Partnerships in Construction

Vandpartner case study

Lukas Kristijonas Salkauskis
Dominyka Romaneckyte
Adam Wicherek

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TITLE SHEET

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Supervisor	Kristian Ditlev Bohnstedt
Group members	Adam Wicherek
	Dominyka Romaneckyte
	Lukas K. Salkauskis

PREFACE

This report presents a case study of Partnership between public entity – Aarhus Vand and private party – VAM A/S among many others; collectively this partnership is known as Vandpartner.

It must be stated that this report does not cover partnerships and partnership practices in whole Denmark, it only focuses on agreement between Aarhus Vand and VAM A/S. In its true sense, VandPartner consists of fourteen companies in total: 3 public and 11 private ones, however, this report covers only the collaboration between the two said companies.

Another aspect of limitation for this report are time and page limits. Report was developed between 1st of September 2018 and 10th of January 2019. This time period included collecting primary and secondary data, writing and redacting the report. Thus, conclusions and finding shall be interpreted with respect to given time frame. With that in mind, research group focused on most important aspects in their opinion, and only vouch for the written included part.

Research group included overview of partnership projects in foreign companies – total of seven countries were selected for this research as being considered "Western culture countries", that is having a similar developed level as Denmark. However, the Research Group does not claim to be specialists regarding this subject, and only provides a short summary of relevant information for this report.

Furthermore, Discussion chapter provides reader with a table of solutions for partnership attributes implementation in standard projects, however, the solutions rely on limitations of the project. Research group is not professionally competent and can only state educated guesses regarding the suggested solutions and their implementation.

ACKNOWLEDGEMENTS

Research Group would like to express their gratitude to Kristian Ditlev Bohnstedt for his supervision during the writing process. Thank you for always providing a structured and sincere feedback, that helped guiding the report in the right direction, yet still allowing the group to discover new ideas and find own path of research. Thank you for always so generously sharing your time, be it for helping to come over obstacles, inquiring whether everything is going according to the plan, or simply to talk about school and life.

Additionally, the Research Group would like to express their gratitude for Karina Topp (Aarhus Vand) and Stine Lajer (VAM A/S) for the effort they put in helping the group better understand the research topic. Thank you both for your time, sharing valuable information and very interesting discussions.

Last but not least, Research Group would like to thank Aalborg University for providing students with a possibility to work on such topics. Research group is thankful for services, provided by University: for facilitating good and supportive working environment, as well as welcoming the expression of ideas.

READING GUIDE

Thesis structure has been divided into chapters, presenting a reader research process and development of chosen topic. Every chapter is indicated by an Arabic digit and a short summary – a description of research purpose. Additionally, a figure representing report's stage has been included to every chapter's page.

Report consists of 10 chapters of main part and 2 chapters of appendixes and annexes. These chapters are: 1 Introduction, 2 Interviews, 3 Literature study: World Market Overview, 4 Problem formulation, 5 Methodology, 6 Perspectives, 7 Explanation, 8 Discussion, 9 Conclusion, 10 Bibliography, 11 Appendixes, 12 Annexes.

Research group have used external sources of literature as secondary data. Therefore, every time, when an external source had been used, research group put a reference, according to Harvard referencing style. List of books, research papers and all other sources is presented in chapter 10 – Bibliography.

Tables and figures which have been used in the report, in most cases were prepared by the research group. Sources to original drawings were included under the figures.

Lastly, authors of thesis: Adam Wicherek, Dominyka Romaneckyte and Lukas Salkauskis, refer to themselves as *research group* throughout the report.

ABBREVATIONS

DBFOM	Design-Build-Finance-Operate-Maintain
EU	European Union
PFI (PF2)	Private Finance Initiative
PPI	Private Private Initiative
PPP (3P)	Public-Private Partnership
U.S.	United States

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1. Introduction

The premises of the first chapter set a collective understanding of what is partnering, how does it differ from its sister terms and how it was developed over the years. For this report it was focused on literature review in order to collect all the necessary data and analyse it respectively. This chapter provides the reader with a sustainable presentation of reasoning about what makes partnering a popular tool of implementation within the building industry.

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1.1 Preface

This report is written with a focus on analysing possible opportunities in construction sector and how they could be implemented in an ongoing process to improve performance. Construction sector is known for not assuming leading positions within the field of innovation. Matter of fact, according to Dutch research company's KPMG global research, only around 2/3 of construction companies even use Building Information Modelling and only around 1/3 use robotics and automatization (KPMG International, 2016). When compared to neighbouring sectors, such as Manufacturing, construction sector is placed at disadvantage for not pursuing towards a constant change. Thus, construction industry experiences multiple faults for such lack of improvement speed, with some of the blame falling on participants' unwillingness to change their working methods (Babič & Rebolj, 2016).

Although there is an advancement in construction regarding usage of new technologies (Kirkpatrick, 2018), the research group believes that the issue of lagging lies within work approaches and methods instead. With this assumption in mind, it was decided to focus on analysing those methods that would demonstrate how construction processes could be improved through small alterations for the participants. In doing so, the changes should be met with lesser resistance, unlike most of the before implemented ones within the industry.

Among multiple possibilities for research, focusing on work culture and contracts seemed as a most plausible option at the time due to multiple opportunities of implementing small changes throughout the work process. Such desired changes should be barely felt in everyday work environment, but at the same time steer the projects towards more productive work in a long run. Possible areas of change could include adjustments to the contracts, work ethics, communication between participants etc.

Thus, for this report, several options were considered, and due to two contradicting opinions a clear candidate finally emerged. After a short investigation several documents were stating the opposites - Danish construction industry statistics stated an incredibly small usage of certain type of contract compared to others – partnerships (Byggefakta, 2017). However, a report about partnership usage indicated a trend growth over the past years (Dittmer, 2012). Additionally, a book about Partnerships in Western Europe showed policies of Danish government to reinforce usage of partnerships in 2004, 2006 and 2009, indicating government's interest on the matter (Krumm, 2016). Opinions became even more divided after going through a report from European Court of Auditors regarding the positive benefits together with shortcomings of partnerships in EU, showing the

opportunities available using Partnerships, yet coming with multiple downsides compared to already used methods (European Court of Auditors, 2018).

Such information led to belief that Partnership, more precisely Public-Private Partnership option has an untapped potential, but a whole change from standard contract types (such as Main, Total, etc.) to “PPP” might be too much of a leap and can prove itself disadvantageous on most of the cases. If Byggefakta statistics are right, then, even there is an incentive from government to implement more of such contracts; they are not being used as much as they could be due to various reasons of the construction industry participants (Byggefakta, 2017).

Seeing this as an opportunity, it was decided to analyse the structure of Partnership contracts, as well as their advantages and possible attributes. Some of the obtained attributes could be implemented and reused in standard contracts currently in use, this way taking “the best of the two worlds”. Such option seemed beneficial due to similar setting of contract forms and the possible positive changes to communication, risk management and project delivery stemming from small additions to standard already ongoing processes.

1.2 Partnering and partnership

"There is certainly no commonly accepted definition of partnering which is hardly surprising considering the variety of shades of partnering which exist." - (Walker, 2015)

Partnering as a term, began to be in use since 1980s. It meant a medium- or long-term relationship between two companies with common goals to achieve, e.g. increase benefits of all members of such alliance. The most often used form of partnering, at early stages of implementation, was joint ventures. It was about merging companies into one firm, in order to achieve supplementary strength (Walker, 2015). In construction industry, partnering was about setting the best conditions between involved stakeholders (parties) while working on a construction project, with a perspective to share benefits between partners. Initially, partnering agreements were established between clients and contractors only. Modern partnering agreements are also including main contractors, subcontractors, suppliers, designers, engineers, banks etc. (Walker, 2015). Over time, different types of partnering contracts were implemented, depending on who was the client, or who was financing the project. These contract types are, for instance: PFI (private finance initiative), PPP (public-private partnership), design-build-operate (DBO) and any other contract type that allows companies to establish long-term interest (Bennett & Peace, 2006).

In order to achieve long-term collaboration, which depends on common values, some fundamental aspects need to be fulfilled, such as: mutual trust to a partner, commitment, common goals, respect to each other and transparency. These conditions have to be accomplished due to a fact that partnering's main focus is oriented towards improvement of collaboration and reduction of misunderstandings. With implementation of these practices, partnering has succeeded at decreasing the rate of division between parties and expanding integration within construction industry (Walker, 2015).

However, another researcher – Mike Bresnen (2009), in his article *Living the dream? Understanding partnering as emergent practice*, emphasises that partnering should be understood as "emergent process that is not only situated in particular (local) circumstances and practices, but also actively constituted through the collective" (Bresnen, 2009).

In the analysis of practical scope of partnering, Bresnen (2009) points out, that the scope of such alliance does not have a commonly accepted definition, which perhaps, generates difficulties to other researchers aiming to unify a meaning of that activity. Bresnen (2009), by referring to numerous of other researches, took into consideration psychological, philosophical and social aspects, in order to determine a suitable explanation of a

phenomenon of partnering in the construction industry. The analysis provided with few results, one of them stating that that even though there is a collectively agreed definition, it still may differ depending on the place it is used at. The cause of that could be the cultural differences and life habits. Nevertheless, according to the researcher, a practice-based approach is the key in developing and understanding partnering movement (Bresnen, 2009).

Numerous studies point out that partnering among companies enhances work efficiency (Holti & Standing, 1996, p. 5). Although there has been much conducted research with results, many experts from building industry begun to analyse possibilities and outcomes of partnering between different nationalities and cultures. It was noticed that partnering is understood differently in national and cultural contexts. It led to conclusion that cultural and socioeconomic diversification affects development and usage of partnering (Bresnen, 2009).

Bresnen (2009) for his report's purpose, conducted several interviews about the role of partnering and involvement of employees. The reason for this was that researchers started to question variations of internal organisation, what led to discussion whether design team in a building project should be included or excluded from partnering collaboration. Conducted research showed that design teams, as well as subcontractors in turnkey contracts, are not likely to be a part of partnering. Findings presented that subcontractors question partnering collaborations because while collaboration fails, it affects the whole supply chain (Bresnen, 2009).

Towards the conclusion of Bresnen's article, partnering can be understood as a set of "best practices" in relation to location where its implemented. Moreover, partnering has been named as a "social accomplishment", which works only when internal norms of society are fulfilled. Applied practices must be sense-making to local conditions, so partnering relationship can be achieved (Bresnen, 2009).

Construction Excellence – a platform which enhances innovation and collaboration within building industry, was used as an example to give a reader better understanding of partnering from professionals' point of view. It is an organisation based in United Kingdom, with main objectives to stimulate, debate and implement change in the building sector (Construction Excellence, 2018).

According to the fact sheet submitted by CE, partnering can have various forms. One is project oriented - when a partnering has place only for a period of specific project, whereas the second form – long-term, is used for defined period of time and covers a number of different projects (Construction Excellence, 2004).

Definition of partnering has been described as “a management approach used by two or more organisations to achieve specific business objectives by maximising the effectiveness of each participant’s resources. It requires that the parties work together in an open and trusting relationship based on mutual objectives, an agreed method of problem resolution and an active search for continuous measurable improvements” (Bennett & Jayes, 1995).

Although definitions of partnering present it from a very positive perspective, it requires constant effort from establishment to maintenance, which however reflects in satisfaction of employees who experienced partnering collaborations (Construction Excellence, 2004). Despite employee development and satisfaction, partnering brings several attributes, such as:

- Technology innovation
- Better time and cost estimations
- Improvement in communication between involved parties
- Higher customer satisfaction
- Increased quality of final product, by improving “buildability” in early stages
- Etc. (Construction Excellence, 2004).

Definitions

Since researchers could not come up with one single definition for “partnering” which is broadly used in many countries, for the benefit of this report it was decided to create a vocabulary list to clarify the meanings of terms used in further chapters. Based on conducted literature review it is clear to notice that in most cases partnering is being described as collaboration between parties, but it differs in terms of conditions and behavioural aspects (Bresnen (2009); Walker (2015); Bennet & Peace (2006)).

Terms:

Partnering – a formal collaboration between two or more parties/companies for achieving specific targets with aim to maximize effectiveness and profit; used for defined period of time, mostly for the time period of a project.

Partnership – a formal agreement of collaboration between two or more parties/companies for achieving specific targets, maximizing profits and effectiveness; used for defined period of time which covers number of various projects.

Strategic partnership – a partnership with one or more companies, bounded for specific amount of time; having common objectives to enhance their businesses, mutual strategy which requires implementation of innovation.

Collaboration – entities working together towards certain common goal (Merriam-Webster, 2018).

Cooperation – individually working entities for common benefits (Merriam-Webster, 2018).

Value – according to Merriam-Webster dictionary, one of the “value” definitions, closest to the case of this report, is “relative worth, utility or importance”. Using this definition, research group defines “value” as an agreed specific project-related measurement of fair return in goods, services or money (Merriam-Webster, 2018).

1.3 Development of partnering

For many years, construction industry was torn by conflicts and factionalism from involved parties, what noticeably led to weaker performance, drastically lower profit margins and decreased morale within consultants, contractors and suppliers (Construction Industry Council, 2000). This traditional approach towards work ethics in construction industry had a framework, based on anticipated status of many trades and professions. As consultants were determined to preserve their independence, contractors were aggressively competing for work and specialists encountered difficulties in maintaining demanded level of skills and knowledge for market-driven requirement for quicker delivery and lower costs; this, however, provided no certain control or coordination (Bennett & Peace, 2006). Recognising such failures led to fixing the issues through project management practices (Bennett & Peace, 2006), and later partnering, as a management trend, was introduced to construction industry (Latham, 1994), (Bennett & Jayes, 1995).

Regarding the origins of Partnering, there seems to be a conflict within authors and literature as to what initiated it first. In their book, *Partnering in the Construction Industry*, authors J. Bennet and S. Peace suggest that *partnering grew out of revolutionary changes in other industries, notably the car industry,* while Edelman and Lancaster and other authors argue that partnering was rather developed by the United States Army Corps of Engineers at the end of the 80's (Edelman, et al., 1991) (Tvarnø, 2016). The U.S. Army corps of Engineers were the first to use partnering on two construction projects in the late 80's (Tvarnø, 2016). Until mid-nineties the term continued to develop in The States. In European market, UK was the pioneering country with introducing partnering in the early 90's. During this time, partnering and other similar forms of collaborating were used as a means to deal with lack of integration and fragmentation that plagued efforts to enhance project performance throughout the years (Bresnen & Marshall, 2000).

Collaborations between parties had to be based on trust (Hosseini, et al., 2018) and that could be done through concepts such as alliancing, integrated project delivery, joint venture, public private partnerships and partnering (Lahdenperä, 2012). However, this report will mostly focus on latter two. It also should be kept in mind, that various approaches and utilizations of the concept of partnering were developed, that picked up a spectrum of tools, techniques, attitudes and values (Bresnen & Marshall, 2000). There are also differences in contracts, that emerge in various countries: collaborative partnering contract is legally binding in Great Britain and Denmark, while it is not legally binding in the U.S., although opposing view is emerging (Tvarnø, 2016).

In Denmark the partnering term was first used in the late 90's, but it was not as effective as in the U.S. or Great Britain (Tvarnø, 2016). In 2001 in the Danish Procurement act,

partnering was mentioned in preliminary legislative work stating the intention of the Danish Public Procurement Act, which was to enhance competition in construction industry, to encourage development towards finer and cheaper construction, as well as given the opportunity for enterprises to gain benefit advantages of new forms of collaborations and to have an equal opportunities to participate in public construction projects (Tvarnø, 2016). In the 1999 The Danish government launched the Public-Private Partnership model; however, no particular actions were taken during the following years, as no financial incentives were allocated to the projects (Petersen, 2011).

