order to attain mutually rewarding relations, no formal agreements are required but rather informal approach. Common observation is that teambuilding activities should start from the first meeting, as the outcome and development of the project is very influenced in the early stages. Creating good relationships and building trust since the very beginning brings up the good results out of partnering faster.

Continuous and structured meetings

It is important to have regular meeting on which the progress is followed. These meetings are also meant to present problems that have appeared so that the team can discuss them openly and eventually find a suitable solution. These meetings are recommended to start in the early stages of the project when the level of information about the project is low. Having different experts with their expertise and knowledge in planning stage, has the potential to influence immensely the project by reducing costs and time consumption, and therefore make the whole experience of partnering more significant for the parties involved. On the figure 2 below it can be seen how the ability to impact cost and other solutions for the project diminish over time.

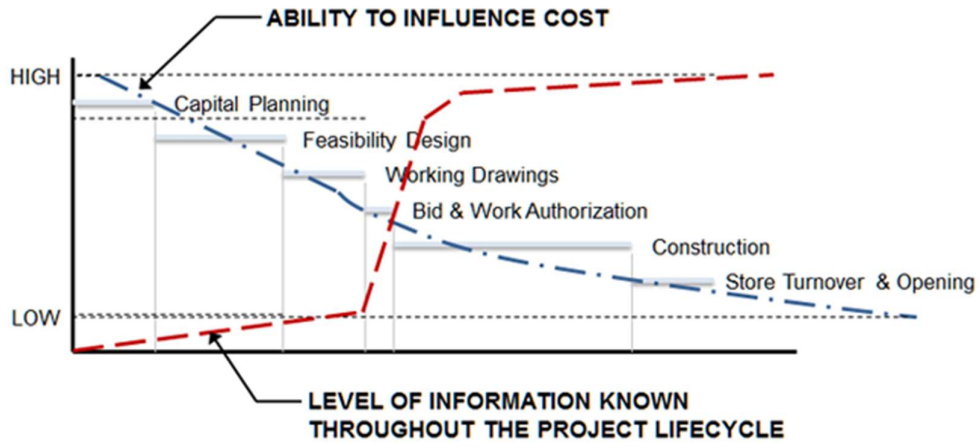


Figure 7. Ability to influence a project (Nejezchleb, 2010)

Facilitator

The definition of facilitate is to “ease a process” or simplify it, and the tasks of a facilitator include planning and managing meetings and discussion in such a way that they have a successful conclusion. An external person acting as a facilitator can be very beneficial as he/she can intervene when necessary to improve the effectiveness and efficiency of any kind

of collaboration and outcomes of it. The facilitator engages best practices to achieve cohesive teams in order to reduce conflicts.

Choosing working partners

Partnering is thought to entail a closer relationship between client and contractor. Therefore it is of a great importance people to get along. That can be easier achieved with the participants having an initial positive attitude towards each other. To get the right people in the team, both parties can handpick the suitable people. It is also recommended to have a predetermined way of how to exchange people in the group. (Nystrom, 2005)

Predetermined dispute resolution method

Expensive litigations in the American construction industry were very common in 1980s and some argue that the concept of partnering originated from the idea to prevent them due to high costs connected with litigations. Disputes in construction are still fairly common and when not resolved in time, they become expensive in terms of time, personnel and opportunity costs. Despite there has been a great progress regarding dispute resolution, there is place for improvement. Taking a dispute into a court can result in only one winner or two losers, therefore it can be the final alternative only if everything else has failed.

A strategic approach to dispute prevention and resolution is required. In the literature for partnering it is recommended that problems should be resolved by discussion, if they arise (John Bennett and Sarah Jayes, 1998). That could be an employment of a neutral advisor (facilitator), early intervention, and the ability to tailor the resolution method to the particular nature of the dispute.

Openness

Companies participating in partnering need to decide what to share with their partners, having that the more relevant information they share the better the understanding about the project. Sometimes this can include information that has been confidential for the company, this is why it is called sometimes *open books*. This will also encourage the other party to share and promote key behavioral aspects of synergy. Bennett and Jayes (1998) suggest that open books seem to be a factor where openness is particularly called for. At the same time that can be seen by the contractor as financial monitoring and lack of trust from the side of the client.

Personal contact on a daily basis in the initial stages and regular meeting further on, is desirable, since the parties can confront issues and differences of views and develop solutions rather than allowing them to turn into conflicts. Having the importance of open communication, various procedures, processes and incentives need to be integrated in the partnering to enhance it.

Summary

Having that the partnering entails human beings, it is ruled by human nature and thus relationships, attitudes and opinions. Therefore, it ca be considered the successfulness of a project using the partnering concept, depends mainly on soft measures rather than hard ones.

All of the components described above, enhance the devotion of the staff, which is essential for accomplishing the results desired by the partnering. Yet among them few can be distinguished as more frequently stressed on, and more important for establishing a healthy relationship. As the various definitions in the previous section suggest partnering embraces expects terrific results out of partnering, and the main components are the base of the cooperation, which enables the staff in completing their job.

Nystrom adopts the philosophical idea by Ludwig Wittgenstein, that the partnering concept resembles a family. In his book *Philosophical Investigations*, (Wittgenstein, 2009) he argues that things which could be thought to be connected by one essential common feature *"may in fact be connected by a series of overlapping similarities, where no one feature is common to all".* Johan Nystrom applies his idea together with the literature for the definition and components of partnering and presents the concept as a "flower" where the essential components are placed in the center and a set of the non-essential ones are petals of the flower as seen in figure *3.* According to the model, partnering always includes *Trust and Mutual Understanding/Common Goals* supported by the other components. Nevertheless, the base for the *Flower* is entirely theoretical, therefore it requires support from real life experiences.

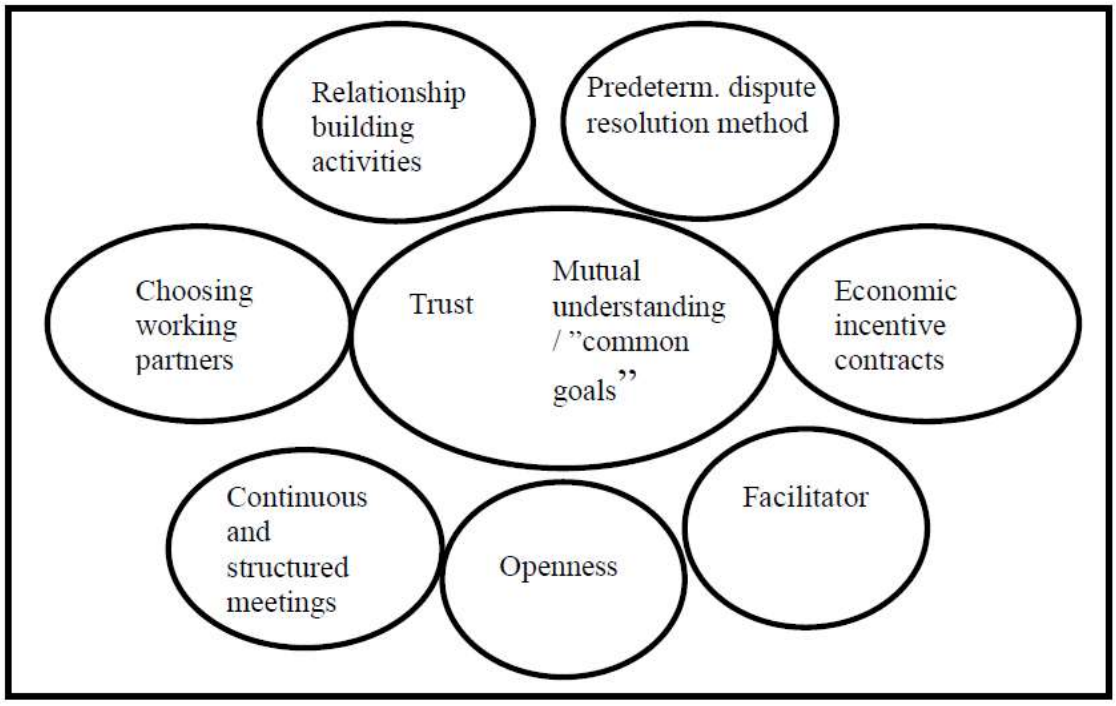


Figure 8. The partnering flower (Nystrom, 2007)

5.2. Effective teams

It is not simple to coordinate a team consisted of various individuals working on a project. it is even more complex in the partnering concept, where different teams combine their main goal and efforts as one single team. The following section gives an insight specifically in the healthiness of the team how to achieve an effective team which is able to run a successful project.

Designing High-performance work teams

As already established, the mechanism that execute and finalize the project is the whole team. This suggests that for the sake of the project to be rewarding, an effective team is essential to be built. The effective team can be built when the motivation and the needs of the individual employee is taken into account. *"There is no such thing as an unmotivated employee, but the system within which people work can either seriously impede motivation or enhance it"* (James R. Evans and William M. Lindsay, 2011). Considering that requirements of the modern business and technology are changing, so are the needs of the workforce. The needs of the single employee should be fulfilled in order for them to put valuable to put valuable input in the project. In his Hierarchy of Needs (figure 4), Abraham Maslow presents the essentials, represented in to needs, for people be motivated.

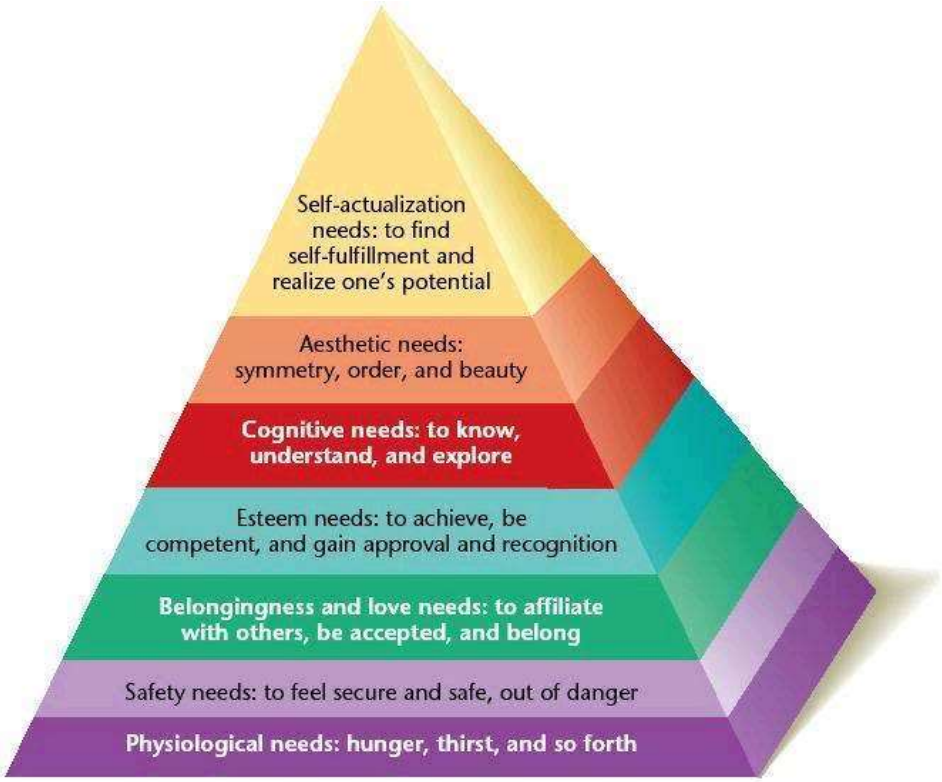


Figure 9. Maslow's Hierarchy of needs (McMahon, 2011)

A person must secure the satisfaction of the lower levels basic needs before going on up to meet the higher level growth needs. It is necessary one need to be fulfilled so that the person continue with meeting the next one. If one of the needs of the lower levels is unsatisfied, the person would seek to fulfill it before moving to the self-actualization. (Maslow, 2013)

High-performance work can be defined by the characteristics such as flexibility, innovation, knowledge and skill sharing, client focus, and fast response to the changing business needs and market requirements. "High-performance work refers to work approaches used to systematically pursue ever-higher levels of overall organizational and human performance." (James R. Evans and William M. Lindsay, 2011). The way that an organization creates the working model explicitly influences the quality, effectiveness and the results. And not lastly the organization's most important asset that cannot be copied and is unique is the knowledge, skills and creativity of the workforce.

From individual to high performance team

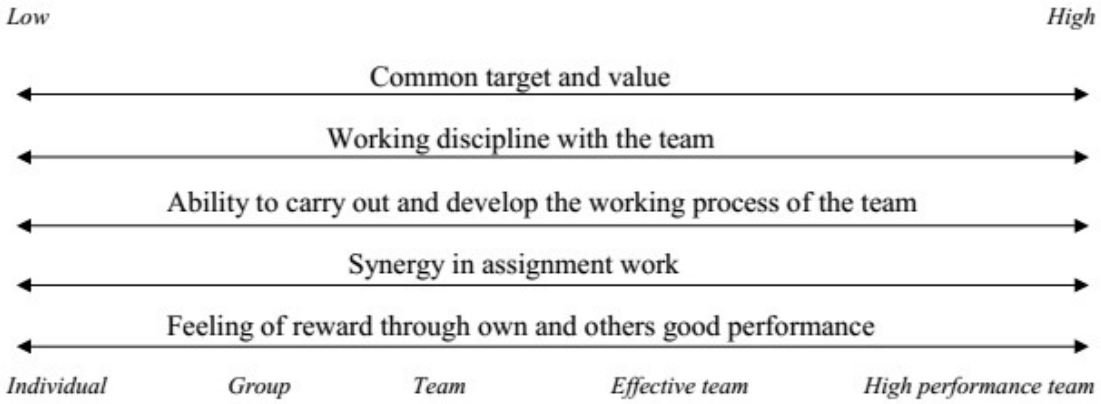


Figure 10. Model: From individual to high-performance team (J. Storch and T. M. Søholm, 2005)

When the right team is assembled, according to their technical and personal skills, and their individual needs are fulfilled, so that their motivation is boosted, the team needs to develop itself from individual to high performance team. Five elements for improving the cooperation and enhancing the performance are highlighted in the figure 5 above. That requires full devotion to the common target and values of the team, establishing discipline in the work processes, and creating synergy in the assigned work and hence feeling rewarded through the good performance and results of the cooperation.

5.3. Best practice techniques

This section describes a common set of best practices adopted by organizations to underpin successful long-term partnering. These practices can be seen not separate from each other but rather parts of a whole strategic plan.

Partnering business plan

Generally, literature recommends the developing and institutionalizing of a consistent partnering business plan. The partnering concept can benefit much from a methodically organized guidelines and help maximize the paybacks. However, as it demands change of the culture in some organizations, in addition deals with human behavior, the business plan should be carefully premeditated and craft.

Establishing partnering goals-establishing the process and members

The partnering board needs to include members from all the long-term contractors which are involved in the project in order to provide a proper top-down commitment to the long-term partnering and to have better overview of the management performance.

Membership of the partnering board should be established of members who are on the higher levels of the organizations they are working for. Each of these members should not be involved with the contracts on a day-to-day basis. They should be involved with the contracts with the managerial influence to benefit the contract. The day-to-day management of individual contract performance is the obligation of a partnering contract management team.

It is very important that all the contractor groups have representative person if the relationship has to manage issues during the contracting period. The aim is to create a partnering board which goals and management process is clearly transmitted and communicated by the building owner along the whole partner selection process. The potential contractors should be asked for their proposals for board members during the partner selection phase. It would be useful to require also for their proposals for health-check templates instead of client being completely prescriptive in such a case. (Scott, 2001)

- Partner selection phase
  -Client statement of intention to create partnering board
  -Client statement of objectives of the long-term relationship
  -Client`s proposal for a partnering contract management team

- Contract award
  The contract made in a way that provides specific benefits in order to encourage partnering. (For more information Key components, subchapter Incentive Contracts)
- Publish a partnering strategy policy document
  -Relationship objectives
  -Board objectives
  -Board membership
  -Management process

Meeting –frequency and agenda

The frequency of partnering meetings depends on the problems and the size of the project, number and volume of the tasks. The membership of the partnering board consists of senior management and executives, it is proposed that the meetings can be held on each three months. The partnering contract management team is meeting on a monthly basis where data and information is properly collected and transferred to the board meeting.

The agenda can vary according to the scope of the issues but usually covers topics related to management process and procedures, innovation, workload, resources and planning, quality management, safety management, payments and incentives etc. (Scott, 2001)

Partnering health checks

The partnering health checks are established in order to foreseen any occasions that could fail reaching the goals of the partnering. This way the proper actions can be taken on time. Most of the corrective actions affecting the project can be taken by the management team. On other side are problems of a more corporate level that may require actions from the partnering board. It is appropriate that the health checks are held prior the board meetings so in case of issues on a corporate level can be brought up. (Scott, 2001)

Basic principles of a long-term partnering

1. Devolution of power

In a partnering it is crucial that there is a contractor who has authority enough to dictate independently fundamental actions, such as planning, economy, personnel or quality. (Scott, 2001)

In addition, there should be empowerment of the workforce. Empowerment comes from higher levels of the organization where the management is to lower levels where the workers are. To empower the workforce means to give the authority to the workers to make decisions, have own control on their work, take risks, and all that based on their experience and their skills. This requires that the workforce has to step outside of their comfort zone and start being more responsible for what they do, for the results and mistakes. The need to empower the employees motivates them to learn more and gain extra knowledge, which directly brings high quality results. Ultimately, empowering creates trust in the relationship between the employees and managers and creates climate for innovation based on the reliability and freedom over the workers to create something new.

2. Analysis of job design and workload

Most typically the developer has to make decisions how much work is possible to be executed from each of the partners in order to distribute the workload equitable. There should be awareness of the work design and job design. The work design is about organizing the employees in structures such as departments and teams. The job design is about the individual tasks that an employee is obligated to do. These two subjects have to be considered from the leaders as highly important because they are crucial for the partnering effectiveness and employees' job satisfaction.

3. Measurement of performance

The long-term partnering is only able to survive upon on developing and strengthening the trust between the stakeholders. Very important to the improving the trust is the measurement of performance.

Measurement of performance is time and resource consuming. In order to get the most of the measurements of performance the contractor team members should create mechanisms which concentrate only on issues that will bring success and are based on collecting information as a matter of routine. (Scott, 2001)

Communications and collaborative software

Nowadays partnering teams can use software platforms for team management procedures and document exchange, which can maximize the benefit. On large project the building owner can operate a management system which can combine working processes in financial accounting, economy management, planning, resources, contracts, etc. The client should not forget that such software systems are expensive and also time and resource consuming for training the personnel. However the IT systems can be considered as safe investment for long-term partnering due to the fact that the returns will be generated which will offset the initial cost of the product. (Scott, 2001)

For a better communication within the team and understanding of the values of self-disclosure, the idea of the Johari Window (figure 6) can be explained and encourage them to give, and accept, constructive feedback from colleagues.

It is used to help people build better, more trusting relationships with one another, solve issues, and even work more effectively as a team.

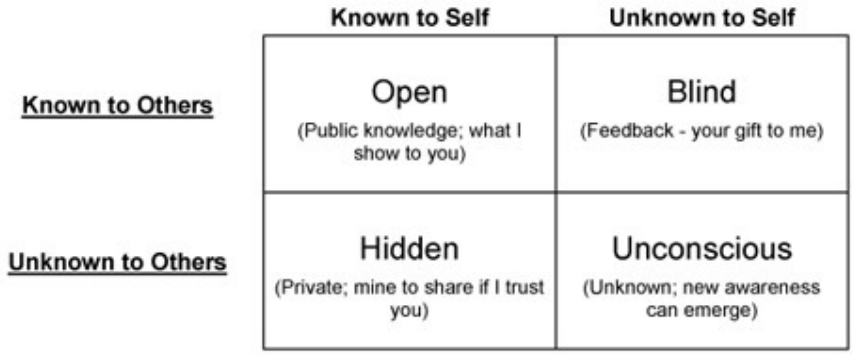


Figure 11. Johari Window (Warner, 2015)

Created by Joseph Luft and Harry Ingham, there are two key ideas behind the tool:

1. One trust with others by disclosing information about yourself.
2. With the help of feedback from others, one can learn about oneself and come to terms with personal issues. (Luft, 1969)

6. Aarhus Vand - Case Description

The following chapter will provide a description on how partnering concept is being realized by Aarhus Vand. The description aims to describe important aspects that form the overall structure on which partnering agreements are formed. Furthermore it will outline the transformation project requirements into a set of concrete objectives, strategy that can be applied and measured in practice.

Information included is based on the findings from the concept that was translated from Danish language. Further information was acquired from interviews with Aarhus Vand, VAM and EnviDan conducted by the group.

6.1. Case background

Aarhus Vand is a company established by Aarhus municipality and is in charge of providing water supply for the citizens of Aarhus area. Since Arhus Vand initiated about 11 years ago, they have been looking to develop and improve the partnering concept. Their main focus lays in providing solutions to enable more efficient and effective way of providing services to their paying customers.

First trials were conducted on a pilot project that lasted about one year. The trial project was followed by a four year partnering agreement that was completed in the end of 2008. That was flowed by the first 6 year agreement that is to expire at the end of 2015. During 2015 Aarhus Vand has been working on awarding new 6 year contracts with 2 additional areas of Odder and Favrskov joining the endeavor. (Appendix B)

6.2. Project developers

Aarhus Vand A/S

Being an enterprise owned by a municipality results that company is not permitted to generate profit and exist strictly to provide the best service to the paying customers. The company has 196 employees and revenue of 600 million DKK a year. Aarhus Vand has 283.000 clients and provide them with them 16 mil m3 annually. Furthermore they are also in control of delivery and purification of wastewater to about 300.000 customers, which equals to approximately 35 million m3 a year.

Odder Spildevand

An enterprise owned and working on behalf of Odder municipality that is located to south of Aarhus. Odder Spildevand is managing the water supply and separation of rainwater from wastewater for customers living within the bothers of Odder municipality.

Favrskov Spildevand

Similar to other developers within this agreement it is an enterprise owned by a municipality. They are in charge of the water supply and separation of rainwater from wastewater and working on behalf of Favrskov municipality located on the northwest of Aarhus.

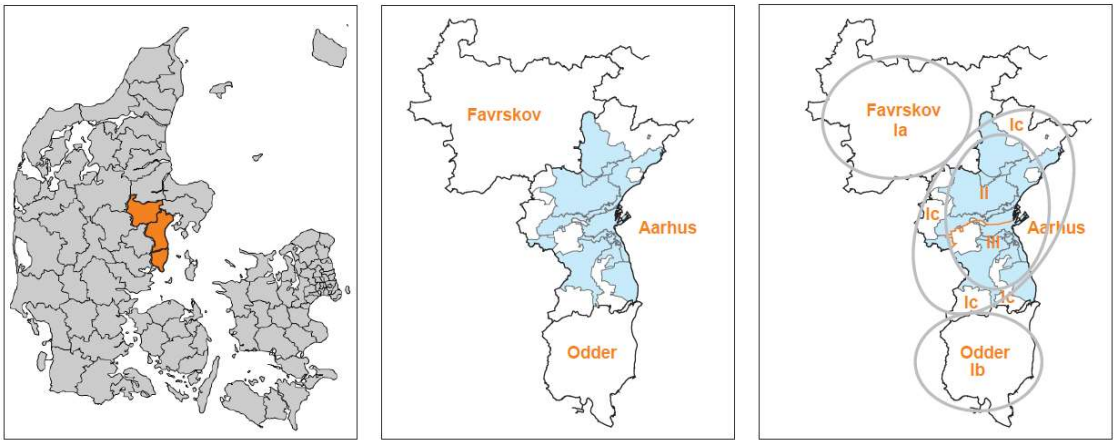


Figure 12. Aarhus Vand maps, areas of operation (Annex A)

Image above maps the location of Aarhus, Odder and Favrskov. Furthermore it indicates the zoning used for division of work within (Aarhus) and between the municipalities.

6.3. Project partners

There are many contractors and consultants collaborating under the supervision of the developing parties. This investigation is focused only on the involvement of Aarhus Vand, EnviDan and VAM in order to outline how partnering is being established.

EnviDan Group

Is a consultancy firm specialized in environmental solutions within water resources, water supply, wastewater and bio-gas. It was originally established to aid the Danish municipalities in all aspects of wastewater treatment, including the construction of wastewater treatment plants and full-scale sewer systems. The EnviDan Group has approximately 170 employees. The company is involved on international level, conducting projects in countries all over the world, including a permanent office in Sweden and well-established business relations in

Malaysia and China. EnviDan managed to secure a 6 year agreement in 2008, so they have been involved with partnering and Aarhus Vand for almost 6 years now. EnviDan will continue their involvement with partnering since they managed to secure another 6 year agreement this year. (Appendix A)

VAM A/S

Is a family owned contractor located in Auning. The company is providing services like planning, executing on site together with the landscaping/ finishing works. The company has been involved in partnering with Aarhus Vand for about 10 years meaning that they managed to secure both long-term partnering agreements. The company participated in the tender process that was conducted this year and managed to secure another 6 year contract/agreement for 340 000 000 dkk. (Appendix B)

6.4. Project parameters and objectives

Economic and quality concerns

According to the Water Sector Reform Act, all the water and sewage companies in Denmark are to take efforts towards modernization of their activities. To address these demands, Aarhus Vand has for more than 10 years been working to develop an alternative form of cooperation based on partnering in the works.