Later, in 2004 the Danish Government released ten initiatives for a PPP Action Plan to support the development of PPP, and even though it seemed ambitious at the beginning, it later proved to be less serious than what it was intended to be (Petersen, 2011). However, various alliances seem to be gaining popularity in recent years (Appendix - 11.1 VAM A/S interview;11.2 ArhusVand interview).

1.4 How to set Partnering

Some literature suggests that fundamental element in ensuring that partnering process is effective lies within creating and maintaining strong teams – which means accepting management method of facilitating working together (Construction Industry Council, 2000).

Building good relationships and accepting "pain and gain sharing" mentality, companies can, through partnering, achieve a positive environment for project, together gaining success for all participants (Naoum, 2003). Literature suggest a variety of ways to establish partnering, some are rather broad while others pin to the crucial elements, however, research group came up with a list of summary objectives to setting up a partnering:

1. Commitment – there must be a commitment to partnering expressed by top management in every organization (Choquette, William H.; Gilbane Building Co., 1994). Introducing partnering within organization can be viewed as essential in creating commercial success for the company. Mike Bresnen in his paper *Living the dream? Understanding partnering as emergent practice* quotes client's Property Development Director: *You have to start […] with creating unhappiness with the status quo at the highest possible level of the organization. The best way of doing that is to demonstrate that other people can do what you're doing better than you are… because they they've got close working relationships with people, whereas we haven't…* (Bresnen, 2009). The idea is that top management initiates the change in the working culture, as many people get accustomed to certain ways of working, that might not always drive towards successful partnering (Construction Excellence, 2004).
2. Self- assessment – the company has to understand their own identity and place in the market before setting out to look for new partners (Construction Excellence, 2018).
3. Selection – naturally, it is desirable to form partnering with a company that already has achieved good working relationships (Construction Excellence, 2018). Possible candidates for partnering can come up through various sources – client's personal or business contacts, industry associates, publication from construction journals or magazines or specialized websites. A listing of potential partners can be then formulated; later inviting interested parties for one-on-one or introductory meetings to discuss the project, as well as to see their interest in collaboration (Bennett & Peace, 2006). The cornerstone to partnering is that all parties must aspire to carry out the project under partnering agreement (Choquette, William H.; Gilbane Building Co., 1994). Often selection process includes competitive tenders

to weed out parties that are unwilling to work under partnering terms (Bennett & Peace, 2006).

4. Mutual objectives – realistic, obtainable goals and clearly defined objectives have to be set upon agreement between parties in order to assure successful partnering (Construction Excellence, 2004). Partnering can change mindsets – within clear guidelines, it helps to focus on important matters of concern related to obtaining maximum project goals (Choquette, William H.; Gilbane Building Co., 1994). It is crucial to have a first partnering workshop where the agreement is achieved and all parties can settle on mutual objectives – those that specify value gained for the client and those of attributes for the partners (consultants, contractors etc.) (Bennett & Peace, 2006).
5. Problem resolution – disputes must be resolved without claims or litigation, what applies to all of team members (Choquette, William H.; Gilbane Building Co., 1994). A collective settlement system must be appointed that allows decisions to be taken quickly and efficiently. Such dispute settling system must focus on finding the most suitable solution, instead of shifting blame to other parties (Construction Excellence, 2018). When it comes to working on a project, a tool that can help in solving occurred problems could be a workshop. The idea is that after every achieved milestone a workshop should be held, during which work teams learn and understand agreed problem resolution methods (Bennett & Peace, 2006). Resolutions should have an outcome of a "win-win" atmosphere for open communication and trust (Choquette, William H.; Gilbane Building Co., 1994).
6. Continuous improvement – systematic continuous improvement probably can be referred to as one of the main success factors for partnering, that leads to increasing efficiency and gaining competitive advantage (Construction Excellence, 2018). Parties can hold a partnering workshop, during which they can agree on how they will observe and increase performance, but most importantly – what performance improvements will they make. It should be noted that before improving certain aspect or areas of needed change, those areas must be reviewed and measured (Bennett & Peace, 2006). Another good tool for improving is by using Deming's continuous improvement cycle, also known as *plan – do – check – act*. It nicely sums up before suggested ideas – planning allows to see new possibilities and plan a change; *do* is a stage during which the change is

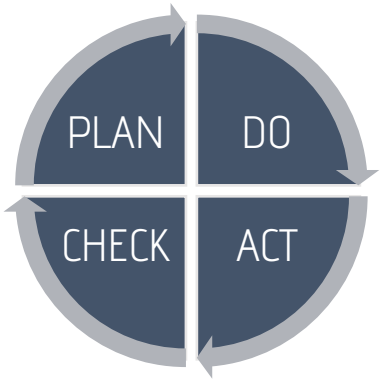

Figure 1. 1 - Deming's Continuous Improvement Cycle

tested; *check* reviews and analyses results of what was learned from the *do* phase; and finally in the *act* stage action can be taken based on what proved to be a successful plan to implement change, however, it also can be used in reviewing multiple step plans in choosing the right fit (Basu, 2004).

7. Contractual information – In Denmark, partnering tradition is heavily based on the idea that the contract is legally binding (Tvarnø, 2016). The Danish Construction Authority defines partnering as a form of collaboration in construction project that is based on dialogue, trust and transparency, within early involvement of all parties; the project is executed under a common goal formulated through joint activities and based on common economic interests (Tvarnø, 2016)

8. Risk and reward issues – quoting Karina Topp, a representative for Aarhus Vand during meeting with research group, *If we go into minus – we split it equally. If we make profit – we share it, like a cake* (Appendix - 11.2 ArhusVand interview). However, it should be kept in mind that a broad list of risks that might occur has to be identified and assessed with joint effort. Managing various types of risk should fall on work teams, that are best suited to deal with certain types of risk (Construction Excellence, 2018).

1.5 Research strategy and data collection

First chapter of the report provides an overall information about partnership and its genesis.
It is a foundation for the research group to start the research in a certain direction. However, it was decided to use qualitative research method instead. In order to obtain qualitative research, the process must involve data collection that enables the researcher to obtain information from various sources and interpret it according to its own needs (Creswell, 2009). This method is associated with inductive approach, because it refers to literature review as grounded theory, that is a necessity for a researcher to generate new theory based on collected data (Deborah, 2013).

There were few data collection methods that were implemented during the research process. It has been divided between primary and secondary data collection.
Primary data is classified as all relevant information, directly collected by the research group during any of the possible interactions with sources of such information (Martens, 2004).
To gather primary data, two interviews were held with companies, representing the client and the contractor, with the purpose of understanding the perspectives of both parties regarding their mutual partnership. These meetings played a crucial role in further development of the report. It was exactly the practical application feedback that was needed to differentiate from already available literature and to analyse how written theories are being processed and adapted in real-time. Therefore, all information obtained from interviews have an impact on the research direction, research design and finally - on problem formulation.

Interviews were conducted with all research group present, having a direct contact with the interviewee. The conducted interviews were all started as personal type and quite structured, then leading to more relaxed (Kothari, 2004), open discussion with several practical explanations. Due to such combination, it was possible to gather well thought-out answers from different parties for similar questions. Progressing further the discussion was able to become more open, what allowed to gather an even broader range of leads to be analysed later on in the report.

Interviews have also led to gathering of additional information, where a contact person, or interviewee, would provide own, practice-based opinion on certain aspects, that were not though of before the interview. Such information would include certain aspects of work approach, that were influenced by multiple behavioural (such as location, culture, company policy) factors and thus differ from original theoretical basis (Appendix - 11.1

VAM A/S interview;11.2 ArhusVand interview). This kind of spontaneous information can easily alter the report direction to more practice-based one (Saunders, et al., 2007).

Primary data collection can be supplemented with a usage of questionnaires, where certain statistics can be formulated depending on the amount and roles of the participants. This form of data collection often has it both: multiple setbacks as well as advantages. A well-done questionnaire can quickly collect vast amount of information from multiple participants, meaning that this information can often be weighted and measured. Data collection can be rapid. On other hand, poorly formulated questionnaire can easily become a burden to participants, as well as research team, when gathered information must be decoded later on (Milne, 1998).

The questionnaires were prepared regarding the experience in working with partnership and attributes of such agreements. They were sent to Stine Lajer – interviewee representing VAM A/S – a contractor company which is a member of Vand Partner. Later the questionnaire was redistributed to employees within VAM A/S. Due to possible misunderstanding or misinterpretation of formulated questions and a language barrier (Milne, 1998), the questionnaire was made in two languages – English and Danish. Nevertheless, the received amount of responses from participants of questionnaire was insufficient, thus results from this data collection method were not taken into consideration in further development of the report.

Secondary data, on the other hand, can come as raw data or information that is refined by others already, e.g. statistics, research papers, etc. (Saunders, et al., 2007).
Additional literature was used for formulating the beginning of report and expanding report ideas throughout. It also helped to strengthen the points made by the gathered primary data.

Mainly, the used secondary data in this report came as a form of literature and helped to develop deeper notion of subject by analysing and commenting it throughout the report (MacDonald, 2008). Due to its volatile nature, sources of the information cannot be controlled unlike primary data, thus in some cases this information can be seen as less biased as well as provide new point of view on already exploited subject (MacDonald, 2008).

1.6 Initial problem formulation

Partnership area is often seen as vaguely-defined due to its flexible nature. Nonetheless, it is a multicultural phenomenon showing a potential to generate higher than agreed value for all project participants, thus is worth investigating further. According to supporting literature, well-staged partnership project brings multitude of attributes of involved parties (Walker, 2015) and should be seen as a possible opportunity area for all market members, capable of meeting the needed criteria.

The meetings were conducted with interviewing a representative from both companies, private contractor and public waterworks company, which both have multiple year experience of participating in a public-private type of partnership and both were highly positive about the attributes. First company was a contractor firm VAM A/S, which left an impression that a well-functioning contract can secure a financial stability for upcoming years while the contract still lasts (Appendix - 11.1 VAM A/S interview).
Second company was a public entity Aarhus Vand, serving as a water supplier in Aarhus area; Aarhus Vand has also stated many positive aspects, such as ever decreasing pricing for contractor services while in the bond (Appendix - 11.2 ArhusVand interview).

Meetings have also backed initial analysis of literature, affirming the flexibility of partnership bond, where met companies have own, modified version of partnership. Such version differs from standard versions described in literature yet are much more niche-based and generate more positive value than a standard model would.
Important aspect for research group was the conditions surrounding such niche sector as private partnership, thus it only made sense to focus on why the sector is in such a delicate position (Appendix - 11.1 VAM A/S interview), binding only a small number of members and focusing on something else than commonly used industry's approaches. It was decided to saturate known information and focus on a particular area that has an improvement potential and possible higher positive result compared to its well-known counterparts, this way stating initial problem formulation:

How is Vandpartner's collaboration agreement functioning?

2 Interviews

Two consecutive meetings were conducted with Contractor firm and Client from Vandpartner partnership initiative respectively. Aim of the meetings was to get the participant input regarding their participation in partnership, attributes and possible issues. Both interviews were done with all research group present as well as one company representative. Information collected was documented and added to appendixes. Following is the analysis and interpretation of both meetings.

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2.1 Interview with VAM A/S

Meeting was with VAM representative Stine Hjortshøj Lajer. Main topic was regarding ongoing company's partnership with public entity, as well as company's insights on how that affects the economy and work ethics. Stine sounded highly eager and interested in the topic, often reminding that whole company is having an economically easier period, when a partnership contract is taking place.
VAM representative mentioned it is already not their first collaboration of this type and that VAM has worked in partnership contract form with Aarhus Vand two times before.

Additionally, similar contracts were done with Favrskov Forsyning, thus making VAM into an accurate information source on how a company is affected by the ongoing partnership project. Lajer lists such partnership period as having the "biggest risk on NOT getting the contract" where company would lose part on receiving a stable income for whole period. On other hand, such partnership creates high demands on the company performance, where innovation is crucial to keep up with yearly 2% reduce in funding (income for VAM) during the ongoing period (Appendix - 11.1 VAM A/S interview).

Partnering was indicated as a currently functioning niche sector, where not so many companies dare to participate due to length of the contracts, as well as possible unnecessary hustle compared to classical types of contracts. It is niche also because there is an existent entry barrier, which normally is both measurable (years of previous partnership/similar experience), and more fluid which can be seen as company's attitude in openly sharing information with partner thus avoiding/reducing chances of possible disagreements. On top of that, company's ability to participate in partnering can often stem from its strategic level, where whole company shares similar, open minded goals with reduced boundaries, which then are used as a backbone (or at least partly) to establish a new partnership thus inviting external company with different values.

When asked if whole company shares such opinion and eagerness as she does, Lajer stated that all company members are well familiar with company's policies, mission and vision. On top of that she mentioned that multiple employees would prefer to always work in partnership agreements, for these agreements allow much more comfortable and relaxed communication.

Lajer was gladly showing a booklet from an ongoing partnership project, explaining how clients have set up common values, mission and vision for whole partnership period. It was done hoping that all participants will use it as a certain common ground and basis for understanding when dealing with any issues that might arise. When disputes actually arise, they are handled through dialogue where every party is truthfully looking for best

possible outcome for all participants (Appendix - 11.1 VAM A/S interview). It seems that VAM has a strong admiration to transparent and open communication between multiple companies. VAM shows continuous interest of working in a same niche industry as their main preference.

2.2 Interview with Aarhus Vand

Meeting was with Aarhus Vand representative Karina Topp. During this meeting, the main focus was on how Aarhus Vand, as a public company, forms partnerships with private companies, what outcomes does it bring, and how Aarhus Vand, as a public body, manages such agreements. Topp shared her broad knowledge and experiences on the subject and was eager to share prepared material about partnering and news within Vandpartner (Appendix - 11.2 ArhusVand interview).

In Topp's words, partnering is a special kind of contract – made in addition to commonly used contracts that include prices and legal details. Partnering contract states how parties should work together. This contract covers how the companies, even though being competitors, develop together and share resources. Contract also includes identified goals that participants should aim towards and gain benefits if the work is done very well. In such partnering environment companies share the financial outcome – be it surplus or deficit. Any problems are found relatively easy, because, according to Topp, every involved party will start looking into problem straight away, coming up with solutions. The reasoning for that is when hours add up, cost rise, and eventually there is not much left to share. Sometimes it might mean, that contractors and consultants have to pay Aarhus Vand (Appendix - 11.2 ArhusVand interview).

Currently, Aarhus Vand has a contract with fourteen companies - three in utilities field and eleven more companies. The contract period is 6 years. The contract includes an annual reduction of 2% of amount the contractor receives. As Topp says, they are now 3 years in the contract – halfway. The criteria, set by Aarhus Vand consists of about 35 - 40% tender price, 15% is for company's' experience and expertise within innovation field, and the rest goes for overall company – do they have experience working on similar projects, are they capable to work focusing on the project in the centre. Innovation aspect includes before mentioned experience in the field, but also new methods. Karina added that Aarhus Vand is trying to improve day by day through small progress alongside large developmental jumps – solutions and methods for new technology.

Karina Topp was eager to present with catalogues and presentations for executives. This provided material allowed to better understand what vision Aarhus Vand has for its partners, and how all of them are going to achieve it. They have identified five goals, and

within every project a plan is made for where they want to improve. All of the small plans are said to be helping on reaching the goals for all involved companies. The same strategy is formed with all fourteen companies.
Aarhus Vand has 15 years of experience with Partnering contracts; throughout the years some companies remained, but also some new ones were able to enter the contract as well.

In Topp's words, it might be a little difficult to start working in such conditions – for beginners' feelings like mistrust are quite common. However, this is an environment where you also adapt quickly to it.
Another practice is meetings. On respective projects, representatives from utilities and contractors' companies meet every 3 months where they work with development plans.

Contractors meet with each other, while the same applies for utilities representatives. Developed ideas can be beneficial for other projects as well. It is usually a person from utilities company who leads the meetings. The outcome of it is an environment where you have to share your results, knowledge and something you developed. Even if a certain company is developing something in their "home" they are welcome to bring it and develop it further with the customer. Project leaders from consultant companies also aid in sharing their knowledge on the subject, and the outcome is that you get a welcoming environment for open learning and improvement. Steering group members also meet every 4 – 5 months to discuss what is next and how to develop new things or how to get better projects for cheaper price.

During the meeting, strategy plan in Aarhus Vand was also discussed. It has three main areas: growth, efficiency and innovation. Everybody in the company, according to Topp, knows about that, however, not everyone should know specific details. It is done so to avoid drowning employees in information, that is not relevant to their area, but still making sure that the main strategy direction is known to everyone. A big open area near canteen is also sometimes used for working and developing strategy with mutual efforts, and it is often that employees hear what their leaders and CEO's discuss.

Topp also provided with insights into their (and few other companies, like Grundfos and Danfos) cooperation with The United States. It is called Water Technology Alliance and the main purpose of it is to help Danish companies enter American market with lesser difficulties. A colleague, living in the states, visits utilities companies and contacts them; he also talks with them about their every-day work life and what difficulties they experience. As Denmark is very advanced with water technology, the colleague provides American companies with insights on how similar issues are solved in Denmark, and then some workshops are organized.

American companies are welcome to visit the firm in Denmark, and if they decide they want Danish solutions, they are redirected to the company that sells desired solutions. This way Danish product is exported to the USA. Similar contact is also made with some American universities, where they want to combine American solutions with the Danish ones.

One of the last discussions during the interview were about difficulties in Partnering. Probably the main issue is finding how to form a contract, how many companies are wanted in the contract and in which kind of way it is needed to work with so many people. The problem is combined different cultures and strategies into one that works for everyone. When that is sorted, the next challenge is to manage in a way that brings results – the contract alone does not bring desired outcome. All the workshops have to be planned really well, people have to be brought up together. The contracts require a lot of leadership, especially when leading that many companies.

Both VAM A/S and Aarhus Vand meetings were fruitful, providing much needed insights in an ongoing partnership project. Representatives were willing to provide a lot of information from own point of view, both seeing partnership as a benefit to the institution they represent. Vandpartner agreement seems to demand participants to fully immerse in project as well as innovate in an ongoing setting and thus providing members with individual benefits such as yearly reduction in costs (e.g. Aarhus Vand) and stable income source throughout years (e.g. VAM A/S). Based on mentioned information from interviews, it was agreed that symbiosis developed in Vandpartner agreement seems to be mutually beneficial to its participants, thus showing a positive partnership functionality. Although coming with own set of issues, partnership area seems to offer unique attributes compared to standard contracts and is worth investigating further, on which following chapters will be focused on.

3 Literature study: World Market Overview

Chapter 3 provides insights into PPP culture and practices in various countries and continents. The first part - overview of PPP markets worldwide – gives an understanding of history and applicability of PPPs used in countries similarly developed as Denmark. The second part – Case Studies – looks into implemented projects under Public-Private procurement, with purpose of extracting beneficial practises from properly executed PPP projects and to understand how these practices were established.

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Vandpartner's case study is an example of how a symbiotic partnership relationship is formed between private and public bodies in Danish market. Properly managed and further enforced by commitment of the two fronts, such collaboration produces tangible and intangible attributes. The former being respecting time constraints – delivering project within schedule and promised quality, and financial benefits – costs savings and continuous stream of income for private parties. The latter, intangible benefits, can be understood as shift in cultural mind-set: adopting practices of open communication, learning to trust your competitors, sharing knowledge and in general, to work together as a team, not as a group of people who "just have to do their work".

However, there are not many examples of case studies from Danish collaborations, so to strengthen the claim of these attributes, research group decided to analyse PPP market and case studies in countries of similar development as Denmark. The purpose of this chapter is to substantiate the findings of one example – Vandpartner case, by looking into various projects on world-wide scale and extract practices that were proven beneficial.

To do so, PPP market overview is designated to give a brief and summarized understanding on PPP culture and practices used in United Kingdom, Canada, United States of America, Australia, and the Nordic region – Norway, Sweden and Finland. Further, five case studies describe what initiatives were implemented for various projects, and how these initiatives were achieved.

3.1 PPP markets in the world: overview

As the use of Public Private Partnerships is increasing worldwide (Casady & Geddes, 2016), research group decided to briefly overview historical context and trends in leading countries in PPP market.

United Kingdom

Data about UK seems conflicting. As of input from 2015 UK PPP market was one on of the leading ones, however, recently UK PFI (now known as PF2) experienced decline (KPMG, 2015). Over two decades, spanning from 1990 to 2010, PFI deals in UK experienced growth and then plummeted: while market for it was relatively small in early 90's, it experienced significant growth towards end of millennia.

The peak, in terms of capital value and number of deals, was in 2007, afterwards it has experienced decline (HM Treasury, 2018), (European PPP Expertise Centre, 2012). However, in 2017, UK was considered as being one of the largest in Europe by the number of closed deals (European PPP Expertise Centre, 2018). As of 31st of March 2017, 715 PFI and PF2 project were documented, out of which 699 were operational and 16 were in construction (HM Treasury, 2018).

North America: Canada and USA

Canada:

Canadian use of P3s originated from the United Kingdom. In 1992, named as Private Finance Initiative (PFI), current program of P3 was first brought in. The goal of the program was to get the private companies included in the provision of public services at the levels of central government and local government. Originally, the PFI was applied to transportation related projects. From late 1980s PPP in Canada, just like in the U.S. was used mostly for building roads, bridges, tunnels, light rail systems (Zurich, 2016), but later grew into other markets, like schools and hospitals (Fussel & Beresford, 2009)

Canada experienced two waves of P3 – the first one through 1990s until early 2000s, and the second one being of the last decade (Canadian Centre for Economic Analysis, 2016). The first wave received a lot of criticism for experiencing difficulties in *transforming a good theoretical idea into practice*. None the less, responded to the critique of the first wave, last decade's P3 project enabled Canada to assume leading position globally (Canadian Centre for Economic Analysis, 2016).

As of 2012, Canada was rated as one of the leading countries in PPP projects. Led by PPP procurement agencies, provincial governments became experienced in driving their PPP programmes ahead and thus projects have hot endured the drying up of debt liquidity as

keenly as in other markets (Deloitte, 2012). Canada is very much comparable to its *Commonwealth* cousin Australia – both jurisdictions applied PPPs since early 1990's and have as well-developed comprehensive policy guidelines and legislations (Colverson & Perera, 2012). Canadian market continually delivers notable and transparent pipeline of greenfield opportunities, having also strongly supportive political environment (KPMG, 2015).

USA:

USA is notable for providing one of the largest infrastructure markets worldwide. Nearly all jurisdictions have presented with clear-cut legislation to facilitate PPP investment, with dominant focus on transport sector (KPMG, 2015).

In USA, the most common method through executing PPP are through full DBFOM (design-build-finance-operate-maintain) combination (Buckberg, et al., 2018). However, historically America was marked with various forms of PPPs throughout its time. A classic example would be as early as in 1860s, when the Transcontinental Railroad was built. The Federal government owned lands, while private company stocks were issued to fund the railroad itself. Upon completing the tracks government transferred parcel of land to private developers for further development for farmlands or towns (Norment, 2002).

After years of scarce use of P3, the pipeline of U.S. projects is experiencing growth through broad range of sectors and over 30 of the states (Buckberg, et al., 2018) . The number of P3 projects abruptly grew in 2015, and as of currently, more than 200 public infrastructure projects are in procurement under P3. Between the years 2004 – 2006 average number of P3 projects in USA was 19, comparing it to 2017, the number of P3 projects increased tenfold (Buckberg, et al., 2018).

Majority of U.S. P3 project were occupied by transportation sector, however, as of recently, transportation makes up 50% of total project, allowing other sectors to enter P3 agreements as well (Buckberg, et al., 2018).

Growth of Public Private Partnerships results out of need for it (Florey, 2013).The market is induced by three stimulants: speedy decay of almost all types of infrastructure in every state; investment shortfalls for building and rebuilding vital public systems; and a growing population's increasing burden upon existing systems (McNichol, 2013). PPPs generate new opportunities; however, it also brings new risks along. For American market, essential part lies in contractors involving skilful insurers, bonding agents and counsels to tackle potential risks in some P3s (Florey, 2013).

Australia

In the past decade, Australian PPP market has expanded significantly, while it still continues to grow. Over a decade between years 2005 to 2015, highest PPP transactions were reached in 2015 (nine transactions), bringing value of more than 12 billion dollars (EY, 2016), and the popularity is still growing (Deloitte, 2012). Participating countries in Australia's PPP market has also doubled with greatest participations from nearby countries – New Zealand, South Africa, and some Asian nations, however countries like Canada, USA, UK, Germany has also increased participation (EY, 2016).

However, it also should be noted that Australia is a huge country with just 20 million people, so in comparison to Canada and USA, Australian PPP market may seem relatively small (Deloitte, 2012). Stable PPP market was enhanced after a slight contraction in the wake of financial crisis (KPMG, 2015).

Nordic region: Norway, Sweden and Finland

In general, view towards PPP is rather sceptical in Nordic countries. Even though there are some publicly funded starter project, the PPP policies seems to not have accelerated far from the start (Krumm, 2016).

Norway:

The first Public-Private Partnership in Norway was introduced in 1998 for the application on possible pilot projects in the transportation sector (Solheim-Kile, et al., 2014). In 2001, decision to administrate three road projects as *Offentligt-Privat Samarbeid* was made (Solheim-Kile, et al., 2014) + Eriksen 2007. However, the PPP concept in Norway is not fully developed. Though there has been some projects (mainly in early 2000) related to healthcare, education, transport and defence sectors (Solheim-Kile, et al., 2014) (Weihe, et al., 2011), but none in the water sector (Pavlov, et al., 2014). Up until recently there was no official policy or legislation about Public Private Partnerships in the country (Weihe, et al., 2011), (Pavlov, et al., 2014). In February 2016, the Norwegian government has authorised a new framework for PPPs with purpose of ensuring efficient infrastructure projects (Deloitte, 2017).

Little development of PPP policies in Norway can be the result of Norway being a wealthy country, possibly, due to oil industry. Consequently, public bodies do not face difficulties in funding their development projects; and so, the Norwegian government has no need to involve private sector to participate in PPP projects. Moreover, Norway lacks experience in PPP matters (Pavlov, et al., 2014).

Sweden:

There is an opinion that due to historical political climate and fiscal situation, Sweden is not very familiar with the PPP and PPI terms (Weihe, et al., 2011), (Colverson & Perera,

2012); and is one of the lesser active users of PPP (Krumm). PPP projects are not bid at national level; however, PPP-like solutions can be suggested on a regional and local levels (The Swedish Trade and Invest Council, 2016). There are no special laws about the usage of PPP or PPI in Sweden as well (Weihe, et al., 2011).

According to more recent data, interest for use of contractual PPPs are growing at the local level, mostly for projects related to tourism and building and/or renovating sports centres, as well as activities related to industrial policy (Grossi & Reichard, 2016). Findings done by (Weihe, et al., 2011) suggests that there is activity related to PPI, but, once again, more on local and regional levels of government. A reason for that could be the fact that funds are easier accessed at local and regional authorities than from central government authorities (Weihe, et al., 2011).

In strict terms, one of few *real* PPP projects at national level in Sweden is considered the 19km high-speed railway from Arlanda airport to Stockholm, that was first agreed upon in early 1990's and was opened for usage in 1999 (Krumm, 2016). Even though the project did exhibit features of a PPP, it was still questioned for legitimacy to be called a PPP project. Formally, it looked like a formal contract between the actors with shared risk taking, but to the public it was introduced as a joint project between public and private parties, with intention to prevent notion of a PPP (Krumm, 2016).

<u>Finland:</u>

Finland has a comparably long tradition of using PPI at local and regional levels, albeit in many cases this term was not used accurately (Weihe, et al., 2011). The term is often used in a broad, rhetorical sense (Krumm, 2016). Recent government has signified partnerships as part of its innovation policies, with some existent examples of strategy papers and planned initiatives focused on promoting partnerships (Weihe, et al., 2011).

The very first Finnish project executed as PPP was realised in 1997 – the Järvenpää–Lahti motorway, opened in 1999. Later, another project in grand scale was signed at national level in 2005 – The Muurla-Lohja motorway (Krumm, 2016).

Generally, Finland is considered to be a small market for PPP projects, what could be a restraint to further realisation of PPP approach. That being said, during recent years new models of cooperation between the public and the private bodies for development of rural areas by private construction and development firms are used progressively (Krumm, 2016).

3.2 Case studies

Provided case-studies gives insights into 5 projects procured as PPP or some form of it. Each project is briefly described, but the focus is on benefits – what were the positive gains and how were they achieved.

Bridgepoint hospital redevelopment project – P3 procurement, CANADA

Among suggested attributes resulting from partnerships, timely delivery and value for money (VFM) are one of those (Bennett & Peace, 2006). This could be well illustrated with a case of Bridgepoint hospital redevelopment project. The purpose of the project was to build a new hospital that would replace an older building on the east side of Toronto's city centre. The build occupies slightly more than 63000m2, with a capital cost of 380 million USD. An alliance of several companies (further – a consortium) was selected in August 2009, and from then on, the private sector partners took over the risk of contract management (Boothe, et al., 2015). The hospital was built using DBFM method (Design – Build – Finance - Maintain), under the Government of Ontario's Alternative Finance and Procurement (AFP) model. Proper application of this model ensured the use of strengths of private sector partners in modernizing, upgrading and expanding Ontario's public infrastructure, while creating opportunities for new jobs (PCL, 2016).

The agreement with Plenary Health was to design, build finance and maintain the project (Deloitte, 2009). This included all tasks from design to maintenance (maintenance contract includes lifecycle repair and renewal for a time period of 30 years).

The payments for the project covered construction, building maintenance, lifecycle repair and renewal, and project financing. The annual payments were similar to fixed-rate mortgage, that included repair and maintenance costs. The contractual agreement of the project was structured in a way that contractor held responsibility for completing the project and on time (Boothe, et al., 2015). Moreover, the contractual setting ensured close knitted collaboration between project team and intricate network of organizations (owner, Plenary Health, various consultants, stakeholder etc) to ensure that the project milestones were met and delivered. The consortium organized regular gatherings that worked as a tool in developing strong partnerships that cultivate sharing of mutual goals, respect and collective trusts (PCL, 2016).

The project was finished on time and within the budget frame, with project risks transferred from public sector owner to the project manager (Boothe, et al., 2015). Deloitte & Touche conducted a value for money assessment and found out that there was a 10.4% costs savings in comparison to traditional delivery (Deloitte, 2009).

An essential part of the project was communication, especially regarding safety. Hiring workers from various backgrounds and different projects meant that more time was required to ensure that every person was informed and educated about safety and site practices. It was achieved through daily morning safety meetings, as well as encouraging workers to take care of each other. Lunch-and-Learn sessions were implemented twice a month to secure safety practice and increase communication on safety (PCL, 2016)

Tunstall Western Bypass, UK

Another example of project, benefiting from Partnership, is case of Tunstall Western Bypass in United Kingdom. After an open tender process for the construction for the new highway project, Staffordshire County Council entered partnering agreement with Birse Construction Ltd (Construction Industry Board (London) Working Group, 2001). Tunstall Western Bypass has all the necessary ingredients for a difficult project – contaminated soil, underpass below a busy trunk road, a canal, a railway crossing, narrow site and various structures (Potts & Ankrah, 2014). However, the highly risky project of 12 million GBP was completed 10 weeks before it was scheduled for completion. It was executed within designated budged and to the standards of agreed quality. It was achieved through development approach between the three parties: client, consultant and contractor (Bennett & Peace, 2006) .