All developers wish to further develop partnering in order to reduce the cost of construction work. This should for example be done by focusing on continuous improvement in the community across developers, consultants, contractors and suppliers. In addition, the developers expect to take advantage of significant economic and quality potentials by entering into partnering contract agreements for a wider geographical area including multiple municipalities. (Annex A)

Social considerations and interests

By coordinating the execution of construction works in a larger geographical area, it became apparent that there is a great demand to meet the challenges associated with renovation of existing infrastructure.

Development of new methods, products and systematic providing of new solutions is to be provided by cooperation between three developers. The development will not only benefit the paying clients, but will also provide all involved partners with solutions that can assist their sales on Danish and foreign markets.

Furthermore the initiative also includes an implementation of the Danish government's decision to separate rainwater water from wastewater in areas for future growth in Denmark. (Annex A)

Vision

The developers have together formed the following vision for collaboration across the three developer organizations: "We develop the future sustainable solutions through boundless collaboration. The vision expresses the attractive and ambitious but realistic objective of homeowners within the area." (Annex A)

Mission

The partnership's mission is to ensure that the water supply and drainage systems now and in the future work to citizens satisfaction and benefit to the environment. The vision and mission are valid for all partners and are to form the basis for all decisions taken and all the solutions in the contract of the agreements. The developing parties identified the following factors of success that will be rewarded according to the balance score card; Economy, Customer satisfaction, Innovation, Cooperation, Quality. (Annex A)

6.5. Partnering objectives

The developers aim towards change behavior done stimulated by partnering. Aiming towards an environment where individual entities look beyond self-interest and short term economic gains. Traditional cooperation methods often end up in errors, quality failures, inefficiency, disputes and accidents.

Therefore the primary intention of partnering is that all partners shall acknowledge mutual dependence. That is to result in teams' ability to openly talk about problems and together as partners aim towards solutions that benefit the project and the whole group.

It is the developers' belief that all parties can reap the benefits of helping each other to provide more, which is increased value creation and benefits of all the parties, both partners and developers. (Annex A)

Aims of the collaboration agreement

By entering in such collaboration the developers aim to achieve the following:

- Reduce the costs
- Maintain high quality
- Cooperative relations with long-term focus that result in opportunities for shared/common progress/development

- Social and professional stimulating teamwork/collaboration
- A healthy business and active model for all parties included
- Processing of customer feedback and efforts towards good client service
- Joint efforts towards in order to create a new partnering culture in the industry

Additional, internal objectives

- Stimulating and motivating partner
- Proficiency in terms of professionalism, project management, process and strategy development
- New way of organizing, technical/professional team structure
- Common methods, management tools and standards
- Become proficient in facilitating processes in connection with lean, strategy, alterations, innovation and others. (Annex F)

Desired outcomes of partnering

- establish a culture with a vision to develop future sustainable solutions through innovative cooperation;
- project has the main priority
- reduction of costs, increased value for money
- continuous high quality
- cooperate culture of joint development, optimization and structuring
- a healthy business and incentive model for all parties
- satisfied customers achieved by good customer service

6.6. The cooperation and contractual agreements

Developers

The developers are three individual corporations acting on the behalf of paying customers located in three different municipalities. It is the developers that are the initiators of the partnering process. The developers' firms' primary task is to provide the best end product for its paying customers for the cheapest price. Individual developing companies are owned by the municipalities and are therefore prohibited to profit.

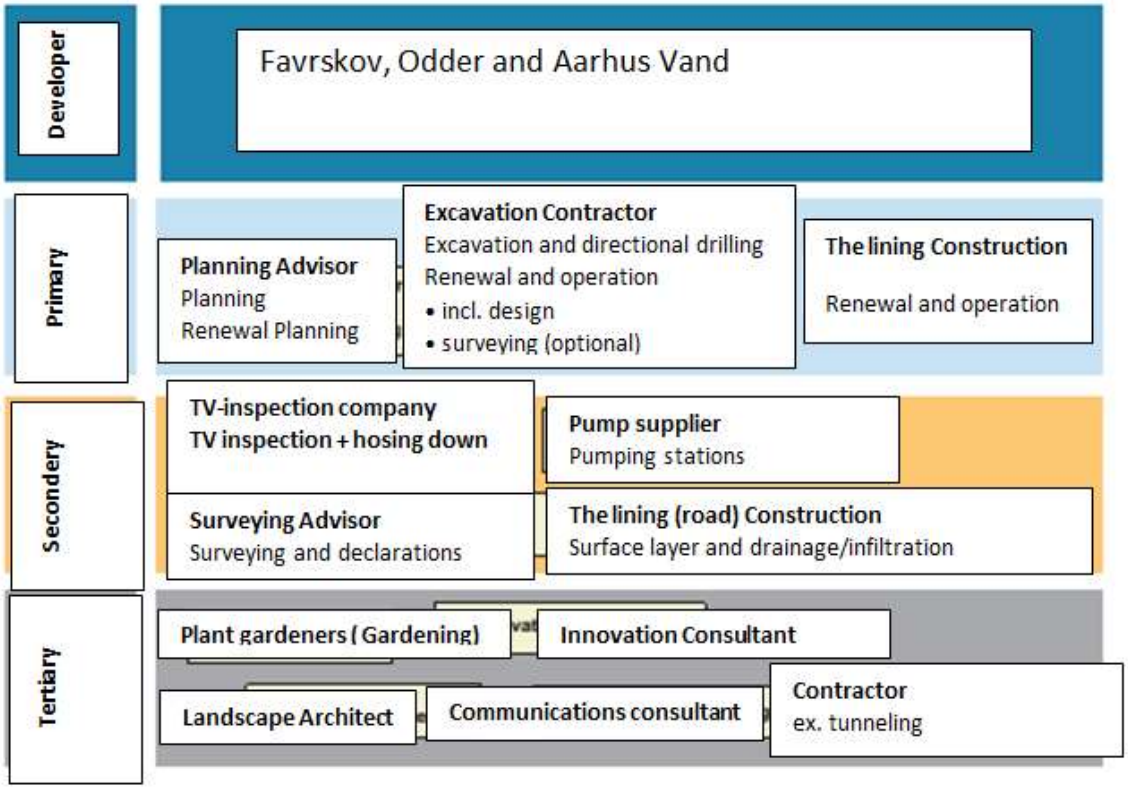


Figure 13. Single contracts included in Aarhus Vand partnering (Annex A)

Close affiliation (primary partner)

All partners on this level have a 6 year agreement with the developers/owners of the developing areas. Contactors have a close relationship with an open dialog with the owner, which enables the parties to communicate efficiently. Early evolvement of the contractor provides a platform on which existing problems can be spotted and a potential solution provided relatively early in the process. It is between the primary contractor and the owner that the overall strategy together with the level of involvement of other co-operators is being decided. It will always be the primary partner that is obligated to coordinate secondary and tertiary partners invested in the process.

Loose affiliation (secondary)

Secondary partners are involved limited amount of selected projects within the partnering agreement. The level of affiliation is determined by the developers and primary partners. Loosely affiliated partners do contribute to the overall strategic development of the partnering process nevertheless extent of their influence is rather narrow.

Assigned if needed (tertiary)

Specialized expertise is provided by external parties that provide services needed on a single projects for a short period of time. Tertiary partners are not involved in the overall partnering scheme and called upon only when needed. (Annex A)

6.7. Tender procedure and division of work

Overall schedule

The works are split into contract because they are offered in According to the Utilities Directive, which opens the possibility of a negotiation procedure. This results in the implementation of negotiation meetings where long term agreements are finalized.

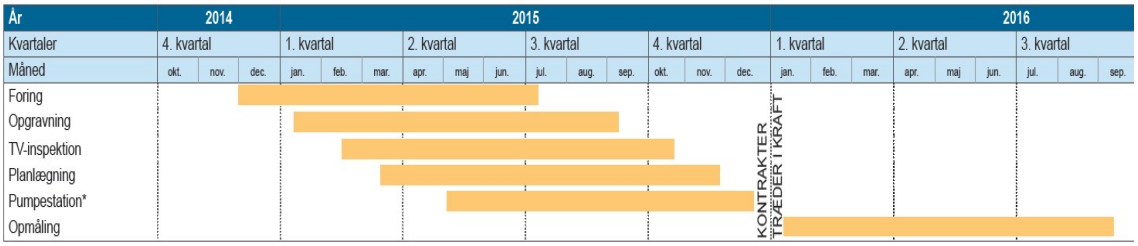


Figure 14. Tender time schedule for 6 contracts (Annex A)

Contracts are being awarded and negotiated throughout 2015; all agreements (excl. surveying) shall enter into action on 1st of January 2016. Partnering and contract agreements that begin on the 1st of January 2016 have the duration of 6 years. Contract agreement of Surveying with the duration of just over 5 years will not be put into action before the third quarter of 2016.

All contract agreements will expire on 31th of December 2021.

Tender procedure

All bids are to go through the same process that starts with developers upload of EU notice, which call for all interested parties to submit the request for prequalification round to tender. Based on applications a pre-qualification is carried out, after which the contract documents are sent to the prequalified parties. During the offer period the developers will hold a briefing for bidders in order to provide them with the information about the intentions of the project.

Before submitting an offer a negotiation round is conducted with all bidders, after which they are able to submit a revised offer. Based on the available offers the developers select the most economically advantageous offer, or whether it may be necessary to implement yet

another round of negotiations. When the negotiations have been completed an offer from a bidder with the economically most advantageous offer has been selected. (Annex A)

6.8. Extent of works

Image bellow displays the flat organization structure of the partnering agreement between all included parties. The project is divided into 6 separate contracts of planning, excavation, lining, TV inspection surveying and supply of pumping stations.

Each of the red lines indicates the boundary of single contract agreements that is covered by 3 frameworks for planning and excavation and 2 for each of the other contracts.

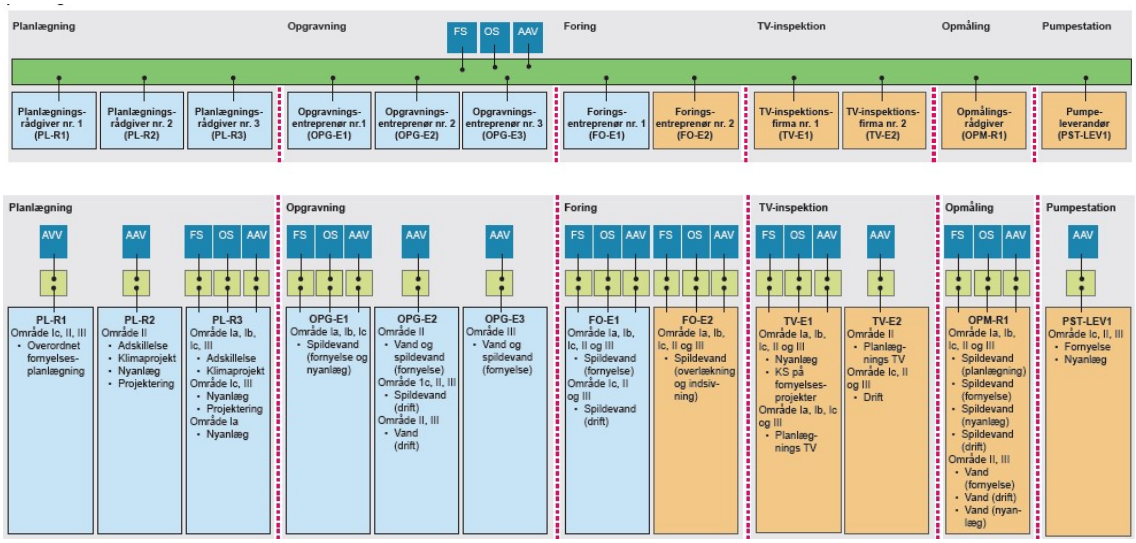


Figure 15. Frameworks within single contracts (Annex A)

Each of the color is indicating one of the parties involved in the process.

- dark blue squares represent the developers
- green indicates the knowledge sharing and cooperation axis
- light blue is the color of frameworks executed by primary partners
- orange represents the framework conducted by the secondary partners

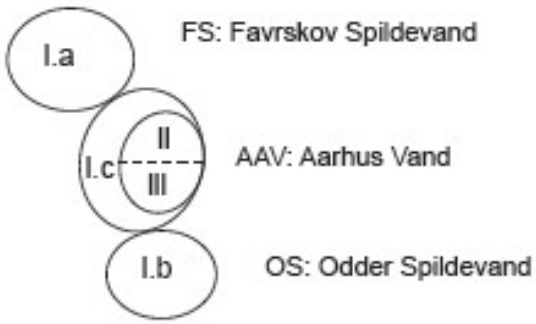
All contract agreements would contractually be linked by a partnering agreement which commits all partners to continuously cooperate and exchange experience in order to create efficiency and improvement. In addition, selected partners will together with developers be required to participate in innovation a knowledge sharing activities indicated by the green box connecting all contract agreements. (Annex A)

Planning contract

This is an example of the planning contract that includes 3 separate frameworks. Once again the dark blue collar represents the developers that are in collaboration with specific contracts according to the area and extent of work. Light blue indicates the involvement of a primary partner. In order to avoid monopoly on a single contract 2 out of 3 frameworks within a contract can be awarded to a single partner.