Project started with client adopting a path for open communication, what resulted in clear brief and well-informed tenderers. One of the early innovative solution in this project was to hold a two-day team-building workshop after signing the contract. The workshop was organised for the entire project team, and the main focus of it was to challenge and change old ways of working practices, instead, introducing people for openness and cooperation (Bennett & Peace, 2006).

The obstacle in this project was how to create an environment where a mixed team of client's staff, consultant and contractor worked together on and off site to foresee and solve problems efficiently and fast. To quicker resolve problems, each staff member had a *shadow partner* – a person from opposite team with whom they directly communicate. The shadow partner was empowered to sort out the problems as soon as they occurred, and only pass it up the line if they themselves could not provide immediate solution. The goal for both parties was to make the solution for given problem as the most cost effective, unconcerned to where the responsibility was rooted (Construction Industry Board (London) Working Group, 2001).

Probably the greatest challenges and difficulties were caused by bulk earthworks for the site. The ground was assumed to be contaminated because of heavy industrial usage over the previous century. In conjunction with the Environment Agency the Engineer and the

Contractor worked together to increase the extent of earthworks to further reuse it as an acceptable fill. Later on, the Resident Engineer, Mark McCappin, admitted that this issue alone could have cost client additional 6 million GBP, also resulting in six months delays, if it was carried out under traditional adversarial manner (Potts & Ankrah, 2014). Joint problem solving, and strong risk management were the crucial factors in preventing claims possibly as high as 6 million GBP from appearing, something that would have happened in traditional contract approach. Through dispute-avoidance procedures, the client's budgetary control and contractor's cash flow were improved (Bennett & Peace, 2006).

The team had to adopt the project as a learning process and experience, and a crucial part was to continually re-evaluate the way site was run and find new ways reduce mistakes and endorse further improvement (Construction Industry Board (London) Working Group, 2001). Three months after the original partnering workshop, the team had a chance to take a day for site meeting, designated to oversee the progress and review improvement to be made (Construction Industry Board (London) Working Group, 2001).

National Museum of Australia, AUSTRALIA

A closer look could also be given to the project of National Museum of Australia (NMA), however, in this case, the contract was based on alliance, which can be viewed as an outgrow of partnering (Hauck, et al., 2004). However, much like in partnering agreements, the alliance had to lay strong foundation on mutual trust and respect, as well as requiring the involved to fully commit themselves in achieving common milestones and outcomes. Also, the alliance addressed the need for participants to embrace an 'open-book' mindset on costs, as the alliance participants shared risks and rewards (Hampson, et al., 2001). Partners for alliance were selected based on their professional competence and ability to meet rigorous performance criteria before price was considered. For successful project development, trustworthy, devoted and competent companies are crucial (Hauck, et al., 2004). It is also important to note that for the alliance to succeed, skilful management for particular risks had to be appointed. It was also especially important to estimate appropriate balance between the spirit of alliance and to also protect Commonwealth's (the project owner) financial interests (Australian National Audit Office, 2000).

Project Alliancing invited construction professionals to play different roles: instead of working under adversarial role regulated by traditional contract, business partners were encouraged to rather form a team and make decisions that would be *the best for the project*, instead of being the best for personal or organisational goals (Hampson, et al., 2001).

National Museum of Australia featured sub-alliances between steel manufacturers, glass and aluminium fabricators, landscapers, and information and audio-visual information

technology suppliers. Essential benefits included fruitful negotiations, focused on buildability and value engineering exercises and possibility to apply CAD/CAM data to fabricate for the intricate structure and building envelope. Issues like liability for interpretation of design details and workshop drawings, or inter-organizational barriers were declining when teams applied *best for the project* solution method (Hampson, et al., 2001). Over time period of the project, exceptionally high levels of communication and cooperation were achieved as all parties shared a common office space on site (Hauck, et al., 2004).

It is also important to note that due to the nature of alliance – the fact that risk and reward structure is joint, not only shared – meant that no member of alliance could succeed alone, but it also meant that failure from one party meant failure for the whole alliance. Naturally, innovation is only possible if the parties facilitate the progress with collective effort. The extent of innovation in National Museum of Australia project was very high, with pristine levels of quality. The project was also delivered with a price of 20 – 30 million CAD lower than it would have been under traditional contractual setting (Hauck, et al., 2004).

At the beginning of 2000's, project alliancing was relatively new method of contracting, but it was chosen as a means of delivering a cost-effective outcome within given time frame for the NMA project for Commonwealth, while sharing risks and rewards with contractors (Australian National Audit Office, 2000). This was also the first project of such size to be implemented using alliancing. Despite that, it seemingly delivered value not only as an architectural statement, but value through integrated team effort in achieving financial, time and quality targets in a 'no dispute' environment (Casey, 2001).

<u>Highway 4 (VT4 Järvenpää-Lahti), FINLAND</u>

Project Highway 4 was Finland's first roadway project in the country, procured as a Public Private Partnership (Finnish Transport Agency, 2013) under DBFOM model (U.S. Department of Transportation, 2017), in other sources described as carried out under the life cycle model (the service provider assumes responsibility for project financing, planning, implementation and maintenance upon agreement of approximately 15-25 years). However, the agreement is no longer valid, since the project was paid for in full (Ministry of Finance in Finland, 2016). The payment mechanism that was used, was a shadow toll payment, meaning that it was based on vehicle volumes on road segments (Finnish Transport Agency, 2013), (U.S. Department of Transportation, 2017).

The construction started in 1997. The contract period of the service contract expired in 2012, and the project received a lot of positive publicity (Lehtikankare & Nygård, 2013), and is considered a success story (Finnish Transport Agency, 2013). Construction was

scheduled to last 3 years, however, due to using PPP, it was finished after 2.5 years. Project was estimated to cost 238 million Euros but ended up costing 234 million Euros (U.S. Department of Transportation, 2017).

Successful construction phase of Highway 4 is a result of favourable circumstances, efficient organisation and good collaboration. As a solution for development in construction phase, open communication and joint problem solving are suggested in challenging situations (Finnish Transport Agency, 2013).

Operational phase of Highway 4 also received positive feedback. The highway received traffic growth, leading the PPP company to earn more revenue, out of which some was used to cover road maintenance from increased traffic (Finnish Transport Agency, 2013). The project Company took part in actively collaborating with the local authorities to stimulate the local economy (Finnish Transport Agency, 2013).It was suggested, as a developmental proposal, that the private sector and the client produce documentation, for example, on the interpretation of the payment mechanism (Finnish Transport Agency, 2013).

Regarding risk allocation, accepted practice is that it is carried by the party best suited to handle it. Highway 4 assumed traffic volume risk, which was handled by Client and Service provider with specific thresholds. Naturally, suggestions for further improvement include that risk is allocated to the ones best prepared to manage it; and matters of risk allocation should be highlighted in the procurement phase (Finnish Transport Agency, 2013)

<u>Port of Miami Tunnel (POMT), UNITED STATES OF AMERICA</u>

Port of Miami Tunnel (POMT) was built through P3 method of DBFOM (design-build-finance-operate-maintain). The owner is Florida Department of Transportation (FDOT), that worked with Miami Access Tunnel Concessionaire, the private consortium partner led by Meridiam Infrastructure (Bipartisan Policy Center, 2016). The purpose of the tunnel is to move large vehicle traffic directly from the Interstates I-95 and I-395 to the island that serves as Port of Miami, avoiding and diminishing traffic from Miami streets (Martin, 2017).

Interestingly, POMT is a result of not only public-private partnership, but public-public partnership as well. Such situation is cause due to involvement of multiple jurisdictions: The State of Florida, Miami-Dade County, the City of Miami and U.S. Department of Transportation (Parker, 2009). The risk is shared by public and private bodies, where public side bears revenue risk, the private side – financing and operations risk, with both sides sharing risk associated with the technically challenging design and construction of the

tunnel. Sharing geotechnical risk solution reduced actual availability payments by nearly 15% in comparison to initial estimation by FDOT (Dentons, 2018).
The public sector benefited, as the project, being technically difficult, prompted commercial development, decreased downtown traffic and optimized cost (Dentons, 2018).

According to operations team, one of the essential elements for positive response from users is communication and accessibility. The tunnel has a designated webpage, where an information on area traffic, lane closures, tunnel maintenance and more is offered, providing users with better tunnel experience. Information on various incident types is provided as well, such as what to do in case injury, or vehicle catching fire (Cabrera & Boroski, 2015).

Moreover, the project's partners were rather perceptive at engaging the community and transparently conveying the project's value. Partners decided to run a campaign aimed at hiring local workers from the area code around the Port facility; local Girl Scouts were engaged in a naming competition for tunnel's boring machine; and kiosk were opened to involve and educate residents about projects timeline and advantages for the region (Bipartisan Policy Center, 2016).

3.3 Subconclusion

Using PPP as a procurement method has valuable attributes, as seen in various examples of case studies. Some of the features were beneficial gains, while others were methods and practises typically considered for PPP projects. Among mentioned projects in case studies, few trends of tangible and intangible attributes were present and repeated through few projects. Tangible attributes could be value creation, project delivery on time/ahead of schedule, and project delivery within/below budget, mentioned in case studies from UK, Canada and Australia. Success of these PPP project can be a partial result from Intangible attributes – such as mutual respect and expressed commitment from project parties; workshops to increase trust, team working and collaboration. These practices were present in nearly all included cases, with exception of few – like *shadow partner* or *what is best for the project* attitude, which a different method for joint problem solving and collaboration. Given cases emphasise the need to innovate in collaboration, respect and teamworking to achieve results that would be better than under traditional procurement.

Cases from Sweden and Norway were not provided, as it was discussed PPP markets are not as developed in these countries.
Table 3.1 provides a summary of PPP markets around the world and specific attributes of partnerships from various countries. Table has been divided between described countries, market descriptions in regard to PPP and related case studies. Research group have summarised all attributes that had place in presented cases.

COUNTRY	PPP MARKET	CASE	ATTRIBUTES
UK	PPPs were practised in UK for nearly three decades, with UK being one of the leading countries in PPP market by number of projects. UK approaches PPP projects as PFI and PF2 procurement.	Tunstall Western Bypass	Successfully implemented project, with highlights in: - Project delivered ahead of schedule; - Project delivered within budget frame; - Adopted approach if holding a meeting for entire project team, to introduce people for openness, cooperation and communication; - To solve problems quicker, a method of *shadow partner* was applied; - Joint problem solving, and risk management

			prevented claims as high as 6 million GBP; - Continuous improvement was endorsed to find new ways to reduce mistakes
Canada	Canadian use of P3 originated from UK as Private Finance Initiative (PFI), which was originally applied for transportation sector. P3 market in Canada can be divided into two waves – first one (1990 - 2000) receiving a lot of criticism, and second one – (post 2000) bringing growth and success for PPP market.	Bridgepoint hospital redevelopment	Successfully implemented project, with highlights in: - Project delivered ahead of schedule - Value for money creation – savings of 10,4% comparing to traditional delivery method; project delivered within budget frame - Organised regular gathering increased sharing of mutual goals, teamworking, trust and communication.
USA	USA is often referred to as the 'ancestor' of PPP projects. Most popular method of procuring PPPs in USA is through DBFOM (design-build-finance-operate-maintain). P3 in USA had a downfall of usage in the past, however, in recent years it started experiencing growth. The dominant sector for PPPs in USA is transport sector. Nearly all jurisdictions have definitive legislation to facilitate PPP procurement.	Port of Miami Tunnel	Successfully implemented project, with highlights in: - Project prompted commercial development, decreased downtown traffic; - Local community was engaged in the process and educated about the projects; - Transparency was increased; - User-friendly webpage for the tunnel was created, providing information about traffic or information about what to do in case of accidents.
Australia	The pasted decade market significant growth for Australian PPP market, while it still continues in growing. However,	National Museum of Australia	Successfully implemented project done through alliancing, with highlights in: - Project delivered with a lower price than budgeted;

	Australia is rather small country population-wise, so in comparison to other countries, the Australian PPP market can be seen as a rather small one.		- Commitment by public and private bodies, encouraging practises of mutual trust and respect; - Making decisions based on *what's best for the project*, rather than personal motivations; - On-site shared open office spaces increased communication and cooperation
Norway	First initiatives were introduced in 1998 to possibly implement in transportation sector. Only in recent years new frameworks for PPPs were authorized by Norwegian government, with purpose of ensuring efficient infrastructure projects. Lack of interest in PPP procurement method in Norway can be a result of Norway being a wealthy country, with pubic bodies not facing difficulties in funding projects.	*--not provided*	
Sweden	Sweden is also less familiar with PPP and PPI terms, and is not an active user of such procurement. PPP-like solutions are more common at regional and local levels, where it seems to be gaining interest.	*--not provided--*	
Finland	Finland has a rather long tradition of using PPI at local and regional levels, though the usage of this term	Highway 4	Successfully implemented project, with highlights in: - Due to using PPP, the construction was finished ahead of schedule;

	is not always precise. Finland is considered a small market for PPP projects, however new models of cooperation between public and private bodies for rural area development are started to use progressively.		- Project was delivered at lower price than what was estimated; - Successful contraction phase was ensured by good collaboration and efficient organization; - Finished project brought more traffic, increasing revenue growth for the leading PPP company, that was later re-invested for road maintenance

Table 3. 1 - Summary of worldwide PPP market overview and attributes from case studies

It can be seen, that some of attributes are not present in another country's list, however, this topic is more elaborated in Chapter 8.

Summarized case examples in Table 3.1 include various practices and methods that ease the process of the project, as well as improves the project itself. Most notable improvements, resulting from partnership, are project execution within time and financial frames, or even going below the set standards. Additionally, soft-skill practices are endorsed, those would be teamworking, communication, knowledge sharing, trust building, dispute reduction and other. This chapter's literature study sets an example of what reasonable outcomes can be expected from successful partnership. An overview of such partnership projects from different contexts also gives a foundation when deciding what results and criteria companies can negotiate on before deciding to partner together.

However, looking only into successful partnership projects and collaborations will not provide with deep knowledge about the subject. Risks and negative aspects must always be considered for both: to be able to critically analyse the subject, and when making wise, favoured decisions.

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4 Problem Formulation

Usage of partnerships shows a high potential positive value if executed correctly, yet it also comes with multiple downsides that must be taken into consideration. Due to their unusual nature when comparing to more common contract work forms, partnerships require specific criteria in order to function at full capacity. Key issues for successful partnership establishment can often lie in participant mindset, company policies and governmental edicts. Nevertheless, partnership offers attributes that cannot simply be ignored and should be investigated for future usage.

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4.1 Drawbacks of partnerships

Partnerships were introduced to Denmark in the late 90's as a concept with first PPP project in 2005, but the country seems to be rather sceptical towards it (Petersen, 2011). Only a handful of partnership projects were initiated in Denmark (Tvarnø & Østergaard, 2013) (Kristiansen, 2009), what can be caused by small market (Appendix - 11.1 VAM A/S interview), as well as little determination from Danish government (Petersen, 2010) , or the fact that need for collaboration between public and private sectors is not that high (Tvarnø & Østergaard, 2013). However, partnerships suggest solutions for deep rooted issues in construction industry, namely – lesser conflicts, better communication, more innovation, mutual shared attributes (Hosseini, et al., 2018) and other, yet, there are also downsides to it.

A research by Wood and Ellis found that under the facade of partnering, traits that were associated with construction industry are still apparent and money focused agendas are still persistent (Wood & Ellis, 2005) (Gadde & Dubois, 2010). Also, partnerships demand trust and commitment, which can be difficult to achieve. For newly entered partners the requirement to collaborate is difficult to get used to and is causing mistrust (Appendix - 11.2 ArhusVand interview). Trust involves vulnerability with a belief that the organization/individual is reliable and will meet the positive expectations of its partner, rather than fears (Gad & Shane, 2014).

Establishing trust among partners in construction can be intimidating, particularly when it takes place in an environment which is bid driven, what encourages leery and mistrustful beliefs (Hansen-Addy & Nunoo, 2014). Partnerships require open communication, and an obstacle to that can occur when one partner also has to communicate with another partners' competitor (Bennett & Peace, 2006). Naturally, while some companies do not have issues with sharing their technical knowledge and methods with their partners, others may exhibit jealousy and guard their knowledge (Bresnen & Marshall, 2000). General observation about trust formed in partnerships was that it can be achieved, but it is more likely to occur on team level and on private side, but not as a result of managerial approach (Kristiansen, 2009).
Since partnering as a practice requires time for development, it is still rather in a shallow form when it comes to teams that are responsible for individual projects (Bennett & Peace, 2006). It requires nurturing for growth, so continuous effort from participants is necessary to sustain a healthy partnership (Mosey, 2009).

Ng, et al. (2002) researched partnering consequences for contractors, and one of the main problems was the client's reluctance to wholly commit for partnering agreement. Same authors also discovered that stakeholders lacked attitudes that would have otherwise

made partnering effective (Ng, et al., 2002) (Gadde & Dubois, 2010). There were also evidence indicating hesitation from clients and contractors, unwilling to be tied into a long-term reliance with particular companies. Reluctance to engage for long term partnership can also be caused by the fact that it could prevent companies from taking advantage of price competition and more beneficial contracts from different suppliers (Bresnen & Marshall, 2000).

From conducted interview with Stine Lajer, it became apparent that companies which win tenders and enter into partnership, enjoy the financial security it provides for the next few years, but the ones that do not make it for the contract, sometimes struggle to find new projects to work on (Appendix - 11.1 VAM A/S interview. Adding to that, partnerships do not grant subcontractors with many tangible attributes. Subcontractors can become prone to be bullied by main contractors, and therefore have to seek assurance that partnership can boost their chances to sustain in business (Gadde & Dubois, 2010).

Further, during an interview with Karina Topp, an issue of aligning strategy and goals was pointed out. Difficulties arise in forming a contract – mainly how to find a way to work with so many companies and how to combine different cultures in a way that could benefit everyone (Appendix - 11.2 ArhusVand interview). Construction industry has an environment in which overcoming cultural differences and developing integrated solutions can be difficult, as it can also be distinguished as “loosely connected system” where making partnerships, among other things, still faces dilemmas (Kristiansen, 2009). One of the obstacles for partnering can be described as having unbalanced levels of commitment, which can arise from fundamental diversity between various companies. Additionally, when team members go back to their old ways of working, it comes back as failure to share knowledge, discussed before (Mosey, 2009).

Another issue is that partnerships/partnering do not have a commonly accepted description (Walker, 2015). A minor deviation from traditional partnership definition can be seen in Vandpartner case as well – one of the features of PPP is the time period it is formed for, usually 20 to 30 years (Herforth, 2016), but in case for Vandpartner it is formed for 6 years for the ease of planning strategic moves in advance (Appendix - 11.1 VAM A/S interview;11.2 ArhusVand interview).

Aarseth, et al., (2012) conducted a research on case studies from Norway and Canada on partnering and found that there was confusion related to roles, structure and responsibilities of partnering process. They further connected that lacking common perception of partnering was related to many occurred challenges (Aarseth, et al., 2012). An obstacle for partnerships in Danish market can also be due to legal and political issues. Since its existence from 2005, Denmark had a partnership strategy that was relying on

legally binding rules or political strategies, and as a result lacks a market for Danish PPP projects (Tvarnø, 2016). Regulation in Denmark for partnerships was in part uneven and regulatory authorities acted slowly and expressed limited dedication towards concluding central regulatory concerns (Petersen, 2010).

Possibly internal Danish legal and political structure can be related to few infrastructures in partnerships – an example is that it is cheaper to borrow money in the public than in the private sector, what results in escalating public sector expenses for partnership project, further – positive gains from collaborations and the private competencies must be even greater to access a substantial business case (Tvarnø & Østergaard, 2013). Arguably, lack of partnership projects can rise a risk for Denmark to lose expected potential wealth, innovation and competitive advantage (Tvarnø, 2016).

4.2 Focus Area

When weighting what partnership usage brings to the industry, there seem to be multiple downsides that come with it, be it necessary additional time for adjustments for its users or lack of openness between the participants. Some things just come with own downsides and the research group has decided to focus on delving deeper into the fabric of partnerships, to understand them more and see what the construction industry can learn from such contracting type.

From now on, this report will be focused on analysing the inner works on partnerships to deduct the essentials that forms it, as well as weight which parts could be used to advance the industry as a whole. Although changes in the construction industry take time (Sears, et al., 2015), improvements in multiple work areas that companies are exposed to daily, could mean a difference between a loss and a victory. For example, loss can occur from project being over its set time and financial frames, thus leading to party disputes. On the other hand, victory can be achieved with positive turnover from the project and all parties being satisfied with the end result.
The problem formulation for this report was chosen with focus to look into existent parallel approaches. That is – through seeing how advantages of one procurement method could be extracted for reuse in other methods, without transferring the risks associated with it. Thus, the problem formulation is:

What attributes of strategic partnership can be extracted and reused by industry for future benefits?

5 Methodology

This chapter gives an overview how research group established their research process and how information were obtained. It consists of description of framework that was followed in order to answer main problem formulation. Selected research design and research methods were described, to give a reader an understanding, how research group achieved presented in next chapters results.

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Conducted exploration of a topic related to partnership, presented in this report, must be valid and reliable. Research of presented case study must therefore have a sufficient design which needs to be established and implemented. In first part of report's methodology, section 1.5, it was mentioned that a qualitative research design was chosen. It was determined by number of factors that fall under qualitative design, such as primary and secondary data collection methods.

Analysis of partnership agreement, called Vandpartner, represents a case study. Information was collected from few participants of this collaboration agreement, and based on observations and available information, it was then possible to formulate hypotheses. Vandpartner case study was selected in order to provide a better understanding of how a public-private partnership in Denmark functions. It was done by presenting it from various perspectives, namely: client, end-user and contractor. In addition, during the research process, research group have noticed that the opportunity of analysing this particular case might be an example for other companies within the construction industry on how to collaborate with each other, and to extract and transfer attributes from partnership to standard contract types.

From the very beginning of the research process, all sources of available literature were used to understand the meaning of "partnership" itself, and later it was possible to allocate the difference between "partnering" and "partnership". Number of various researchers, as stated in chapter 1 – introduction, could not agree to one common definition of "partnership". This led to creating own definitions for this report, that would be supported by sufficient number of research papers. The reason was to state a meaning for certain words, in order to avoid misunderstanding and misinterpretation by a reader. In next stages of report's development, there was a need to look deeper into formation of partnership, to give a simple overview for a reader of a what partnership is, and what criteria needs to be fulfilled to achieve such collaboration agreement between many companies.

A sentence from Kothari (2004), describing what is a research for the author, was followed. *(…) Research is, thus, an original contribution to the existing stock of knowledge. Making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment* (Kothari, 2004). Due to a fact that research group is not a group of experts within presented topic, all information was gathered by pragmatic worldview to increase report's validity - from scientific literature and from interviews where information was obtained from specialists within certain research areas. According to Creswell (2009), implementation of pragmatic worldview to a research process, allows an author to select a research method, technique and agenda based on report's purpose

(Creswell, 2009). That enabled research group to look for solution in declared problem from various perspectives and to understand the case to its full capacity.

Research in a pragmatic tradition, however, seeks to clarify meanings and looks for consequences. (…) Pragmatic choices about what to research and how to go about it, are conditioned by where we want to go in the broadest of senses - (Cherryholmes, 1992).

To increase credibility it was decided to include descriptions of conducted interviews. 2nd chapter of this report was designed with the purpose of presenting the reader with the most valuable information that was obtained in regard to the analysed partnership agreement.

The interviews were used as a research tools for collecting data from companies' representatives. In order to analyse responses from interviewees, it was assumed that each interviewee is a truth-teller and collected information is an objective data. Such interview position is regarded to neopositivism (Dumay, 2011).

Moreover, according to Dumay (2011), interviews could be classified as semi-structured, although research group had prepared questions for interviews beforehand - they were rather used as a guide. The scheme of questions was followed accordingly to predetermined questions, nevertheless it was preferred to carry an open conversation with the interviewees. By using flexible form of questioning, it was made possible to access more valuable information. According to Kvale and Krinkmann (2009), this form of interviews is the most effective when it comes to gathering information (Kvale & Brinkmann, 2009).

By proving descriptions and analysis of interviews, it was possible to answer initial problem formulation. Next stage was to provide various case studies from all over the world, to analyse, how different countries use partnership agreements, and what conditions need to be fulfilled.

Next step of research development was an argument, presenting that partnership arrangements have some disadvantages. Based on number of Danish research papers and conducted interviews, negative effects of partnership implementation could now also be stated. In addition to that, this report also states potential reasons why companies are not keen on implementing partnership. One of such reasons, for example, can be caused by difficulties in forming a contract and establishing a common strategy.

The reason was to let the reader know that the research group was aware of such conditions, yet still presenting partnership as a well-functioning arrangement between various companies.

The main research question was formulated based on partnership functionality and negative effects sections, with a focus on attributes of strategic partnership, their extraction and reuse in the construction industry. In later stages, it was decided to analyse partnership based on perspectives of the client, end-user and contractor. Thorough analysis of stated party perspectives led to pinpointing of mutual benefits that each of the involved stakeholder aims to achieve. Following, a comprehensive analysis of related aspects was formulated using conducted interviews and available literature.

A model presented by Peter E. D. Love (2004) – conceptual model of rework determinants, represents relationship between proper integration within project management and project organisation, and effects that might occur because of rework. It is stated that rework contributes to cost and time overruns (Love & Edwards, 2004).

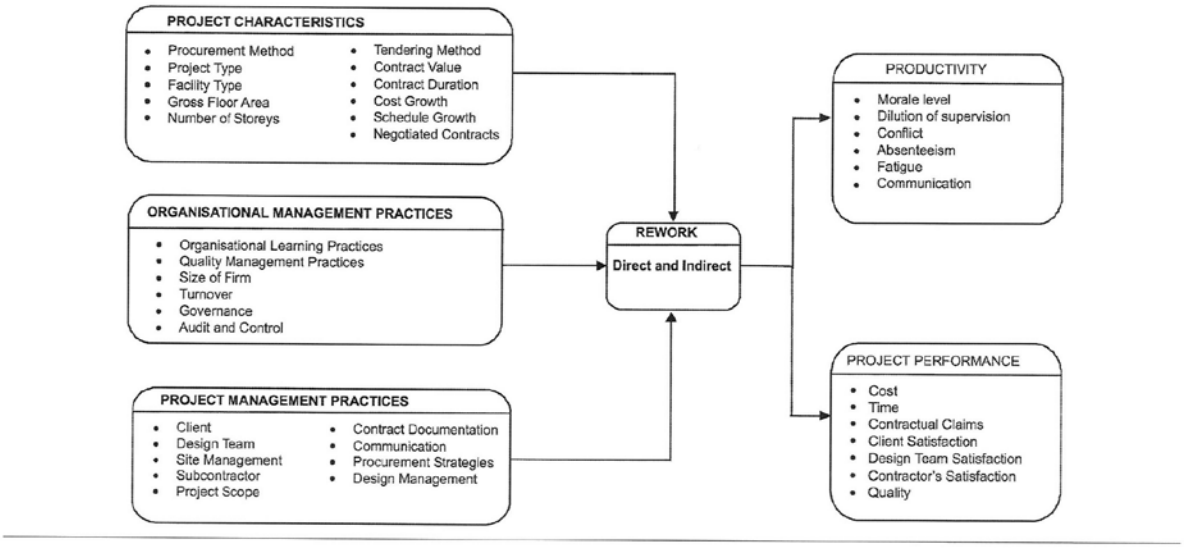

Figure 5. 1 - Conceptual model of rework determinants

Source: Love & Edwards (2004)

Presented model (figure 5.1) emphasises most of possible causes that have direct or indirect impact upon rework. Causes have been categorized in three groups. First group of determinants represents project characteristics, these are for instance: project scope, project specification, gross area and so on. Second group represents practices in organisational management. It corresponds to company's internal policy regarding quality control (Love & Edwards, 2004). According to Cusack (1992), projects where quality management was not implemented or was implemented incorrectly, reported

approximately 10% cost increase due to rework (Cusack, 1992). Third group corresponds to project management practices. In short, this group of determinants mainly reflects communication flow between all involved parties, from idea phase to handing-over. It represents how people communicate with each other and how certain interaction are taking place (Love & Edwards, 2004).

Model from Love (2004) also present effects of rework. Effects were divided into two categories: productivity and project performance. It is important to mention that rework does not only affect project economy and quality of end-product. It also affects employees' productivity by, for instance: lowering their confidence in conducted work, initiate conflicts, or increase their fatigue (Love & Edwards, 2004).

It was decided to use presented model in order to show relationship between involved parties and how they influence the project in terms of productivity and performance. Proper integration of three groups of determinants lowers the necessity of rework, thus lowers production cost and increases quality (Love & Edwards, 2004).

Nevertheless, the main focus in this model is on practices in project management. Therefore, in chapter 6 – perspectives, it was reflected on practices that client, contractor and end-user implement in a partnership agreement and how they collaborate with other parties. These practices create value for participants of partnership agreements, thus they were considered as attributes.

Under the assumption, that a part of conceptual model of rework determinants, created by Love (2004), regarding project management practices, can be used as a work ethics guide showing a map of good practices, which implemented correctly can create value and empower collaboration within construction industry.

The conclusion of different perspectives analysis was of finding aspects that directly influence partnership functionality and can be reused in the industry.
These essential elements for successful collaboration, were explained in next stage of a report. Two aspects were decided to be focused on: innovation and communication, giving the reader a possibility to understand foundations of Vandpartners functionality. Moreover, explanation of mentioned attributes also provides the implementation scheme for the organisation. It is done, due to a fact, that correct model integration influences productivity and project performance.

6 Perspectives

The main objective of this chapter is to present a reader with attributes that come from partnering. Described advantages are divided according to involved parties, in this case from: client, contractor and end-user perspectives. The aim by such division was to analyse available literature, evaluate conducted meetings and to find an explanation, why companies join partnership agreements. All of the participants have own needs and varying ways of dealing with situations, thus enabling a constant search for compromises during the period of works.

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6.1 Client's perspective

Every construction project, no matter the complexity, can be looked at from a holistic perspective, allowing to oversee the big picture without unnecessary details. Such approach is directly used by majority of clients, who are in need to know the development in regards of several factors. These factors normally are referred to the "project management triangle" or "iron triangle". Triangle represents three key aspects that are relevant to every project: cost, time and human resources (Kousholt, 2012).

Each project faces threats that must be avoided in order to achieve well-made end-product. These threats are: **communication** that might affect time, **risks** that might affect overall cost, and procurement affecting **human resources**, meaning to make right decision when, for example, preparing bid, selecting supplier, etc. (Kousholt, 2012). Implementation of "iron triangle" to the management process shows that independent parts of project might influence each other (Morris & Sember, 2008), and therefore, looking from client's perspective resolving these aspects can make partnership more efficient (Wood & Ellis, 2005); (Gadde & Dubois, 2010).

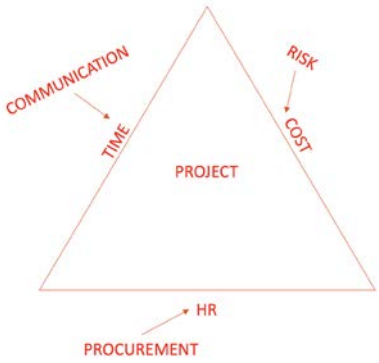

Figure 6. 1 - Project management triangle

Source: (Kousholt, 2012).