Planning contract includes the following frameworks:

- PL-R1
- PL-R2
- PL-R3



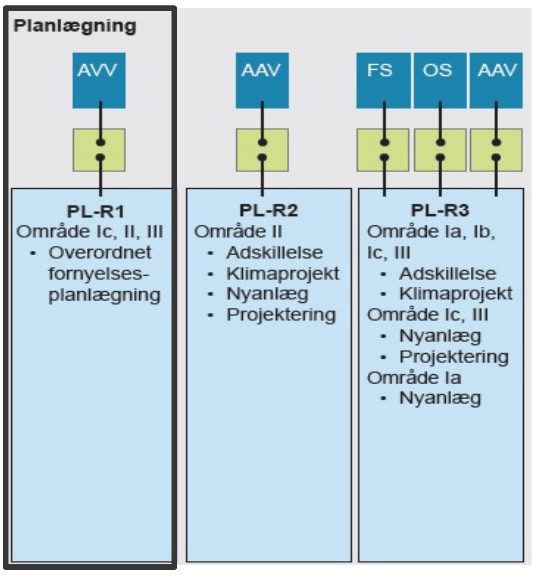


Figure 16. Abstract geographical areas according the developing regions together with planning contract including three separate frameworks (Annex A)

Let's have a look at framework PL-R1. Collaborating consultant that is in this case EnviDan will in this framework be working in close collaboration with Aarhus Vand. EniDan´s contract agreement will include all 3 areas within Aarhus municipality (I.c, II, and III). That particular framework contains tasks of planning for a general renovation of water supply. This principle expiation can be applied to the whole table as well as the project containing multiple contracts and frameworks.

6.8. Structures within partnering

Contract steering committee

Each framework agreement requires an establishment of a steering committee. These consist out of a developer's representative and an individual representing primary or secondary partner in charge of that framework agreement. Selected individuals have come from the ranks of management with enough decision making power.

Contract steering committees work consists out of coordination and evaluation of cooperation and project development. These groups have the authority to make financial alterations and schedule workshops. Furthermore, they provide the first place for solving and clarifying the legal disputes and disputes relating to the partnering agreement and framework agreement.

Contract steering committee´s resolutions only validated only when there is unanimous agreement between the members. If an agreement cannot be reached a second meeting has to be scheduled. Their meeting as scheduled on when needed usually two times annually.

Project group (construction)

Each of the framework agreements is required to have a project group for execution works. The group is to consist out of representatives from builders and a partner (primary or secondary) each contributing up to 3 members. The representatives have to derive for the project level. The group is to keep track of the progress on site, and make sure it corresponds to the planning. Furthermore they are tasked with the development and implementation of measures that ensure optimal cooperation between partners on the operational level. That is achieved by continuous synchronization of developers' requirements with specific ideas and solutions proposed by the parties involved.

Project teams perform their follow-up on a project through regular meetings, timeouts, site visits and workshops/ seminars. The project groups are encouraged to pull relevant employees working on the project and integrate them into the meetings.

Steering committee (primary partners)

A steering committee for primary partners consists out of representative from all contractors and one representative from each primary partner. Selected individuals are to be pulled from the management level and have the necessary decision-making power. The number of individuals representing a party must be identical.

The main objective of this committee is to communicate and make sure that all primary partners understand the objectives of the agreement. That is being acceded through formation of overall development plan broken down into single action plans; transforming goals into actions.

The steering committee's decisions are validated only when unanimous consensus are achieved. If that is not achieved on first, a second meeting is to be scheduled within a week. The steering committee gatherings happen about four times per year and require a workshop at the end of each.

The general assembly

Contractors together with all primary and secondary partners are to participate in general assemblies. More precisely is shall include:

- all members of the steering committee (primary partners)
- contract control groups (secondary partners)
- project groups of the primary partners
- key employees according to the agreement

Objectives of the workshop are to:

- ensure that everyone is familiar and in full supports of the vision, mission and objectives;
- collect and prioritize ideas for development;
- decide on what ideas should be used under the scope of continuous improvement and what ideas that would be suitable for Innovation;
- presented to the overall development plan of the overall partnership;

External parties can be invited to participate, if they can contribute to the development process. The gathering is to go ahead one time per year with a 2 day workshop.

Individual partnership groups

Each contract agreement requires a share partnership group. That is to consist out of representatives from developers, all contractors and suppliers working on the project level.

The purpose of these assemblies is to generate a medium where developers, contractors and suppliers can meet to share collected experience accumulated across projects relevant.

Knowledge sharing assemblies are part of the development plan and are to benefit all involved parties. Common goals formed in the development plan of each framework agreement are being explained and discussed together with further instructions on how to precede with the agreed action plans. The knowledge sharing assembly are to go ahead about 4 times per year.

Project groups (development)

Similar to others the development group needs to be established for each of the framework agreements. The group is formed by 1-3 representatives from the contractors and the partners; these are to be pulled from the project level.

In contrary to the construction project group the development group is tasked with following up on the overall objectives of a frameworks agreement. They are in charge of profit/ loss sharing together a follow-up on implementation of continuous improvement, testing, implementation of new solutions and products. The development and construction group is to coordinate and supplement each other's efforts towards innovation. (Annex A)

6.9. Development plans

Overall development plan is based on the common goals that define the partnership's aims and the vision that defines how the collaboration is to be conducted and is prepared by the steering committee. Together with the overall development plan an action plan defining how the vision is to be achieved through set of actions.

Single development plans are formed for each partnership agreement formed by specific parties according to the division of the work (contacts and frameworks). These are formed by the individual partnership groups and are to ensure the partnership is continually working towards the defined goals and vision. The corresponding action plans consist out of strategies, specific activities providing the way of implementation and monitoring that is to lead towards set goals.

All mentioned plans are evaluated and reformed at the beginning of every year. The workshop consists out of two phases; a reflection on the performance and achieved goals of the previous year and the formation and discussion on the development of plans for the future year.

The action plans that are being formed by individual contract groups are evaluated each quarter using workshops called timeouts. (Annex A)

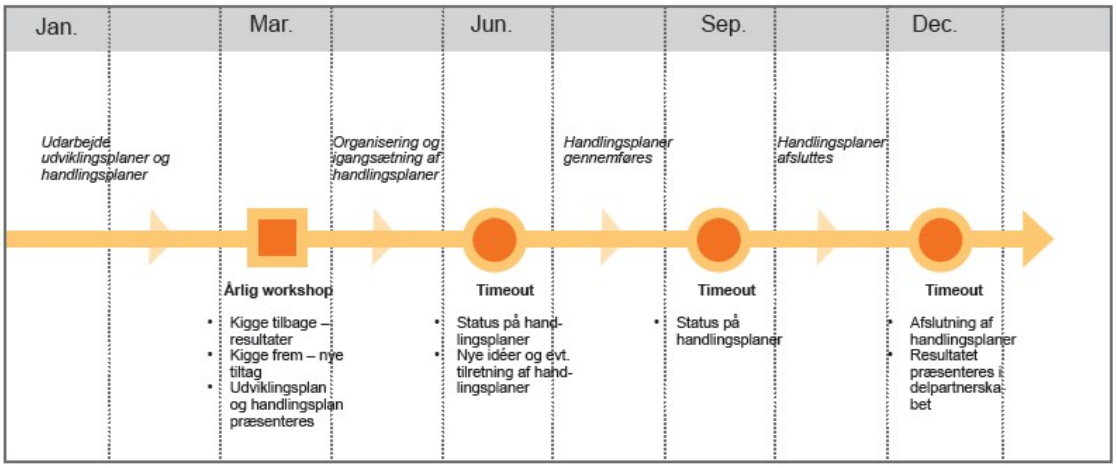


Figure 17. Annual schedule of project meetings (Annex A)

The image includes the planning of meeting that are to be conducted within a year. In March a yearly workshop is to be conducted with follow-up on the goals and establishment on new goals together with development of new action plans is being done. Two timeouts that are to happen in June and September follow the purpose of following up on the goals set in the yearly workshop. The year is concluded with the final timeout that is to go ahead in December where the goals are being revived and rewarded according to the balance score card marks for each of the participating partners.

6.10. Framework for partnering

Partners collaborating within a partnering agreement are expected to contribute towards overall goals defined by the partnering elements. These are:

- Economy and profit / loss sharing
- Common goal
- Continuous improvement
- Innovation

Partnering depends to a high degree of cooperation between included partied. In order to achieve a successful collaboration the partners must provide experienced, cooperative, constructive and committed employees who want to work with both the construction and the development of projects. (Annex A)

Project economy

The model is based on the economic efficiency calculated once a year. It includes comparing the total actual costs (net costs plus contribution margin) on work done with a set target budget. Any surplus or deficit is to be distributed accordingly.

Target budget shall be established prior to start of the execution of the works and has to be agreed by all parties involved in the agreement. Other services (contingencies) are to be covered by the risk pool. Risk pool covers expenses for both the client and the partner's risk associated with implementation of the projects. That is, charges that are normally referred to as unpredictable and often lead to discussions about whether they are the client's responsibility or not. (Annex A)

Open economy

A full transparency of economy and the developers' access to the necessary information regarding pricing of a partner is to happen at all times.

All parties have the responsibility to ensure that the economy kept within the budget of the framework and is committed to contribute to optimizing the economy in order to achieve increased earnings for all parties. Settlement for each partner is made on monthly basis consisting out of the incurred net costs plus contribution margins for its own work. (Annex A)

Profit/ loss sharing model

Profit and lost sharing model applies to all frameworks within the partnership agreement.

1. If the project is carried out, so that target budget just respected, honoured partner under this budget.

2. I case of a project being implemented at a lower cost than the target budget a 50:50 split between the developer and the contractor is to accrue. Shared savings consist out of the risk pool and the difference between unit prices and actual costs.

3. If a project is carried out at a higher price than the target budget, shared additional expense of 50:50 between the developer and the contractor is to occur. Sharing of loos happens only after all funds in the risk pool are exhausted. (Annex A)

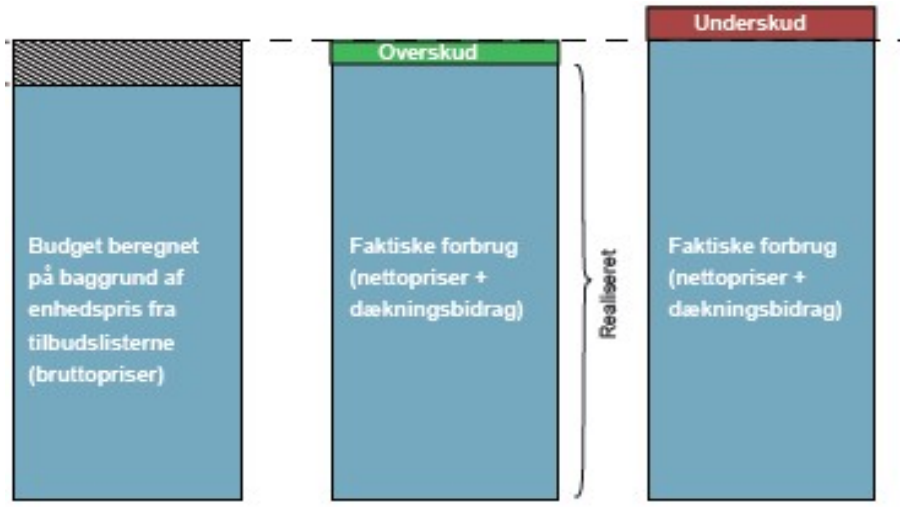


Figure 18. Distribution of project budget for different scenarios (Annex A)

Blue color indicates contracts budget including project insurance indicated with grey color. The second column indicates the scenario when a project was completed under budget, where profits are split 50:50 between the developers and partners. The third column shows a scenario where a project went over budget, resulting in losses to be shared 50:50 between the developer and partners.

Common Goals

Measurement of success/ Balance Scorecard

The partnering is given 5 common objectives, tailored to the second overall goal Common Goals, which help evaluating how successful the partnering process is.

The 5 common goals focus on the most important goals that the partnering among the companies need to achieve latest 2021, and ensure that the partnering gains perspective and reach the vision. The 5 common targets are:

1. Economy
2. Customers
3. Innovation
4. Cooperation satisfaction
5. Quality

The objectives are not arranged in order of priority. It is intended that the partnering jointly participates in making the targets more specific and at the same time ensure that they are realistic and can be accepted by all parties. The partners also participate in development of goals for each target. The targets for the objectives are as follow:

Target 1: Economy

"Minimum 10% reduction of unit prices over the period"

Through the development of the partnership and the longstanding cooperation must be achieved, efficiency, which inter alia is reflected in a reduction of the unit prices. In 2012 they had to save 4%, 2013-6% and this year they have to save up to 10% (Appendix A).

Target 2: Customers

"Minimum 90% satisfaction with the partnering efforts"

Clients' customers should be particularly pleased with service, respect and communication. The percentage is ambitious and causes the generation of citizens and customers everyday minimized.

Target 3: Innovation

"Increase of innovativeness according to the specified goals"

It is desired to create a culture of innovation that supports development of future solutions. There is desired jointly working with a measuring tool or method for Measurement of innovation capability.

Target 4: Cooperation satisfaction

"At least 92% satisfaction among the partners"

Attention should be focus particularly on employees, openness, trust, credibility, accountability, coordination, the each partner's role and the interaction between the partners. Recognizing that 100 % satisfaction is not possible, the target is set to 92%

Target 5: Quality

"Maximum 10% quality deviation in projects with first delivery, and 0% quality deviation on projects on final delivery."

The aim, setting this objective, is not to create a 0 error culture, but rather to detect the mistakes and rectify them. (Annex B)

Balance Scorecard

Target monitoring happens with the help of Balance Scorecard (BSC), where it is evaluated annually the level of achievement of the goals. The monitoring is conducted by Aarhus Vand. The five goals are measured according to 5-point system. For each of the 5 targets there are milestones/intermediate target for the specific year, methods for annual follow-up on the current targets and a description of break points of the annual calculation of how much of the target follow-up pool, which becomes payable. Nevertheless, the descriptions are only in principle to show the methodology. Having that some goals are more relevant to some of the partners and not to others, the Balance Scorecard is made according to the framework and it can be seen in the specific tender materials. Therefore BSC is used for the partners

participating in the planning (Appendix A). In this way Aarhus Vand makes sure the appropriate measurement is being taken and success rewarded.

How each objective will be handled and what targets should actually be used is a question to answer in the general partnership, for example at the first workshop in 2016. At the workshop it will also discussed openly and will reach a consensus the integration of the system approval of action plans

There is Incitement model in connection with the BSC for all partners together. Fulfilment of the goals results in bonuses for the participants. Well defined short-term goals keep the involved parties on track towards the strategic goals. The bonuses are defined in the tender documentation. Failure to fulfil the agreed requirements results in loss of the bonus in each of the categories. An evaluating scale 1-5 for all 5 categories determines how well a company has performed within partnering. The party, which gets all the points of the measurements for the goals gets a financial incitement of 50. 000 DKK. If one of the partners does not succeed in achieving the targets e.g. gather all the points, their partners are not getting either the whole amount. Consequently, everybody is working on achieving maximum results, so that everybody gains. (Appendix A)

6.11. Continues improvement

The partners are to be working to support and help each other to find continuous improvements and project solutions in the collaboration. Improvements may include methods, procedures, products and contracts.

Continuous improvement is done in several ways, for example in everyday life, where ta good idea arises spontaneously in concrete projects and more controlled through planned reflections of workflows and routines. The continuous improvement can take many forms and address for example the development of new workflows, changing ways of involving customers or new ways to organize and co-operation across partners.

The partnership is to create space and willingness to work with continuous improvement and a shared awareness the importance of it. The Action Plans support their objectives, but it is through the joint efforts of all employees of all partners, that results created. It is therefore essential that all partners support work on the continuous improvement. That is to create awareness and commitment to work with continuous improvement right out to the outermost part of organizations. (Annex A)

6.12. Innovation

It is the developers' goal to create the best possible environment for common development of solutions and methods. The objective is to ensure developers the best value for money and to strengthen partners' competitiveness nationally and internationally.

In order to achieve the ambitious objectives a development/ continuous improvement of ideas together with proposing completely new solutions through innovation is necessary. A phase model that supports the entire process from idea to finished, commercialized solution is therefore being proposed by the developers.

The innovation model which is based on close interaction between the developers and partners consists of six steps:

- search for ideas
- the maturing of ideas,
- development,
- testing,
- implementation
- up scaling

While the innovation model consists out of 3 steps: search, development, and implementation.

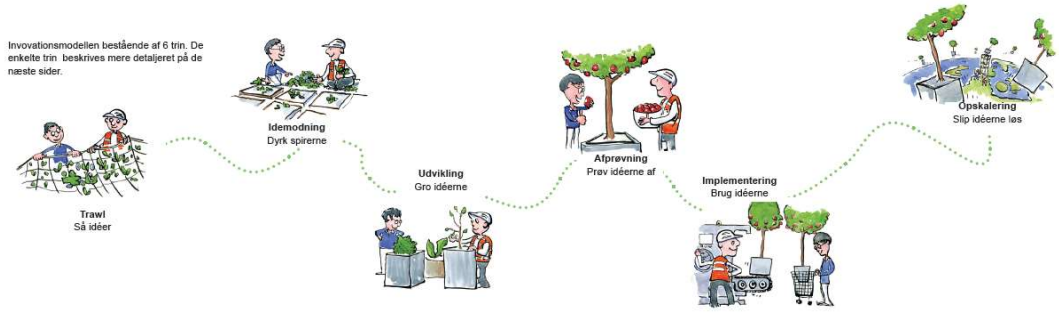


Figure 19. Continuous improvement and innovation scheme (Annex A)

The steering committee is consisting out of primary partners and is tasked with the implementation of the innovation model. At the same time project groups and the management structure is to provide support and ensure that the innovation becomes the necessary resources and match overall strategic objectives.

A model that alternates between openness and demarcation is to ensure that everyone can come up with ideas. The steering committee is to evaluate the proposals select which ideas should be developed further. After further development the developed ideas are being implemented if identified as promising. In order to promote and support good ideas; carried out each year an award of the best idea. (Annex A)

7. Case observations

The purpose of the following chapter is to capture all essential stages forming a partnering agreement used by Aarhus Vand, from its inception to its conclusion. Single stages are described and explained using the information provided by Aarhus Vand and their associates. Further information was acquired by interviews of employees working within this endeavour. Examining the information stated in the previous chapter: "Case description" is to provide a better understanding on why is each of the building blocks forming single stages throughout a partnering project important to the overall scheme.

7.1. Concept stage

It is the costumer/ developers that have to take the initiative towards partnering initiation. That is done by formation of a concept that could be compared to the outline stage of a construction project. The role of the concept is the definition the expectations the developers have towards future partners.

Strategy

Definition of a coherent strategy is crucial step in the concept stage. As subjected in the case description of Aarhus Vand, it is the developers that are required to identify the requirements a project needs to fulfill. These are divided into long term objectives captured by the vision and the way long term objectives are to be achieved that is defined with the mission statement. Forming a vision and mission statement is important in successfully communicating project strategy for future partners.

Time schedule

Importing deadlines are captured in the master time schedule. That is done by the developer and is included in the partnering concept. In addition to the milestones the concept shall include the information regarding meeting of different groups before and during an ongoing project.

Division of work

It is the developers, in collaboration with a consultant, that have a look at the extent of the work and considers which contractors are to be required in order to complete the project. Depending on the extent of work required for single contracts the developers classify the contracts into three categories. Further considerations are made concerning the relationship between interest and power on the project.

Primary partners are the contractors with biggest contracts, subsequently; they are the most influential contractors/ consultants on the project. Their reward and liability level is

substantially higher comparing to other members of the partnerships. The developers are provided with additional responsibilities and the opportunity to have a steady workflow for an extensive period of time. Their role could be described as second generation partners that have a long-term collaboration agreement with the developers. Long term involvement of this group results in primary partners participating in strategic decision making.

Secondary partners include contractors/ consultants with a smaller size of the contract. While important to the project, this group`s influence and obligations do not extend to those of a primary partner. Requires limited involvement into the decision making process goes with the smaller contribution to the whole project. The classification of a first generation partner could apply to this group when referring to the theory, with a short-term collaborations agreement and therefore limited role in the strategic planning.

Associates are companies that are not part of the partnering structure. Their role is somewhat limited to smaller contracts by providing a service without decision making powers.

Expectations of the developers

When developing the cooperation concept it is the developer's responsibility to clearly define what is being expected from the future partners. That is to some extent done by the vision and the mission but in order to establish a measurable goal, objectives need to be defined. These are divided into 2 categories; project objectives and partnering objectives.

Project objectives are requirements that the project or the final product has to fulfill. For example; project budget, customer satisfaction, quality….

Partnering objectives are defining what is expected of them in terms of the process. Some of these could be; innovation, cooperation satisfaction, reduced unit price…

Specified goals are throughout the project being measured by the developer. A very useful tool is the Balance Scorecard that includes detailed information on how the required goals are to be achieved by the partners. Fulfilling the goals is to provide collaborating partners with an agreed financial bonus on an annual basis. According to the importance of according to the developer, a weight index is assigned. In that way a higher reward for objectives that are more important is acquired.

7.2. Tender stage

Prequalification round

Fulfilling the prequalification requirements provides a contractor/consultant with the approval to participate in the bidding process. The purpose of this stage is to sieve through potential partners and identify the participants that have the resources, capabilities and competences within their ranks in order to fulfill project goals. Depending on the contract, a future partner is competing for, the prequalification criteria could include: experience in

partnering, a positive record and reputation of previous projects, ability to provide expertise in the project etc.…

Awarding the tender

I was established that the prequalification round serves as a sieve, discarding contractors that are not able to fulfil the required goals. Therefore it is the purpose of this stage to prick the most suitable contractor and award the contract making him a partner.

Awarding criteria specifies what parameters are the most important factors the developers will select their future partners on. In many cases within the industry, most economically advantageous tender is being awarded. In this case, the developers are aiming beyond conventional goals providing the project only economic advantages. Hence shorter goals are being replaced by strategic objectives that are working as a baseline when awarding the tender. Contractors with best competences and capabilities to complete the objectives in relation to innovation, collaboration, customer satisfaction, quality and economy are being awarded the contract. The developers' priority of a specific area is reflected by the percentage forming the balance scorecard mark.

Economy: annual reduction of unit prices by 2%, adding up to 10% in the last year of collaboration.

Customer satisfaction: minimum satisfaction of 90%

Innovation: achieving set goals set at the beginning of year

Cooperation: cooperation satisfaction of minimum 92% score

Quality: maximum 10% of failure upon first delivery, 0% on handover

7.3. Planning stage

The planning stage consists of multiple phases that are critical to the partnering. The initiation of cooperation starts with forming the groups, creation of action plans and planning of execution. It is in this stage that a firm foundation on which partnering can function and produce desired outcomes.

Formation of project groups and committees

In order to provide a smooth cooperation between the developers, partners and associates a systematic approach working toward achieving project and partnership objectives has to be put in place. Each of the teams has its own purpose within the structure of partnering. Section bellow includes a list of decision making bodies during an ongoing project.

Steering committee is the highest decision making authority within the project structure. The group consists out of individuals representing the developer and the primary partners. Their

main tasks include adjustments to the designated budget and the master time schedule. The decisions taken are based on reports provided by consultants, quarter assemblies and development group. With the data provided by these groups added to their strategic agenda of the steering committee, actions can be taken in order to direct the project into the desired direction. As a part of the duties the steering committee is to renew the results the Balance Scorecard and distribute the rewards at the end of every cycle. The measurements are conducted by the developer or a party working on their behalf.

Finally, the committee is to resolve disputes, to which a solution has not been found by other groups. The steering committee is to assemble and perform the required tasks twice a year.

General assembly is a gathering of representatives of all involved parties. That includes everybody from the developer, consultants; primary, secondary partners. Main purpose of the assembly enable knowledge sharing and making sure each party working on the project know their role and what is being expected of them. The assembly is to accrue on an annual basis usually at the beginning of a yearly cycle.

Contract group is required for each of the contracts awarded. The group is to consist out of individuals representing the developer, primary and secondary partners working on the same contract. The individuals of the contract group need to have the decision making power and come from the management and operational level.

The main purpose of this group is to follow up on the goals that were set at the previous meeting. After reviewing the contract performance, improvements to the contract action plan are being introduced if required. Revision of past three months is to provide the detailed data on what impacted performance of the partners. Regular reviews are conducted in order to find positive or negative influences on teams' performance.

In order to generate trust trough transparency, conducted reviews and actions plans shall be saved for the next meeting and be available to all involved parties if requested. The quarter assembly should be held every three months during an ongoing project.

Construction group is the decision making authority on the operational level for each of the awarded contracts. It should consist out of individuals representing the developers and all relevant partners interacting on the construction site.

The primary objective of the construction group is to coordinate the execution work on site. If disputes between partners arise, it is the group responsibility to spot and resolve them as soon as possible. If an agreement cannot be reached unanimously another meeting is scheduled in a week time until an agreement is reached. As the operational level, ideas for improvements are expected to arise. It is the construction group's responsibility to capture them. Those can then be taken to the development group to evaluate each idea. Unless specified differently the meetings are to be conducted on a weekly basis.