Human Resources

In strategic partnership the client's responsibility is not only to select designers, consultants and contractors, but to establish and develop "high-quality project team" (Bayramoglu, 2001) (Nevstad, et al., 2018). Project team is going to collaborate with other parties and will be involved in every decision throughout the whole partnership period. Members of project team must have an understanding of upcoming project, as well as possess knowledge about industry and financial aspects (Bennett & Peace, 2006).

In terms of client selecting partners for the project, partnership differs from traditional procurement. Originally partnership focuses on generating value for money and the lowest final cost (Bennett & Peace, 2006). Client decides whom to invite into partnership based on specific qualitative criteria, for example: experience with partnering projects and innovation level. Because partnership is a long-term commitment, the cost of contract is assessed based on life-cycle rather than initial estimations (Nevstad, et al., 2018). Clients who decided to use partnering approach, often prefer to interview partners beforehand to get information about factors like: capability, previous experience in similar partnerships, expectations and so on. Nevertheless, when a client is a public entity, it is mandatory to carry a competitive tender (Herforth, 2016), to find a long-term partner. In

this case, all mentioned criteria must be included in tender documents (Nevstad, et al., 2018) (Appendix - 11.2 ArhusVand interview).

Communication

One of the fundamental elements of partnership is communication. It is based on an open dialog between involved parties, so that problems and arising risks can be identified at the early stages (Bennett & Peace, 2006). Appropriate methods of communication are essential in decision making and problem solving. They allow project teams to increase the work performance, what leads to increase in quality of an end-product. It is important for the core team to provide all partners with communication system that ensures everyone gets information they need at the time they need it (Bennett & Peace, 2006). However, a communication system is not enough to establish information sharing system between partners.

In order to achieve great level of information sharing between partners, a client should provide workshops for all involved parties. Partnerships workshops enhance open and effective communication in-between partners. During the workshops client, together with the rest of the partners, is able to shape inputs which might be **performance improvement** methods, outputs which represent **mutual goals** and all processes that are needed to achieve successful partnership, for instance **decision-making** scheme (Bennett & Peace, 2006).

It is a clients' responsibility to encourage partners to work together and create work environment based on honest discussion. Therefore, workshops are focused on teamwork collaborations because they are essential in partnerships. Discussions of potential problems and risks may allow participants to find opportunities to solve it in an extraordinary way. The aim of workshops is to build confidence among participants, and to show that is easier to achieve success by joint work (Bennett & Peace, 2006).

Another key aspect for successful partnership based on communication is to obtain an agreement on mutual objectives to all partners (Clarke, 2012). Mutual objectives and a scheme for decision making improves project efficiency (Bennett & Peace, 2006). Nevertheless, from client's perspective, one of the objectives might be to receive the project done in higher quality, or to increase customer service, etc. This discussion takes place during workshop and it covers topics about project economy, life-cycle and maintenance issues (Bennett & Peace, 2006).

Through close communication and establishing mutually agreeable goals at the beginning of the project, outstanding results can be achieved (…) – William H. Choquette

According to results from questionnaires (Annex - 12.1 Factors for successful partnering), sent to clients, contractors and suppliers, effective communication has been rated as second most important aspect which cause partnership a successful collaboration method. Responders also pointed a mutual trust, management commitment and aligned decisions to stated objectives as crucial factors (Black, et al., 2000).
Nevertheless, questionnaires showed that mutual trust is the key aspect. However, trust is a requirement that people involved into partnership must develop and use during the project. It forces them to be honest and act in good faith to each other, so the other person can rely on them, especially when it comes to business actions (Bennett & Peace, 2006).

Collaboration with various partners can cause disputes. Therefore, client's project team should have a dispute resolution procedure that encourages solving problems and misunderstandings at the same level as they appeared (Clarke, 2012) (Choquette, 1994). It allows decision to be made quickly, so it does not affect the project. Partnership approach encourages a fair dispute resolution by collective trust and advanced communication techniques (Bayramoglu, 2001) (Nevstad, et al., 2018).

Risk

Risk is an aspect that cannot be neglected. Client who enters strategic partnership can achieve multiple attributes from proper risk management, such as cost and time improvement. It is done by constant communication between partners, but also by project teams that are concentrated on locating and eliminating possible problems. Close collaboration allows to finish project faster because unnecessary activities are reduced, what leads to cut on costs. According to Lewis' study, implementation of partnership increases margins, lowers costs and improves quality of end-product (Lewis, 1995). Risk management has a great impact in this success. Due to fast risk identification and allocation, partnership may bring mutual attributes to all participants (Bennett & Peace, 2006) (Choquette, 1994). Nevertheless, project risk has to be shared equally between all parties throughout partnership period. It is stated that sharing risk between parties is a significant benefit of partnership (Hameed & Abbott, 2017). It is suggested to divide responsibilities according to work arrangements. Reduction of construction related risk allows client to obtain the project with savings on cost and time, whereas partners can still get a higher profit (Nevstad, et al., 2018) (Bayramoglu, 2001).

Using partnership is a very convenient solution for a client regarding economy. It can be observed from early stages of a project. Involvement of all partners from design phase allows client to save up money by reducing unnecessary and costly design. It also enhances innovative solutions and reduces unforeseen risk in later stages of a project (Bayramoglu, 2001).

Aarhus Vand Perspective

Arhus Vand is one of the construction clients in Vandpartner partnership. As mentioned in section 2.2 Interview with Aarhus Vand, research group had an opportunity to conduct an interview and obtain information about such collaboration method.
Based on literature which describes clients' perspective, their involvement and management methods, it was decided to compare this perspective to a real-life situation, to get an overview of how strategic partnership is established and what criteria needs to be fulfilled.

Arhus Vand has been in partnership agreement for the last 15 years, and for that time, they learned how to collaborate and treat partners. It was mentioned during the interview, that one of the challenging barriers Vandpartner's group has for new entrants is the relevant experience in similar partnerships (Appendix - 11.2 ArhusVand interview).
Thus, since Arhus Vand is a public entity, during tender competition specific selection criteria is stated, namely: price, innovation technology and previous partnership experience. It is important for a client to have knowledge about previous experience of their partners, so it is easier do develop a plan of collaboration and to set mutual goals. During partner selection process Arhus Vand presents competitors with the expectations and level of involvement into the project, so clients' goals and objectives are clear from the very beginning (Appendix - 11.2 ArhusVand interview).

A partnership of fourteen different entities is not an easy task to manage. To better manage this, Arhus Vand, together with other clients, have developed a common strategy for all project participants. This strategy focuses on areas that need development. These are: climate change, IT support, technology and efficiency (Aarhus Vand, 2017). As extracted from interview context, client has to take care of every aspect in implementing strategy.

Client is responsible for analysing how partners are behaving and collaborating with each other. One of the implemented methods are the innovation group meetings once in every 6 weeks where representatives from consultants and contractors are discussing the structure of upcoming works, concepts and innovation methods (Appendix - 11.2 ArhusVand interview). It can be said, that client forces partners to communicate and share trade secrets.
"(…) even though they are competitors, they have to make development plans for us so that we can go from our mission to the vision" – Karina Topp (Appendix - 11.2 ArhusVand interview).

Another method of making sure that partnership is bringing mutual benefits for all its participants are workshops, organised by the client, where participants are facing

challenges that force them to develop new methods of solving problems (Appendix - 11.2 ArhusVand interview). These methods are supporting statements regarding the importance of communication between partners and what attributes does it bring, which were already mentioned at the beginning of this chapter.

There are several attributes a client of strategic partnership aims to achieve, all of which can be reached only if open communication, trust, transparency and mutual objectives are established. Clients' main objectives in partnership are to reduce cost of projects, continuously improve quality, develop optimised business model for all participants, establish innovated working culture and to provide good customer service (Aarhus Vand, 2017).

6.2 Contractor Perspective

Introduction

Contractors in construction industry are the main work performers, often regarded as those, who "get things done". This comes with own benefits and issues, and if not properly managed, contractor role can turn into a gamble. Prosperity of the contractor company is reached with experience, when right measures are taken in order to reduce risks, increase productivity, avoid unnecessary tasks and time/material waste and so on (Schleifer, et al., 2014).

In order to sustain the company, contractor party often has to leverage on possible losses and profits. All of that has to be done whilst following the tree major functions it has to do – getting the contracts (e.g. winning tenders), doing the work (producing projects satisfactory to agreed boundaries, such as cost and time) and managing the business (e.g. managing overall business income versus expenses, being on a lookout for new work opportunities) (Schleifer, et al., 2014).

Over time contractor role in construction has become more and more demanding, when it comes to adaptability and thinking ahead. Prosperous contractors must be ready for the unknown, for there are just too many variables, that can affect the project both - internally and externally (Schleifer, et al., 2014). Depending on the contract type, contractor might need to adjust or even rethink own approach and methods, so as not to lose profit (Bennett & Peace, 2006).

Due to volatile nature of projects performed, contractor priorities are often shifting from case to case, in order to reach the best agreed results. Managing risks becomes a real challenge depending on scale and complexity of the project (Nicholas & Steyn, 2008).

In modern time construction contractors have to undertake an immense complexity when it comes to delivering a project. To make a construction project requires an in-depth understanding of multiple trades and how does each individual trade approach challenges. Due to multiple party involvement, proper management has to be attained in order to successfully manage all available resources (Bennett & Peace, 2006), as well as risks (Peckiene, et al., 2013). When it comes to partnership or similar to it agreements, contractor side has to pay careful attention on how involved parties are splitting the risks and possible downsides, not only possible profit at the end of the project(s).

Role in Partnerships

The whole idea of contractor participating in partnership often can be seen as a search of "Surplus Value" which is term in current case describing additional returns from project, that would not happen if usage of partnership would not be present (Klijn & Teisman, 2005) (Huxham, 2000).5

Contractor perspective, out of three mentioned parties, is often seen as most demanding and ever-changing when it comes to partnering. With every new project, new estimations and preparations must be made, what leads to usage of available resources in a different way than previous times (Nicholas & Steyn, 2008). Such need to reorganize keeps contractors on a competitive edge, where if they would always do same without any advancement, another competitor would get the contract for the work.

On the other hand, multiple regulations and demands that stem from government, laws and even the client must be met in order to successfully deliver the project (Herforth, 2016).By having a prepared time buffer for any possible delays, organizing and thinking ahead to prevent possible setbacks makes it possible to avoid wasting additional resources (Chen, et al., 2016). Such delicate position requires well planned approach where all the involved knows precisely what must be done regarding the time and needed collaboration with others when there is a need to share working space (Su & Cai, 2014).

Additionally, more experienced developers/clients would mainly hire specialized contractors who excel at the small area they work in, understand all the intricacies of the matter and know the most optimal way to approach it. Such areas might include specific soil works, hospitals, stadiums, roads and so on (Bennett & Peace, 2006). This way expectation to establish project partnering, which could later transcend into strategic partnering emerges. To establish strategic partnering would mean to create a collaborative bond between two or more companies for a longer period of time, often lasting over the span of several projects (Bennett, 1998). Such opportunity for contractor would mean steady stream of income over prolonged period of time thus reducing the need of resource wastage in participation of new competitions, tender preparation etc. (Bergere, 2016) (Iyer, et al., 2008).
In order to receive the partnering contract, contractors often have to take on additional conditions varying from contract to contract (e.g. collaborating with competitors) in order to get the spot in the project (Appendix - 11.2 ArhusVand interview).
Such delicate choice often has to be made, because partnership agreements are bringing a period of certain income to contractors' company, which often can help with planning, as well as thinking ahead for the company and its future works (Hosseini, et al., 2016). At the end of the day, it is important that all sides in partnership are satisfied with contract conditions and are willing to provide with what is expected from them. Trust can often be seen more important than the contract, of course this is a case in well-functioning contracts (Bennett & Peace, 2006).

A well-functioning partnership example would mean all parties having well-informed representatives and giving input towards the success of the project (Kalousdian, 2006). That can be reached in multiple ways, such as training participants, prior to beginning of

the project, on how to get most out of partnership. It can also come naturally (often bit less effective) when involved parties already know each other and have worked together before (Wandahl, et al., 2011). No matter the way, in order for partnership to function as it should, parties have to be familiarized with each other and ready to work together in a more intimate setting than normal contracts allow (Cornea & Cornea, 2012) (Appendix - 11.1 VAM A/S interview).

Such both party-satisfying relationship can span over long periods of time, where C. Greve and N. Ejersbo examine an ongoing case of public-private partnership in Denmark. Partnership is between Falck, and multiple public bodies renting company's services. Over a span of 100 years Falck went from a small, family owned company renting services regarding fire-fighting and ambulances to an international business currently listed on stock exchange (Greve & Ejersbo, 2005). This analysed case points into an establishment of symbiosis where service seeking party, client, would receive a satisfying quality services and hired party, contractor, would have a steady stream of income throughout multiple years. Looking from contractors' perspective, named symbiosis was profitable enough and served as a cornerstone to grow the company from local to well-established international one (Greve & Ejersbo, 2005).

Depending on the solution originality, contractor can become an active participant in innovation process, often with design party or in some cases even most of the partnership parties present. If the design solution ended up deviating from standardized ones, there will be a need to adapt to changes with all expertise available, thus creating an original design (Klijn & Teisman, 2005) (Koppenjan & Klijn, 2004). Such options might become viable due to innovation in the industry, clients' wishes or ever-changing trends and so forth. Often such opportunity might lead to development of ideas that would simply not be feasible in different type of contract form (Klijn & Teisman, 2005).

Difficulties of Partnership

Due to an incredible amount of public-private partnership types and variations, it can be difficult to define it. Thus, it has to be precisely narrowed down for each specific case, so contract is made with concrete statements of what is expected from the participants. Contract has to be made keeping the overall quality of project as well as satisfaction of participants in mind, thus should be crafted accordingly (Evans & Bowman, 2005). Poorly defined contract can lead to misunderstandings and base of arguing, disputes and so on.

As a very first barrier that contractor is exposed to in regards of partnerships is the tender itself. Tenders for such type of work often require related experience and, of course, the more the better (Cartlidge, 2006). This creates an entrance barrier for any new companies or ones with no such experience. Additionally, participants are expected to be ready for

close collaboration and information sharing, whereas most of the industry is not used to sharing own expertise with competitors etc. (Greve & Ejersbo, 2005).

Depending on partnership agreement, parties might end up with multiple downsides from own standard work approach models due to, for example, the need to allocate resources, provide additional training and similar (Thomas & Thomas, 2005). Partnering can often involve additional costs, that might occur for refining the team that will undertake the whole period as the dedicated team. It is often formed from several partnering companies, or each company having own sub teams that bond into one during meetings. (Thomas & Thomas, 2005).

The attributes of such prolonged communication often are balanced out by the disadvantages that come along with this initiative – the processes can become lengthy and more complex, relationships might not be so well incorporated depending on a scale of the partnership (Kaufman, 2011).

According to Denmark-based research (Dittmer & Christiansen, 2012), PPP market is not yet well developed to have a sufficient number of participants, even though researched cases show positivity. As Dittmer and Christiansen are writing, it is not only the authorities, but even not enough of suppliers who would be willing to participate in such contract due to risks. In order for contractors to establish themselves in partnership-based business, there has to be growth in this market area, so any uncertainties can be lowered.

As following VAM perspective states, market seems to still be a small niche compared to its documented potential. Further growth will require attracting interest from all involved parties, as well as point them towards possible attributes of such collaboration method. Public bodies, such as United Nations, agree on usefulness of partnership, yet see multiple risks that need to be identified for further development of partnerships (Jomo, et al., 2016). These changes in upcoming years will have direct impact on how Danish contracting companies will be perceiving the partnership market.