Development group is required for every single contract within the project. The group is to include representatives from the developer, primary and secondary partners with the possibility to include additional parties that could prove beneficial to the generation of improvements. In order to provide a holistic view, individuals from management and operational level with decision making process should be included. The development group is to hold a meeting once a year.

The development group is to provide a steady flow of improvements and innovation that will enable the partners within the contract to fulfill the objectives set in in the beginning of the year. In order to be able to do so, workshops are conducted at the end year where new ideas are being developed and tested out on a smaller scale. After the most promising ideas are developed they are being proposed to the contract starring committee that is to approve or deny its wider application.

Planning of work execution

The year of a cycle is divided into four quarters. The schedulers have to preplan and ensure there is enough time to conduct the required meetings for each of the groups. The frequency of the gatherings is determined by the developer in the concept but should be also altered and accustomed to the requirements of the project. As mentioned before each of the groups has a specific purpose and is an important part contributing to the fulfilment of objectives.

The key to planning the execution of work is the early involvement of all important parties. That is an initial investment, which is accepted to pay off in a long run, by avoiding possible misunderstanding, disputes and failures. In addition, single individuals representing the involved parties can provide a great opportunity for introduction of improvements that may influence works on site or the way the cooperation is being conducted. Therefore it is the primary contractors in charge of planning responsibility to acquire impute and consciences from all relevant parties down to associates.

Formation of development and action plans

Each of the awarded primary contracts requires a development plan that is generated at the beginning of the project. The responsibility comes down to the development group including members of the contract steering committee and the construction group. It is at this stage negotiations towards productive solutions are being conducted in order to provide solutions that will not favor one partner over the other. Misunderstandings that could get out of hand if not addressed early in the planning stage are curtailed. Unlike planning of the execution on site the development plan is primary concerned with how the project and partnering objectives are to be reached.

Since there is no such a thing as a perfect system, partnering is to evolve throughout the project in order to accommodate the ever changing needs of the cooperating parties.

Therefore it is the development plans together with the efforts of contributing teams that are to pride a structured plan towards achieving set goals.

7.4. Execution stage

This stage consists of 4 quarters forming a cycle that is one year. Number of cycles depends on the duration of the project. As the master time schedule is developed planners take into account the time required for activities supporting the objectives of partnering. An initial investment into follow up meeting and workshops consumes time participating employees could have spent completing their tasks. The invested time is expected to pay off multiple times in the long run by avoiding opportunity cost, generated by disputes, and constant flow of improvements and innovation.

Site meetings

Works on site are to transfer the plans into action. Ever-changing environment on the construction site requires a structured approach to problem solving. That is partially achieved through careful planning done in the earlier stages of the project however there will always be unforeseen events that arise on the construction site. Therefore it is crucial that problems are spotted and resolved as early as possible. That is the job of the construction group at the site meetings. Their role in the execution stage is to resolve potential disputes with a unanimous decision made by all relevant parties. Since all the decisions taken in the planning stage had to be supported by all members of the committee, alterations in the execution stage should cover the unforeseen events.

Time-outs

According to the master plan schedule the development committee is to have a session covering the follow up on goals set on the previous annual meeting. Together with review of the past quarter, gathering serves the purpose of sharing knowledge and review propositions for improvements or even innovation. The development group is to evaluate each proposition and pick the ones that show the potential for future development.

Performance reviews

At the end of each cycle, an annual meeting is being conducted. The members of the project group and the development group are attending. It serves the purpose of reviving the budget and the goals that were set on the previous annual review. In addition they are to provide adjusting the project is to have in the following year. Participating individuals have the authority to make alterations to the budget, schedule and resolve disputes not resolved by construction groups.

Like specified in the section “Expectation of the developers” all partners are to share the profit as well as the losses in a year. A 50:50 split of reward and liability between the developers

and partners is to generate an environment with no conflict of interests. In addition it encourages the cooperators to stay under budget through improvement and innovation. Furthermore, bearing only half of the liability provides some security for the partners in case yearly budget is to be exceeded as a consequence of unforeseen events.

Based on marks provided by the balance scorecard while evaluating the goals, each partner is to receive a bonus at the end of the year. Project and partnering objectives specified in the concept form the parameters monitored of the BSC. Each of the parameters has an appropriate weight towards the score that depends on the importance for the developers. The bonuses are to generate another source of motivation for the contractors to fulfill their obligations towards their fellow partners.

The review of the past year is followed by forming a plan for the upcoming year. By reflecting on the past four quarters, new alterations to the action plans are being introduced. That includes the introduction and implementation of key developed ideas generated over the past year. Those were reviewed by the contract group and developed during workshops. Therefore it is up to the project group for development to take spread the new initiatives and make sure their contractors knows what their role lays.

Annual workshops

The workshops are conducted after each timeout and are designed to provide an outlet, where it is possible to experiment and develop improvements and innovation. The development group of each contact is to work with ideas that seem promising, in order to sieve through the ones that can be taken to the partners and be implemented. As mentioned previously, quarters seasons together with the workshops are to provide a systematic approach to generate improvements and innovation that will enable contractors to conduct their work more effectively and efficiently. After workshops are conducted, the members representing relevant partners have the task to test the ideas on the field and return with feedback at the next quarter season or annual assembly.

7.5. Post execution stage

Reflection on partnering

After the project is completed all representatives for the involved parties are to have a reflection session. That includes the developer, primary and secondary partners and relevant associates. The point of that gathering is to capture the lessons learned throughout the process of partnering. This is to contribute to development and optimization of collaboration methods used during the project. An additional desired outcome is the development of contractors and consultants. Their solutions and experience in achieving goals like annual reduction of unit prices can be beneficial to their competitiveness in future. Moreover, by

looking back on a successful cooperation that went beyond the contractual obligations, should encourage companies to participate in projects that are based on partnering.

The developers can gain a lot by conducting a through reflection on the project. That can be done by comparing the original concept goals with the results achieved for each cycle as well as the final outcomes of the project. A re-evaluation of original goals is to provide closure on how successful was the process when looking beyond the traditional economic indicators. Accumulated data can be used in the future when generating a concept for another project. That would help with setting precise goals and together with proven systems to manage a partnering project.

8. Case Reflections

This section contains observations and reflections on the study case, with regards to the theory discussed previously. A holistic model is used for the purpose of processing the information so far. The method the presented information has been analyzed is structured according to the Kolb's Learning Cycle (1984) (see figure 15), which eventually leads to the creation of an action plan. The Learning Cycle Theory has been chosen as it is a great process of constructing knowledge.

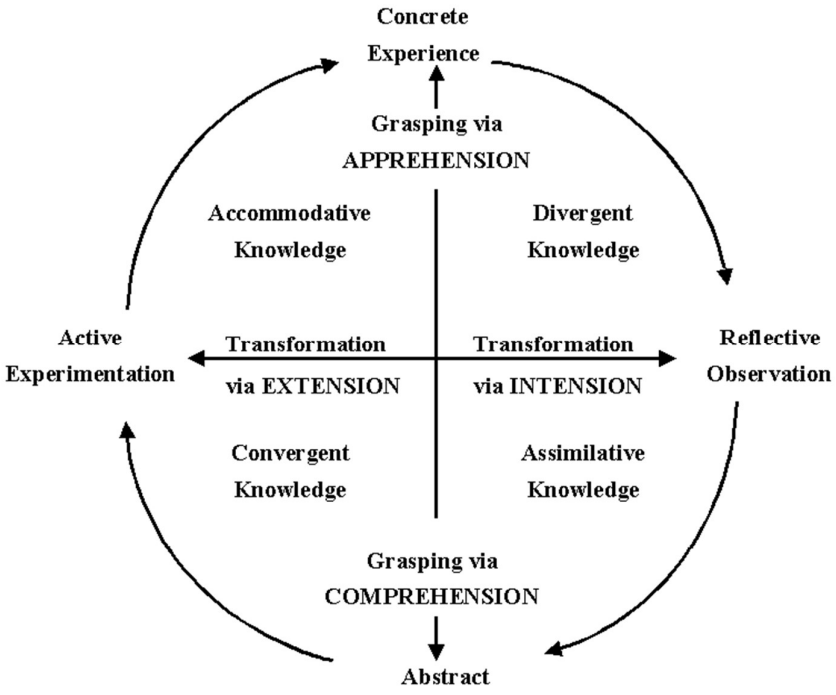


Figure 20. Experimental Learning Cycle (Wordpress, n.d.)

Kolb`s model consists of four elements:

- Concrete experience
- Reflective observation
- Abstract Conceptualization
- Testing in new situations/Active experimentation

"The model portrays two dialectically related modes of grasping experience- Concrete Experience and Abstract Conceptualization -and two dialectically related modes of transforming experience- Reflective observation and Active Experimentation" (AliceY. Kolb; David A. Kolb, 2011). Kolb argues that the learning cycle can begin at any one of the four points - and that it should be approached as a loop. However, normally the learning processes starts with experience and recognizing the effect. (AliceY. Kolb; David A. Kolb, 2011)

Concrete experience

In our case the concrete experience is presented as studying the case from real life of Aarhus Vand and their partners, by interviewing them and studying the obtained materials. Furthermore, some theoretical specifics of the partnering approach were presented, in order to see how theory and practice fit together and what the outcomes are.

Reflection on the case

By the information we gained via-through interviews and reviewed materials we received from the companies, we gained an insight about the values and the practices within the partnering established between them. It was confirmed, during the interviews with VAM and EnviDan, that the most important components of partnering are *Trust* and *Mutual Understanding,* and furthermore, this are the main reasons to make partnering so desirous for companies such as the latter two. *As* this is an example of a partnering concept in the Danish market, it cannot be regarded as a surprise that tools and best practices familiar from the literature are adopted. Nevertheless, Aarhus Vand has experience of approximately 11 years (see Appendix A) with the approach, history records and the interviewed employees proved, that the concept has improved its working methods and results. Although Aarhus Vand has implemented strategies known in managerial books and articles, they have adapted the well-known practices according to their field of work, number and type of contractors and, of course, culture. This can be observed in the ways of choosing partners, creating partnering agreements, the workshops, the ways of conducting meetings and establishing dispute resolution approaches.

Knowing their own values, goals and the expected outcomes of the projects, Aarhus Vand have tailored the criteria model to the framework agreements they work with, enabling them to choose a proper partner. The Danish water company has also recognized the need to distinguish some of the requirements of the projects, undertaken activities and even types of balance scorecard, and tailor them to the essence of the work of the contractors. Something

that is distinguishes the studied partnering approach from what is known in literature, is the stress Aarhus Vand put on *Innovation,* and their efforts to make partners work towards it. Although, the emphasis once again can be explained with the nature of projects they are undertaking, it is important in all kinds of businesses to aim towards more efficient methods to satisfy the needs of the clients, employees, gain competitive advantage through smarter solutions or/and to reduce costs. Aarhus Vand have recognized that, since innovation had not been stressed on in the framework agreements six years (Appendix C).

During the process of collecting data on the case, it was revealed that Aarhus Vand have developed an effective strategy during the years, which facilitates in achieving the common goals, makes the partnering approach desirous way of work for all partners, reduces the cost for the customers and simultaneously. Having their successful example, the research group will use it in answering a question, which is generally problematic in the work with partnering.

9. Solution

This chapter presents a practical model of partnering, generated from the example of the study case and practices according to the researched literature. The model integrates the processes and components associated with partnering and highlight management skills influencing the success of partnering. The intent with the model/framework is to be used in practice in the construction industry including core practices and activities associated with partnering.

9.1. Partnering in construction

It should be pointed out that the model is being developed for second generation partnering or for group of firms working together on series of projects for a major client. It is considered that project-specific partnering is ineffective because trust and commitment could not be developed during a short contract term (Eriksson, 2015). Nevertheless, the writers suggest that *partnering needs to be implemented on an ongoing basis so that trust and commitment can be developed and used to create a learning environment.* (Eddie W. W. Cheng, Heng Li and P. E. D. Love, 2000)

9.2. Model

The overall plan for partnering can be presented in six main phases as shown in the figure 21 below.

Figure 21. Six main phases of partnering

Phase 1 Concept

This phase is connected with the idea and the plan creation for the partnering concept in connection with the project or series of projects. Like in typical projects this phase if of a great importance to provide a sound basis for the project.

I this stage the developer together with a consultant develop the idea together with the framework for the future cooperation. The concept phase includes both planning of the tender procedure and planning of processes and activities for the cooperation.

First of all it is decided

- What is the overall project aim?

- What is the type, size and complexity of the project?
- What is the aim with partnering?
- How much time is required to finalize the project/s?
- What kind and how many of partners are required to achieve these aims? What should be their competences and capabilities?
- How will the partnering work? What activities, practices will best fit the stakeholders and the project/s?