VAM Perspective

During the meeting, VAM representative was positively affirming the ongoing partnership for its multiple benefits, including collaboration quality, innovation, forecasted income and even more pleasant work environment in-house. Out of all mentioned, two attributes stood up the most – chance to work together with same partners for prolonged periods and constant income stream (Appendix - 11.1 VAM A/S interview). Prolonged collaboration periods (compared to standard contracts) allow to assimilate and form new bonds, reducing all unnecessary clutter between the participants. Such method leads to improved communication and information sharing with fewer errors along the way due to

strengthened ties between the partners as well as the tailored (experience-based) methods of communication between the participants (Kaufman, 2011).
A stable stream of income during contract period means less of a need to look for new contracts, and company's resources can be allocated towards a focused objective for a long run. In such manner, an actual need to maintain partnering, as a form of symbiotic relationship arises (Bennett & Peace, 2006).

Company has also experienced an intense need to win, where representative explained that there are not as many projects of such kind that would be ongoing. Thus, the loss of tender would mean a need for more manhours in the company to update all strategic plans for upcoming years and for company to recalibrate for standard projects. The biggest risk named was "NOT to get the contract" (Appendix - 11.1 VAM A/S interview). Such statement can also be seen from statistical point of view, where according to (Byggefakta, 2017) report, partnering contracts have the lowest popularity among all of the contract forms. That aside, Danish market is well-familiar with partnering and often have its elements together with a different contract form, thus possibly not being listed in Byggefakta statistic. Such contract deviations be seen as ways of adapting at least parts of partnership practices (Koch & Buser, 2006).

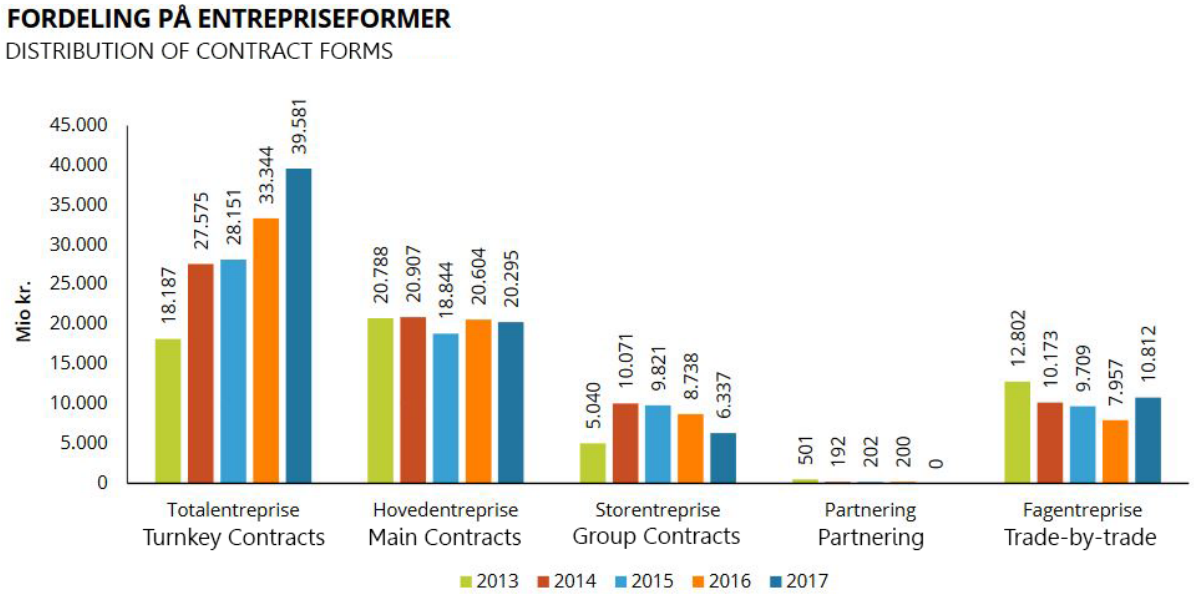

Figure 6. 2 - Byggefakta 2013-2017 Reported Statistics of Contract Forms

Having a content yearly reduction of income by 2%, company has to use all the known tools at its disposal in order to make profit and keep all parties satisfied with results. VAM representative named innovation among "hardcore" internal factors, that are focused on in order to combat the mentioned yearly reduction (Appendix - 11.1 VAM A/S interview). Such yearly reduction is forced upon by the client in hopes to cut on costs as well as to foster innovation in an ongoing, long-term project. Additionally, conditions for innovation

are fostered by establishing an information sharing environment, where a need to share information with colleges (in current case is forced upon contractors by clients (Appendix - 11.1 VAM A/S interview)) arises (Saha & Banerjee, 2015).

As stated during interview, a lot is based on trust, when it comes to partnership agreement in focus. A difference between producing highest possible quality while fitting in boundaries of all constraints often becomes possible only when all participants are not only open to each other, but embrace knowledge and experience sharing across the table (Appendix - 11.1 VAM A/S interview). Such trust often appears over a span of long talks, and exposure of working together. As representative is stating, there is no point in "being trapped" in a contract for multiple years which does not even bring profit to the participant. Thus, all disputes and issues are being solved through long meetings where only satisfactory outcome means that all participants win. Such straightforward approach does not deny conflict, as a matter of fact, such practice embraces disputes as a way of forming long lasting bonds and understanding. An approach like this can be seen in various industries, as well as in multicultural environment-based partnerships (Friedman & Arieli, 2011).

Focus Areas

Contractor perspective is mainly focused on delivering the agreed product, while meeting the strictly stated agreed constraints (time, economy etc.). In partnerships, much of the upcoming risks are shared between all participants, requiring more communication and information sharing to occur (Calabrese, 2008). Due to need of increasing performance and lowering any unnecessary waste, contractors find a need to take on any available opportunity to do so. That can include information sharing, bonding with other parties, that normally would be just possible one-time partners (Kaufman, 2011) and so on.

Well established communication between parties during construction projects have shown to have an elevated positive impact on the project compared to counterparts without such attributes (Nicholas & Steyn, 2008), (Dainty, et al., 2006). Additionally, such opportunity is bound to be seized by experienced contractors, who are looking for ways to cut on costs and maximize profit. Multiple cases where partnerships experienced failure due to lack of such communication are documented in case studies from all over the world documented by multiple reports, including one by The World Bank (Calabrese, 2008).

Another aspect, which has a direct impact on contractor party, is the innovation, and how well contractors can adapt and perform in each new project. Innovation can often be regarded as an edge, separating best of the field from mediocre ones, and it is due to innovation that technologies, materials and approaches change to fit in with the times, being more reliable, durable or adaptable (Rumane, 2018), (Akintoye, et al., 2012).

Innovation in the current Vandpartners case is also something that is expected from all participating contractors due to yearly reduction of their pay, while still expecting same performance and results (Appendix - 11.1 VAM A/S interview;11.2 ArhusVand interview).Innovations in projects often leave an impact, which can be an enhancement of one or more of finished project's factors (e.g. end-price increase for buildings with innovative design) (Nicholas & Steyn, 2008).

Such innovation is needed to both fit in with ever tight governmental budget and for contractor companies to push forward, utilizing any possible edge they can get from experience, construction industry or even parallel industries (Orstavik, et al., 2015).

6.3 End-user's perspective

Within traditional public procurement, end-user have been mostly regarded as the receiving party of created value (Torvinen & Ulkuniemi, 2016). In the case of this report, the end-user is a term used for municipalities of Odder, Favrskov and Aarhus (Vandpartner, 2017) and its residents, as well as businesses that will benefit of Vandpartner project.
There is no sufficient way of collecting information from municipality (or its members) regarding their perspective on such partnering, or what they expect out of it, but that can be done through looking at Vandpartner's Vision statements, process and approach to projects, as well as relying on existing literature for similar cases.

End-user expectations
The interests of users in Public Private Partnerships include few main factors: 1) users can access information about PPP projects and have the ability to participate in decision making during the project; 2) users can receive public facilities and services at reasonable prices; 3) users can access high-quality public facilities and services (Zheng, et al., 2018).
Primary needs of end user can be defined as: water that is safe to consume and lower price for water, secondary needs can be innovative technological solutions, as they can bring positive results in before mentioned primary needs.

Danish Water Sector Act (Vandesktorloven) Chapter 1 Paragraph 1 states that The Act shall contribute to ensuring a high quality of water and waste water supply of high health and environmental quality, which takes into account supply security and nature and is operated in an efficient manner that is transparent to the consumers (Vandsektorloven, 2009). Denmark is a country that made many advances in the field of water technologies and created clever solutions for supplying not only population, but industry and farming as well, with clean and safe groundwater (Copenhagen Cleantech Cluster, 2012). The issue of having **water that is safe for consumption** will probably always be relevant for end-user, as in 2016 two companies had to issue a recommendation to their customers to boil the water because microbiological parameters were surpassed (DANVA, 2017). Vandpartner states its mission to make sure that water and drainage systems operate to the satisfaction and health of citizens, as well as benefits the environment now and in the future (Aarhus Vand, 2017).
Innovation in technology and procedures contributes in saving time and money and providing with cleaner water with less waste. Documented Drinking Water Safety (DDWS) found a pattern in the biological properties in the new pipes. Having the elements that have influence upon it under control, microbiological drinking water parameters are restrained, what, in cooperation with utility companies protects ownership and ultimately supplies with cleaner water in the new pipes (Aarhus Vand, 2017).

Having clean water in pipes is essential for consumers safety, and new methods of cleaning it secures it. As time passes, pipelines get loaded with various deposits and bio-film remnants, what is expensive, and in some cases – difficult to clean out (Vandpartner , 2017). Vandpartner, EnviDan and Aarhus Vand tested a new approach for purifying pipes – by pouring slush ice into it (Vandpartner , 2017). The solution disappears after exiting the pipes, while picking up the sediments along, and is affecting customers much less (Vandpartner , 2017). Many of water utility companies start using advanced technology and modernising waterworks design, as these are crucial factors in ensuring reliable water supply (Hvilshøj & Klee, 2013). Generating new ideas through workshops builds foundation for developing new efficient methods of executing works with less costs and better quality (Topp, 2018), what ultimately results in creating value for customer.

Another interest for the customer is a **lower price of water**, which is varying through Denmark. Often asked question is "What does the price of water include?"; and the answer to that is – groundwater protection, abstraction and treatment, as well as distributing water from waterworks to consumers (DANVA, 2017). Wastewater bill consists of operation and maintenance, renovation and development of sewers, along with operation and inspection of wastewater treatment plants, that ensure the water fulfils requirements before it is discharged for recipients (DANVA, 2017). Technology is a catalyst in lowering water prices in Denmark, as can be seen from example of Danish water technology caching eye of foreign countries, like USA, what leads to exporting Danish knowledge abroad (DANVA, 2017) (Topp, 2018) and developing new methods in energy consumption what already contributed to Aarhus Vand lowering tariffs in 2017 (DANVA, 2017).

Importance of user involvement in PPP projects

(Torvinen & Ulkuniemi, 2016) suggest that end-user involvement in public procurement isn't just a subsequent process of resolving and satisfying users' needs, but rather a *"continuous set of actions that aim to expand the role of service end-users by binding them in the value adding process as co-creators of value".*

End users have the power to heavily impact the success of PPP projects, as a successful PPP project depends on the satisfaction of the end user (Yuan, et al., 2010). The users of PPP project should be the focal point in discussions regarding the public services, as the user participation in PPP mechanism is likely to improve various areas of the project (Cartlidge, 2006). That includes building trust, that can be achieved through open lines for communication between citizens and public service providers. It could also help in improving responsiveness in advancing the project for service users (Cartlidge, 2006). On the other hand, refusing to acknowledge end-user importance may be a pretext for opposition to the project (Zheng, et al., 2018). Early noticing user requirements and needs,

guides procurement initiative towards greater usability, efficiency and innovation possibilities (Satish & Shah, 2009).

It should be noted that too often the needs and wishes of end-users are forgotten in PPP projects, what might cause developing solutions that are not fulfilling the service demand by users, and, ultimately, producing financial losses for procurer and supplier (Torvinen & Ulkuniemi, 2016). However, citizens have limited opportunity to get involved in PPP projects due to ruling restrictions for tendering process (Nederhand & Klijn, 2016). Users could help innovating creative ideas for projects, as well as influencing other users in positive direction or decreasing public opposition (Bovaird & Loeffler, 2012). Little interaction with end-user type of stakeholders occurs because tendering and negotiation process is very much restricted to public and private parties, since information is confidential and are not available for public viewing (Nederhand & Klijn, 2016). After the tendering is concluded, the essence of PPP project is already somewhat determined, and involvement from end-user brings little change (Verweij, 2015) (Nederhand & Klijn, 2016).

All involved parties, be it client, contractor or end user, have own agendas and areas of interest when it comes to work agreement. If the partnership setting is formed correctly, all participating parties should end up benefitting from the agreement and all would get what they initially were aiming for. Due to existing common goal, all participants need to develop a strong bond when it comes to communication and information sharing. Additionally, existing budget constrains often force the innovative process to take place. However, such setting requires multitude of criteria to be filled and establish untraditional bonds, such as trust. Due to varying agendas, involved parties have to foster multiple traits in-depth, which sometimes can be avoided on more common contract work types.

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7 Explanation

Partnerships are often more complex than the standard contract counterparts due to their extended length, which calls for additional measures ensuring the success. One of the best examples of such measures is facilitation of innovation pushing participants to combine knowledge and strive for the best available result, this way developing new solutions for increased work value. Additionally, in order for successful partnership to take place, all participating parties have to be well aware of all the pitfalls and think ahead how to avoid them. Most often the strongest prevention method is clear and well-established communication and information sharing, allowing expertise of all participants to be used correctly and on the right time.

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7.1 Innovation as benefit of partnership

Analysed partnership of Vandpartners is characterised with multiple attributes and few cautions likewise. Nevertheless, it was stated that innovation brings mutual value to all participants (Appendix - 11.2 ArhusVand interview. According to conducted analysis from chapter 6, innovation has been classified as a benefit and therefore, research group decided to analyse how innovation is implemented and how it affects collaboration within partners.
Innovation can be understood in multiple different ways, depending on scope of activity or research field (Pellicer, et al., 2017). When talking about innovation within building industry, it is defined as development of new ideas in regard to products, services or processes, that enables organisation to increase their efficiency and competitiveness (Pellicer, et al., 2017) (Gibbons, et al., 1994).

Arhus Vand as a client of partnership has dictated some criteria that future partners must fulfil before entering into agreement. 15% of prequalified criteria correlates to the experience in innovation culture and methods of promoting it (Appendix - 11.2 ArhusVand interview).It is determined by willingness to continually improve, as well as current economic factors. So, in order to obtain positive results, Arhus Vand needs to grow and become more efficient with a meaning to develop new products or new methods of work. In other words, Arhus Vand is obligated to innovate (Appendix - 11.2 ArhusVand interview).
During interview, Karina Topp – Head of Innovation in Arhus Vand, explained why innovation has such great impact upon partnership organisation. First of all, is it related to economy.

According to current situation in Danish market, water prices are decreasing, therefore by finding new ways of working, or by developing new products, Arhus Vand is able to provide water in acceptable price. Secondly, innovation is a part of company's strategy, but also a part of whole partnership strategy. Management of fourteen partners with whom Arhus Vand collaborates, has been moved towards strategic collaboration, therefore all participants have a common strategy. In this case it is climate, IT, technology and efficiency (Appendix - 11.2 ArhusVand interview).
Nevertheless, innovation is being introduced to a partner already during tender procedures.

Vandpartners have developed 6-step innovation process where it is described how to develop new ideas, implement and test them.
Innovation as a process takes place during workshops, usually every 6 weeks, where an innovation group (representatives from consultants, contractors) sits down and discusses

new working methods or products. Due to a fact that a client cuts off 2% annually from contract price, partners are obligated to reconsider current methods, disregard unnecessary activities and introduce new technologies to their portfolio (Appendix - 11.2 ArhusVand interview).Despite willingness to innovate and frequent meetings, involved partners must establish a sufficient level of trust and communication exchange, so to innovate effectively (Whyte & Sexton, 2011) (Orstavik, et al., 2015).