What partner is needed?

Provided that all these topics have been considered and thoroughly analyzed, the tender competition, for choosing the right partners, should be designed accordingly. Providing that partnering, in its essence, is promising money and time savings, "lowest price" is far from the desired award criteria. First and foremost, the competitors must be prequalified for the specific project. The award criteria for choosing partners should be financially most advantageous with sub-criteria. The sub-criteria can be for example:

- Economy-including unit prices. The assessment is on the gathered sum
- Organization and technical competences-description of the offered organization including organization plan and related CVs of all named key employees. The assessment is focused on that the tenderer possesses both academic range resilience as well as an understanding of partnering concept
- Process- for this sub-criterion assessment will be given to the tenderer's ability to structure and plan the entire process, including the ability to understand their own role in both the specific projects and partnership
- Innovation- focus on enablers for innovation; ability to cope with an innovation process; ability to achieve results. It is given weight to that the tenderer has the necessary prerequisites to be involved in the innovation process-either by gained experience or demonstrated through an explanation of how the conditions will be acquired (recruitment, training etc.)

It is added positive value if the offeror's description contains proposals for concrete actions, for all sub-criteria, rather than declarations of intent. (Annex D)

Each of the sub-criteria is given weight in percentage, which sum is 100%.

Balance Scorecard

The targets relevant for the particular partners are defined and Balance Scorecards are tailored to them. Five common goals can be distinguished for the cooperation. They are:

6. Economy- staying within the budget constrains
7. Customer/s-satisfaction of about 90%
8. Innovation definition of goals

9. Cooperation satisfaction-about 90%, as 100% is recognized to be impossible
10. Quality- maximum 10% deviation on projects

For the tender documents, bonuses are defined for fulfillment of the targets in the annual follow-up.

Phase 2 Tender and contract

The next phase is the tender procedure itself, which ends with awarding the contracts/frameworks. The content of the contract should be similar to the one suggested in section 5.1 Key components for partnering Incentive contracts It is advisable the contracts to be incentive and ensure profit and loss sharing in the long-run, which is done by sharing a percentage factor for a deviation from a predetermined target cost. The percentage for each party depends on their role in the project. Rewards such as bonuses should be defined here, again adapted to the partner. Monetary incentive for the work groups shall be given, on an annual basis, to the achievement of a good result in the combination of the important issues e.g. project duration, quality, safety, technical development, cooperation and less utilization of resources. In these cases the contractor receives a bonus if a predetermined level is exceeded (or underachieved in the case of duration and utilization).

Nevertheless, greater the focus will be on non-financial incentives, as practice proves that they result in better outcomes than the financial rewards. Examples for non-monetary benefits will be illustrated in Phase 5.

Phase 3 Cooperation establishment

This phase serves as an introduction for all parties to the project and connected tasks. Furthermore, values and priorities, as well as and common defined ambitious aims need to be communicated and consensus on the common goal to be achieved. As an effective communication should be established, this stage can be seen as a crucial starting point.

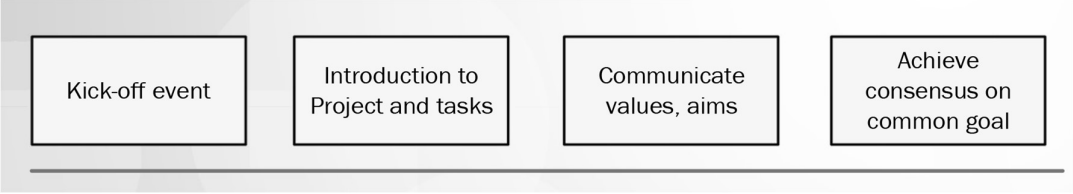


Figure 22. Cooperation establishment

Establishment of cooperation

A Kick-Off event in connection with the start of the project is arranged, in order to highlight the start of the project. The whole partnering organization together with external actors, which have significant role in the project, including the developer, should be present. The event needs to be adapted to the size of the organization, the nature of the project etc.

The aim with the event is to give ownership of the tasks of those who are involved and achieve consensus on the common goal. From there, a common understanding about the project will be achieved.

In order to make sure that essentials are presented to all on the meeting, the following questions should be discussed:

1. What needs to be build and why?
2. Cooperation on the building site.
3. Sharing of knowledge and experience from previous projects.
4. How to achieve the perfect submissions to each other?
5. How to execute the building processes, the way the developer will be satisfied and all on the building site can be proud?
6. Strengthening of planning based on respect for each other`s work fields.
7. Roles and responsibility distribution btw the construction management and the people on site together with contact to the consultants and developer
8. Agreement on common values for cooperation, communication, compliance with agreements, conflict resolution etc. (Martin Juhl, Lene Faber, 2015)

Phase 4 Group formation

Once the partners get acquainted the formation of groups is to go ahead. Single groups and committees have been specified in the concept created by the developer. It is started with the steering committee that is a group consisting out of the most influential individuals.

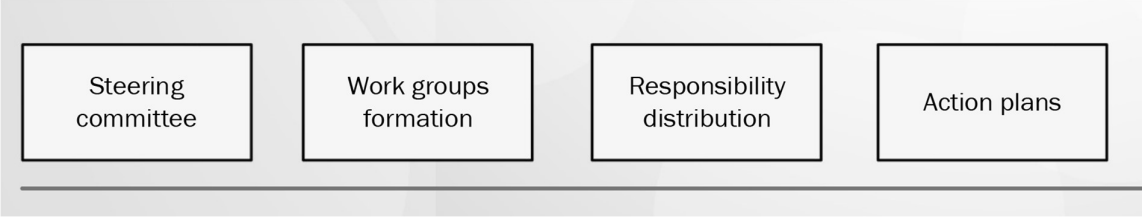


Figure 23. Group formation

This is done to let employees know to whom they can refer to, in connection with different matters, what responsibilities lay in the different groups and what the action plans for the specific groups are. Additional groups are: contract group, construction group and development group. Each of them is designed to perform specific tasks that are to enable partnering to function. Focus is on the individual employee, their competences, ambitions, values and mutual relations. Only then common goal/s, priorities can be established.

Team formation

In the establishment of the teams the developer should go through 6 steps, according to the book "*Den lille leder by Martin Juhl*"

1. A short presentation of the building project and why the project teams are established

2. A long presentation of the project team`s members

3. A common dialog about the expectations for the project team`s future cooperation

4. With starting point in the members and theirs expectations, specific targets are set

5. Collaboration methods are developed by the team, included responsibility distribution, procedures for knowledge sharing, conduct of meetings etc.

6. Actions. It is agreed what the team should do in order to solve the task and fulfill the targets, while people support each other in the process

Name of group	Meeting	Purpose	Who	How often
Steering committee	Performance review meeting	Highest decision-making authority. Making adjustments to the budget , time schedule	Developer Primary partners	Twice a year
General assembly	General assembly meeting	Share knowledge. Distribution of responsibility	Developer Primary and secondary partners	Annually
Contract groups	Time-outs and annual reviews	To follow up on the goals. Form action plans	Developer Representative for each contractor	4 times a year
Development groups	Workshops	In charge of the innovation and the improvements	1.Developer and a representative of a primary contractor 2. Developer and representative of a secondary contractor	Annually
Construction groups	Site meetings	Coordination of construction works and conflict resolution. Capture ideas for improvements	1.Developer and a representative of a primary contractor 2. Developer and representative of a secondary contractor	Twice a month

Table 3. Team formation

Phase 5 Execution

In order for the work processes to be executed in way that will lead successfully to the common goals, it is created certain framework of activities. Work discipline in connection with the community is guaranteed to use the following model in a daily or weekly basis:

1. Status-what`s the status with the present tasks?
2. Next task-what`s the next step?
3. Actions- common research on how we go further
4. Specific agreements-work- and responsibility distribution with RACI

The course is constantly evaluated, when the task is complete. Feedback and constructive criticism is given, so that the employee matures.

When the right course is communicated, it is important that the employees see the overall goal, know the timeframe, priorities etc. this is decided during the site meetings, that are on a weekly basis.

The site meeting is held in the building site and all organizations' members are involved in the decision process. The members can set/put topics on the agenda, that deal with the work, safety, work satisfaction and how the goal is achieved.

It can be also discussed and decided if there is need for further training in connection with some tasks.

In addition, site meetings help to communicate the right course, they contain a kind of practice-teaching where members exchange building experience and create an understanding that a construction project is a series of trades, but a joint construction project. (Martin Juhl, Lene Faber, 2015)

Dispute resolution

Emerging disputes are to be resolved by the appropriate group or committee. Solutions required on the operation level should be provided by the construction group. If an agreement cannot be reached with mutual consciences another meeting is scheduled. If a compromise cannot be reached the problem is to be resolved by the project group.

Situational leadership

In addition to communicating the course in the common building-site meetings, it is necessary to communicate the course to the individual employee regularly. It is important that the leadership is adjusted to the individual employee. This is done by identifying employee`s development and using the right leadership style.

The development level is determined based on the employee`s competence and engagement to the actual task. When this is defined, the leader can decide whether to be directing, coaching, supporting or delegating. (Martin Juhl, Lene Faber, 2015)

Figure 24. Harsley and Blanchard The figure indicates the employee`s development/growth (Brucem, 2011)

Instructing: used with employee who f.x. has just been employed and hasn`t any experience. Be directive and what he/she should do. Formulate specific problem concerns/challenges and ensure that they are resolved satisfactorily.

Coaching: used on workers with little experience those require feedback on the performed tasks. Let the communication goes both ways ad ask the employee to explain action plans and argue for the targets. Manage and evaluate employee`s effort

Supporting: used when employee`s competence is high enough, that he/she can participate in the decision taking. Let the employee also defines the assignments and exchange viewpoints with him. Stay on the sideline and support, but let the employee take responsibility for the assignment.

Delegating: is used when the employee is capable and involved enough to plan and execute his own assignments. Delegate/outsource the responsibility for one task and get just a status every now and then. The employee should be self-conductive so retrieve just information from him and try to get the whole picture.

Phase 6 Monitoring and Motivation

According to Martin Juhl (Martin Juhl, Lene Faber, 2015), synergy in task execution is achieved paradoxically when the team turns focus away from the tasks. The team members taken out of their usual context and are forced to assess the cooperation, whether it can be improved.

This is done with carrying out teambuilding activities within interval of 3-6 months, based on the necessity, timeframe in relation to the job/mission/task. The project leader is a mediator and asks the employees on opinions about the 5 topics that provide the framework for the meeting.

The FIVE TOPICS for teambuilding activity are:

Focus on the general cooperation in the project team and not on specific jobs/tasks. Focus on improvement wishes that are formulated like transformed questions: focus on what is desired instead of what is not.

Understand when it works well, and when it doesn't. Use the experience the project teams possess.

Picture how the collaboration can be developed in cooperation and what the project team would like to achieve.

Determine- a specific target that contributes to the achievement of the future performance of the improved team.

Release elements that do not work and implement action plans that contribute to achieving the objectives and improvements. The phase must be specific and detailed, so there is no doubt among team members about how the project teams have jointly planned to achieve the goals. (Martin Juhl, Lene Faber, 2015)

Balance Scorecard

The target monitoring is conducted by the developer, or his/her representing, with the help of balance Scorecard. The goals are measured according to 5-point system. And for each of them there are intermediate targets. The measurements are taken a rewarded on an annual basis. Rewards are distributed according to the score in form of bonuses at the end of each year.

Human needs and motivation

When the team has just been established, focus the employees on fulfilling the safety needs and the social needs, illustrated with the help of Maslow`s pyramid of needs (see chapter 5.2). The basic needs should be fulfilled to move on to the higher needs. Focus then, on maintaining them. Focus on the stimuluses to create a positive and effective working positions and long-term satisfaction. Examples for non-financial incentives which stimulate and maintain employees` motivation are:

- A great project and winning team
- Challenging work-making the employees have the best performance at work
- Praise for a good work-congratulate them for their good performance
- Career opportunity- "help the team achieve their dreams"(Silverman, 2004)

10.Conclusion

This report has identified that traditional way of conducting construction projects in collaboration where multiple parties represent conflicting interests. That results in each involved party trying to maximize their short-term benefits and ultimately in disputes between them, higher costs, waste of time, customers unsatisfied with the quality of the project and all that caused by outdated ways of conducting a project.

Beneficial effects have been recognized from partnering, which represents an alternative where all efforts are directed towards cooperation. This approach applied in the supply chain in the long-term (second generation partnering), creates a great competitive advantage for the whole chain, as it make it a strong united team. That is to result in establishment of common interests that will benefit every partner and the final product. In addition, all partners cooperating are to gain additional benefits like steady stream of work, improvement of competitiveness, reputation and happier work environment. As indicated by the provided study case for second generation partnering, a partner gets encouraged for spending time on improvements and innovation. The experience acquired during the project can be used by the partner in order to increase their competitiveness on the Danish or/and foreign markets.

As the need for rethinking the way construction industry is conducting their business is recognized, the change is already on the way in the infrastructure sector with second generation partnering projects are successfully operating and will continue so in the future. Therefore it is time for the building industry to follow their lead. Professionals within the building industry can learn from the provided example in the report, where partnering was implemented to a great success. This is therefore the basis for the main research question:

How to successfully implement and manage the partnering concept in the construction industry?

The research team has concluded that the good results associated and expected from partnering can be achieved, if certain components are present in the cooperation. Trust and mutual understanding, and common goals lie in the base of the approach according to Johan Nystrom and have been supported by the parties in the case of Aarhus Vand. These components are not something ready-made but rather require strategic and structured approach for achieving them. To start building these crucial elements, it is important to have the knowledge and preferably the experience in connection with them. Only when they are present, can we talk about a high-performance team working in synergy and accomplishing effectiveness and efficiency in their work.

It is also concluded, that the responsibility for the initiation of comes down to the developer or a party working on clients' behalf. Thus it is them that are in charge of developing the

framework on which partnering is to be based. That includes the appropriate division of work, establishing the number of primary, secondary partners and general conditions the cooperation is to take place during the project. Defining the objectives based in the project requirements that are to result in a coherent strategy is another important step towards successful partnering. In order to communicate the developers' intentions in a successful manner the formation of vision and mission statement is required.

In order to develop a successful partnering between the developer and the partners it is crucial that the right team is assembled. Therefore it is vital for the developers to look for the most suitable contractor that can become a future partner. That includes looking beyond the traditional tender selection criteria, meaning that less weight should be put on the prices offered and more stress be put on to contractors` competences and capabilities.

After partnering has been established, it is of equal importaince to follow up on the set objectives. That is made possible with a strucured approach of planned meetings held by designated groups that are to provide solutions to the problems before and during the execution phase. Each of the groups assembled is to perform a specific job that is to contribute to partnering as a whole from the operation level up.

Performance measurement tools like the Balance Scorecard play a crucial role in providing a system with which progress can be assessed and monitored. Success should be recognized and appreciated accordingly, in order to keep the partners motivated. In case of complications, decision making structures are to provide a calm environment where mutual decisions can be taken. Inclusion of all relevant parties into the decision-making process has an enormous potential in improving projects performance and minimizing the chance for desputes.

Furthermore, partnering is to serve the project in the best manner possible, including an everchanging environment, which requres a flexible system where alterations to the action plans can be introduced in order to increse effectiveness and efficiency on the project. Innovation and improvements are possible and an importaint part of the whole process and can be achieved through workshops and united effords from the management and operational level.

11. Future research

This presents partnering an alternative to currant ways of conducting project work in the building industry. It can be used as a guideline for private and public organizations looking towards developing a new way of collaborating with positive results. Reviving the paper the organizations can realize what in their current practices has potential for improvement and what desires a complete rethinking.

Due to the resources available the researchers were not able to conduct a wider investigation including multiple cases within the Danish building sector. The findings are limited exclusively to material and individuals involved in the Aarhus Vand partnering. Conducting a review of multiple cases could form a more coherent implementation plan. That would include best practices and lessons learned pulled from multiple projects. Another potential for future research represent the employees working within the structures of partnering. Individuals with hands on experience could provide a valuable insight from all levels of the management and operational hierarchy.

Finally the conducted investigation was limited to a single case functioning within the Danish construction industry. Reviewing cases present on the international could open another perspective on the same fundamental ideas.

Bibliography

Abudayyeh, O., 1994. Partnering: a team building approach to quality construction management. *ASCE Journal of Management in Engineering,* 10(6), pp. 26-29.

AliceY. Kolb; David A. Kolb, 2011. Experiential Learning Theory: Dynamic, Holistic Approach to Management Learning. *handbook of management learning, education and development*, 04, pp. 42-68.

Ambercon, 2013. *www.ambercon.dk.* [Online]
Available at:
http://ambercon.dk/uk/NEWS/News_details.aspx?Action=1&NewsId=146&PID=2920

Ambercon, 2015. *www.Ambercon.dk.* [Online]
Available at:
http://ambercon.dk/Betonelementer_/NYHEDER/News_details.aspx?Action=1&NewsId=222&PID=765

Anon., 2012. *www.out-law.com.* [Online]
Available at: http://www.out-law.com/topics/projects/partnering/

Anon., n.d. *http://www.stoptb.org/assets/documents/countries/partnerships/5-Components_partnering_agreement.pdf.* [Online]
Available at: http://www.stoptb.org/assets/documents/countries/partnerships/5-Components_partnering_agreement.pdf

Axelfod, R., 1984. *The Evolution of Cooperation.* s.l.:s.n.

Badger and Muligan, 1995. *Examining reasons for and benefits gaining from forming international alliances,* s.l.: s.n.

Bennett, J., 2001. *Decision Matrix compared with Partnering Principles,* s.l.: s.n.

Bennett, J., 2013. *Construction the Third Way.* s.l.:Routledge.

Blaxter, L., Huges, C. & Tight, M., 1996. *How to Research.* Buckingham: Open University Press.

Bohnstedt, K. D., 2015. *How to create an effective and efficient building process,* Aalborg: Aalborg University Press.

Bohnstedt, K. D., n.d. *Lessons learned in the construction industry. Extracting cooperative components ,* s.l.: s.n.

Brucem, 2011. *http://xray-delta.com.* [Online]
Available at: http://xray-delta.com/tag/dreyfus-model/

Cowan, C., 1991. *A strategy for partnering in the public sector,* Arizona Department of Transportation: s.n.

Cowan, C. G. C. &. L. E., 1992. Project partnering. *Project Management Journal,* Volume 22, pp. 5-11.

Cresswell, J. W., 2009. *Research design: qualitative, quantitative, and mixed methods approaches..* Lincoln, USA: SAGE Publications, Inc.

Eddie W. W. Cheng, Heng Li and P. E. D. Love, 2000. Establishment of Critical Success Factors for Construction Partnering. *Journal of Management in Engineering.*

Egan, J., 1998. *Rethinking Construction,* London: Construction Task Force.

Eriksson, P. E., 2015. Partnering in Engineering: Four Dimenssions of Supply Chain Integration. *Journal of Purchasing and Supply Management,* 21(1), pp. 38-50.

Flick, U., 2007. *Designing Qualitative Research.* Los Angeles: Sage Publications.

Graves A and Rowe D, 1999. *Benchmarking the Government Client- Stage Two,* s.l.: Agile Construction Initiative.

Heng Li; Eddie W. L. Cheng & Peter E.D. Love, 2000. *Engineering, Construction and Architectural Management,* Hong Kong: The Hong Kong Polytechnic University.

Hinks, J. C. A. S. a. C. S., 1996. *Is partnering a state of mind?.* University of Salford, s.n.

J. Keathley, P. Merrill, T. Owens, I. Meggarrey and K. Posey, 2013. *The Executive Guide to Innovation: Turning Good Ideas Into Great Results.* s.l.:Quality Press.

J. Roschelle and S. D. Teasley, 1995. *The construction of Shared Knowledge in Collaborative Problem Solving,* s.l.: s.n.

J. Storch and T. M. Søholm, 2005. *Teambaserede organisationer I praksis,* s.l.: Ledelse og Dansk Psykologisk Forlag.

James R. Evans and William M. Lindsay, 2011. *The Management and Control of Quality.* 8th ed. s.l.:South-Western, Joe Sabatino.

J-J Laffont and D. Martimort, 2002. *The theory of incentives: the principal-agent model,* s.l.: Woodstock: Princeton University Press.

John Bennett and Sarah Jayes, 1998. *Seven Pillars of Partnering,* London: Thomas Telford Publishing.

L. Crowley and A. Karim, 1995. Conceptual Model of Partnering. *Journal of Management in Engineering.*

L. Crowley and A. Karim, 1995. Conceptual Model of Partnering. *Journal of Management in Engineering,* 11(5).

Lærdre, O. a. H. T., n.d. *Use of project partnering in construction,* Trondheim: Norwegian University of Science and Technology.

Latham, M., 1994. *Constructing the Team,* s.l.: Sir Michael Latham.

Luft, J., 1969. *Human Interaction: The Johari Model.* s.l.:Mayfield Publishing Co.

M. Bresnen and N. Marshall, 2000. Partnering in construction: a critical review of issues, problems and dilemmas. *Construction Management and Economics.*

Martin Juhl, Lene Faber, 2015. *Den Lille Leder.* s.l.:Boligfonden Kuben.

Maslow, A. H., 2013. *A Theory of Human Motivation.* s.l.:CreateSpace Independent Publishing Platform.

Matthews, 1996. *Identifying the stages for selecting subcontractors using empirical data, resulting in the establishment of a semi-project partnering process.* s.l.:s.n.

McGeorge, D. P. Z., 2012. *Construction Management New Directions.* third ed. s.l.:Wiley-Blackwell.

McMahon, K., 2011. *http://www.peakoilblues.org/.* [Online] Available at: http://www.peakoilblues.org/blog/2011/03/02/beyond-maslows-hierarchy-of-needs/

Mike Bresnen and Nick Marshall, 2000. *Building partnerships: case studies of client-contractor collaboration in the UK construction industry,* s.l.: s.n.

Moisander, J., Valtonen, A. & Hirsto, H., 2009. Personal interviews in cultural consumer research - post-structuralist challenges. *Consumption, Markets & Culture,* 12(4), pp. 329-348.

National Audit Office, 2001. *Modernising Construction,* London: s.n.

NEDO, Loraine, Jayes, B. a. & Bailey, E. a., 1991, 1993, 1995, 1996. *Partnering in construction: a crucial review of issues, problems and dilemmas.* s.l.:s.n.

Nejezchleb, J., 2010. *http://www.sitefolio.com.* [Online] Available at: http://www.sitefolio.com/blog/article.aspx?id=35

Nystrom, J., 2005. *Partnering; definition, theory and procurement phase,* Stockholm: Royal Institute of Technology.

Nystrom, J., 2005. The definition o partnering as a Wittgenstein family-resemblance concept. *Construction Management and Economics,* 5(23), pp. 473-481.

Nystrom, J., 2007. *Partnering: definition, theory and evaluation,* Stockholm: Royal Institute of Technology.

Ogunlan, S., 1999. *Profitable Partnering in Construction Procurement.* London: s.n.

Out-law, 2012. *http://www.out-law.com.* [Online] Available at: http://www.out-law.com/topics/projects/partnering/

P. J. Thompson and S. R. Sanders, 1998. Partnering continuum. *Journal of Management in Engineering,* p. 14.

RICS, T. R. I. o. C. S., 2013. *https://consultations.rics.org.* [Online].

Scherer, F. M., 1964. The theory of contractual incentives for cost reduction. *The Quarterly Journal of Economics.*

Schrage, M., 1990. *Shared Minds: The New Technologies of Collaboration.* 1st ed. s.l.:Random House .

Scott, B., 2001. *Partnering in Europe/ Incentive based alliancing for projects.* London: Thomas Telford Ltd.

Scott, B., 2001. *Partnering In Europe: Incentive Based Alliancing for Projects.* s.l.:Thomas Telford.

Semco, 2014. *http://www.semcomaritime.com.* [Online] Available at: http://www.semcomaritime.com/pages/visnyhed.asp?newsguid=112559

Silverman, M., 2004. *Non-Financial Recognition The Most Effective of Rewards?,* Brighton: Institute for Employment Studies.

Skeggs, C., n.d. *Project Partnering In The International Construction Industry,* Sydney: BE Civil, MBA.

Stake, R. E., 1995. *The Art of Case Study Research.* s.l.:SAGE Publications, Inc.

Stukhart, G., 1984. Contractual Incentives. *Journal of Construction Engineering and Management.*

Warner, D. J., 2015. *http://blog.readytomanage.com.* [Online] Available at: http://blog.readytomanage.com/the-power-of-the-joharis-window-model/

Weitzman, M. L., 1980. Efficient Incentive Contracts. *Quarterly Journal of Economics* .

Wilson, 1995. *Partnering as an organizational change process. Developing a strategic partnering process model.* s.l.:s.n.

Wisdom Kwawu and Samuel Laryea, 2013. *Incentive Contracting in Construction,* s.l.: s.n.

Wittgenstein, L., 2009. *Philosophical Investigations.* 4th ed. s.l.:Blackwell Publishing Ltd.

Wordpress, n.d. *https://reflectionforstudentaffairs.wordpress.com.* [Online] Available at: https://reflectionforstudentaffairs.wordpress.com/models/experiential-learning-models/

X. Meng and B. Gallagher, 2012. The impact of incentive mechanisms on project performance. *International Journal of Project Management.*

Yin, R. K., 2003. *Case study research: Design and methods.* s.l.:Sage Publications.