Models

Academic literature differentiates four main types of innovation. These types are categorised according to innovations' purpose. Each type is characterised with specific field of interest, as well as criteria that must be fulfilled before it can be considered as innovation (Stampfl, 2016).

First one, *product innovation* is related to improvement of already existing product or provided services. Second, *process innovation* is oriented towards growth of production by increase of efficiency. Third, *market innovation* represents identification and development of already existing markets. Fourth, *organisational innovation* relates to managerial changes (OECD, 2005).

According to OECD (2005), *product innovation* development is characterised by two distinguished categories: introduction to new product or improvement of already existing one. New products (goods or services) are identified as these which were never produced before, new to the market, with specific intension of use. Nonetheless, implementation of minor changes to already existing product, such as improvement of technical specification, is also a product innovation. Special insight of product innovation should be oriented towards services. In regard to efficiency, *product innovation* might also influence improvement of existing services, however adding new features might reflect in creating brand-new service.

An important aspect of product innovation is design. Nevertheless, design itself does not affect functionality or intended use of product, therefore it is not considered as product innovation, but marketing innovation instead (OECD, 2005).

Process innovation might reflect opportunity to decrease production or delivery costs, and to increase quality of product. Production involves usage of specific tools, methods, software and hardware. Therefore, production improvement, in terms of process innovation, means, for instance, implementation of new automation equipment used at production line. Delivery, on the other hand, can be improved by logistic organisation within company. Newest techniques, such as product-tracking system could enhance time of delivery. Despite possibility of improvement within production and delivery area, process innovation also relies to purchasing, bookkeeping and maintenance. Hence,

communication and information technology implementation are expected to increase efficiency and quality (OECD, 2005).

Marketing's innovation main focus is to fulfil customers demand, developing new markets or reallocating position of product on the market to increase its sales. To be able to talk about marketing innovation, company needs to use new marketing method previously not used by any other firm. Such method might be a marketing concept or a new strategy. Marketing innovation might affect product design, placement, promotion and price. Taking these methods into consideration helps to shape the strategy according to firm's needs (OECD, 2005).

Lastly, *organisational innovation* relates, in general, to lower all costs that are related to company's administration and supplies and to increase job satisfaction. To innovate an organisation, company needs to implement sufficient method, that has not been used before by this company. Organisational innovation is a managerial strategic decision. Such innovation affects business practices, which are for instance, implementation of practices to improve internal communication and sharing knowledge within company. It may also affect workplace organisation by changing current decision-making scheme into new model, that restructures chain of command and division of work within employees. Yet, another aspect – external relation- might be enhanced by organisation innovation. External relation is a method of organising new types of collaboration. It is used to establish relation with new subcontractors, suppliers or manufacturers (OECD, 2005).

Although described four types of innovation have been commonly used in academic literature, some innovation consultants "invented" new models, which can be assigned to the same categories as already introduced. An example might be company "Doblin" which reinvented standard innovation types and created ten types of this process instead (Keeley, et al., 2013). Research group decided to present development of existing innovation types in a table 7.1, where the division by year and by author is emphasised. This table, however, focuses on presenting innovation types and their equivalent from the same category, but reinvented by another author. Table 7.1 points out differences and similarities between standard academic-referred innovation types to two other innovation consultants who reinvented these ideas.

Innovation classification		
Academic literature	Doblin	Sniukas
(OECD, 2005)	(Keeley, et al., 2013)	(Sniukas, 2014)
- Product innovation	- Product Performance Innovation - Product System Innovation	- Product & Service Innovation
- Process innovation	- Process Innovation	- Operational Innovation
- Marketing innovation	- Profit Model Innovation - Service Innovation - Channel Innovation - Brand Innovation	- Strategic Innovation
- Organisational innovation	- Network Innovation - Structure Innovation	- Management Innovation

Table 7. 1 - Innovation classification

Inspired by Table 4, (Stampfl, 2016).

It can be noticed that Doblin's innovation types are based on OECD (2005) models and are more detailed when it comes to specific fields. Doblin, however, has rearranged innovation models' organisation by categorizing them according to their purpose. There are ten types of innovation models, which are resembled in accordance to previously stated academic literature categories. Keeley, et al. (2013), however, have them classified in three groups: configuration, which represents innovations involved in internal work of organisation; offering, innovation models which focus on organisation's main product or service; experience, innovation models concentrated on customer (Keeley, et al., 2013).

Figure 7. 1 - Doblin's ten innovation types

Source: (Keeley, et al., 2013)

Concerning ten types of innovation models presented by Keeley, et al (2013), the established opinion was that, on one hand, it is a great approach to have them categorized in such a manner. It is clear to see which model is responsible for innovation in certain

area. On the other hand, organisation which would decide to use Doblin's ten innovation models, according to research group, should have strong management, that would integrate innovation in sufficient way, without neglecting any model. This would not create benefit for organisation in comparison to models presented by OECD (2005).

Another researcher, Marc Sniukas (2014) in his publication has presented models closely related to OECD (2005). From the first impression it seemed that the nature of these models did not differ at all - they were simply named differently.
"*The trend towards introducing new types of innovation in managerial practice might lead to confusion and partly overlapping terms*" - (Stampfl, 2016).
Nevertheless, Sniukas (2014) divided innovation types according to company's strategy (mission/vision). As shown at figure 7.2, he categorised them based on its purpose, so first diversification is based on internal or external innovation efforts. Second focuses on "the way" how innovative company wants to be, either to have continuous or discontinuous innovation (Sniukas, 2014).

Internal innovation, in contradiction to the external, is characterised with innovation process within an organisation, for instance, changing production process to increase efficiency. External, on the other hand, affects end-product, what means releasing a brand-new product, service or system to meet customers' evolving needs (Thenhaus, 2014).
However, the main difference between continuous and discontinuous innovation is that, the first one focuses on improvement of already existing product by applying small changes, without affecting customers habits, whereas discontinuous innovation constitutes to new-to-the-world products (Tidd, 2006) (Stampfl, 2016).

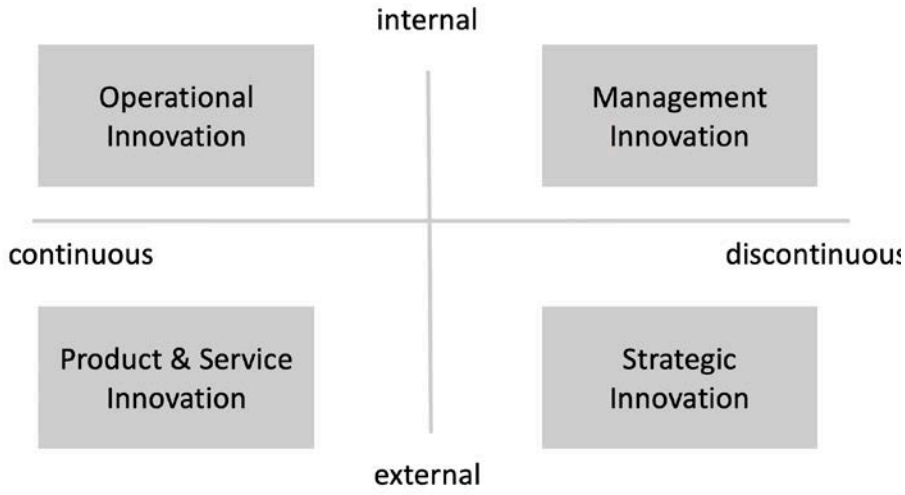

Figure 7. 2 - The Innovation Map: 4 prototypal innovation types

Source: (Sniukas, 2014)

Models, initially presented by OECD (2005) and later by Sniukas (2014), were seen as closely related to partnership agreements. Each model is characterised with certain properties that all together can create fully-functioning, successful partnership. Depending on role in partnership, specific model can be implemented. *Process/operational innovation* is defined as technological improvement of manufacturing or production process (Sniukas, 2014), by lowering production costs due to, for instance implementation ICT tools (OECD, 2005). Thus, it can be used by contractors, who are involved in in-situ works. Innovation in this sphere might increase efficiency and effectiveness of conducted works. Increasing efficiency and effectiveness within partnership has a significant meaning for all involved parties, due to created mutual value for all participants (Aarhus Vand, 2017).

Product/Product & Service innovation indicates enhancement of already existing product or service or introducing new product to the market (OECD, 2005). In regard to partnership, this type of innovation might have notable purpose. Based on Arhus Vand partnership where client cuts off contract price by 2% annually, and by that forces partners to innovate, product innovation is an essential model. Contractors and all the other involved parties during workshops, are able to enhance already existing solutions to conduct work or build up new tools that enable them to catch up changing contract price and still be efficient (Appendix - 11.2 ArhusVand interview).

Organisational/Management innovation is an internal process that aims towards the improvement of administration work and form of organisation, as well as to lower administration costs (Stampfl, 2016). Implementation of this innovation type helps to enhance practices of exchanging information within company, but also to establish new types of collaboration (OECD, 2005). Organisational innovation shall be implemented by every involved party, which participates in partnership. Possible outcome of that innovation model might be an advancement in organizational goals, lower internal costs, but also stronger collaboration bonds between participants (Stampfl, 2016). Nevertheless, such innovation model is a strategic decision which might influence whole chain of command (OECD, 2005), therefore it is recommended to have it implemented before partnership is set up.

Marketing/Strategic innovation focuses on development of new strategy model in order to increase growth and generate value for customer and organisation (Govindarajan & Trimble, 2012). Regarding partnership, chosen strategy has to reflect company's and all partners' objectives and mutual goals. Nevertheless, development of strategic innovation within partnership can be defined as "repeated interactions between firms as the people they employ learn to cooperate" - (Bennett & Peace, 2006). This innovation type is an essential key element of partnership, because it involves strategy into the whole

partnership. It also enhances feedback loop to improve organisation's performance (OECD, 2005).

Integration

Process of implementation models into organisation is in most cases a multiphase activity, therefore, it requires an integration model to carry it in structured and standardized way (Stampfl, 2016). Multiple literature sources questions whether standardization has positive effects on innovation process, because on one hand, it forces the process to have structured approach, and in early stages it might affect it with limitation for inventiveness (Verworn & Herstatt, 2007) (Stampfl, 2016). Whereas on the other hand, having innovation process standardized allows company to achieve competitiveness much faster, based on previous experience, for instance, implementation of Six Sigma (Wright, et al., 2011).

The most common process of integration innovation model is a *Linear process*, shown on figure 7.3. It consists of few phases such as: search, selection, implementation and capture (Tidd & Bessant, 2009). Despite its popularity and simplicity, it was used only for *product innovation* (Stampfl, 2016). Each stage of this process requires that the user decision either to "go or kill" to be able to move to the next phase. Such strict procedure might cause delays in product delivery (Cooper, 2008) (Stampfl, 2016), therefore this model has been updated in later stages by iterative elements.

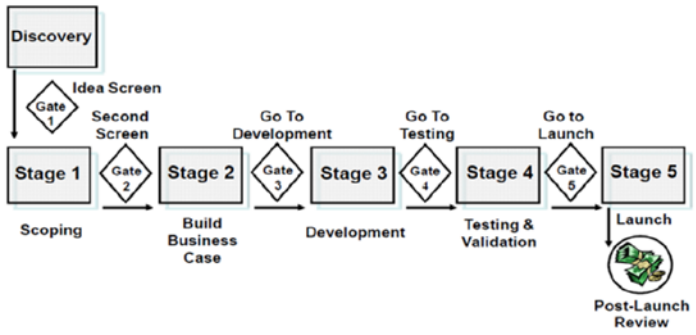

Figure 7. 3 - Cooper's Stage-Gate Model

Source: (Stampfl, 2016).

The other view concerning innovation process has been presented in *iterative model*, which is a non-linear model of interdependent stages (Stampfl, 2016). Main characteristic of *iterative innovation process* is the sequence which is independent from the phases (Koen, et al., 2001), whereas the main difference between iterative and linear is possibility of overlapping and repeating phases (Stampfl, 2016). One of the examples of iterative process is *New Concept Development Model (NCDM)* invented by Koen (2001).

Koen, et al (2001) describes it as circular model representing repeated opportunity to every phase. It consists of the engine, which reflects organisation within company –

leadership, culture and strategy of the firm. That might be represented by an executive-level management board. Strategy or leadership culture directly influences five key elements inside the circle. Five elements of process development (idea genesis, idea selection, concept development, opportunity identification and opportunity analysis) are controlled by executives throughout the process. The Influencing factors that are seen placed outside. They represent external factors affecting organisation and whole innovation process. These might be for instance: legislations, customers, politics, or economy (Koen, et al., 2001).

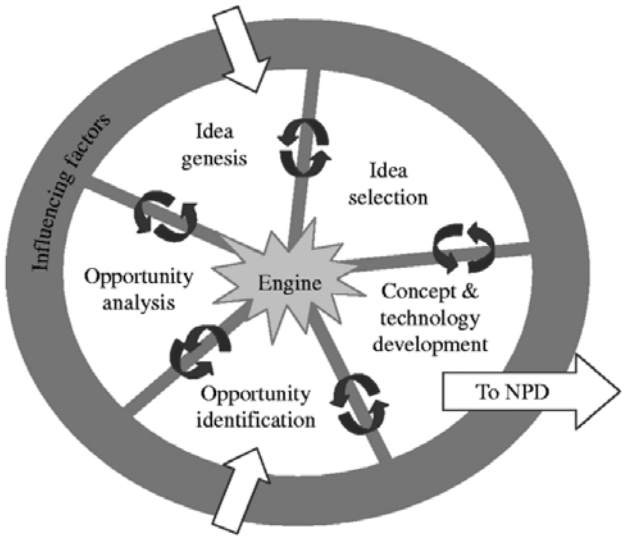

Figure 7. 4 - New Concept Development Model

Source: (Koen, et al., 2001)

As presented on figure 6.4, arrows which are oriented towards the circle indicate where the idea development starts, that is either opportunity identification or idea genesis. After the process is completed, concept leaves the model to the next stage – NPD (*New product development process)* (Koen, et al., 2001).

Circular shape of model proposes that the original idea is supposed to flow and iterate within five elements of development (Dewulf, 2013). Idea flow may surround the element as many times as needed, at any order as necessary. However, continuous, repetitive actions concerning one idea development increase overall project cycle time and cost, therefore well-established business plan empowers management to avoid such actions (Koen, et al., 2001).

However, over years these models have developed and many business researchers have agreed that based on innovation cycle models it is possible to distinguish two new approaches, these are: *customer development* and *lean startup* (Blank , 2006) (Stampfl, 2016).

Customer development is characterized with innovation avoidance when there is no need to implement that (Blank , 2006). It was initially designed as addition to *product development process.* Blank (2006) created four steps oriented towards the customer and the company. Two steps covered potential investigation of identification customer groups and defining their needs and expectations toward product. Whereas, the other two steps focused on actions that company needs to take in order to meet customer wishes and prepare to potential growth (Blank , 2006). Nevertheless, customer development does not

directly rely on partnership, because the main area of customer development is realization of customer needs. On the other hand, in partnership customer needs are clearly defined in a contract.

Lean start-up can be regarded as a methodology favouring more intuitive methods of business planning as experimentation, customer feedback loop (Maurya, 2012) and iterative design over more conservative and traditional methods, e.g. careful planning (Blank, 2013). According to researchers, Mueller and Thoring (2012), lean startup's main benefit is ability to test assumptions on possible inquiries or solutions in early stage of innovation process, before the product is built (Mueller & Thoring, 2012).
This methodology favours growth of new ventures endorsing them to fail quickly and learn from the mistakes. Lean method is based on three key principles:

1. Creation of business model canvas (which is a light alternative to standard business plan)
2. Customer development (as a way to focus on profitable areas while avoiding possible loss areas)
3. Agile development (while working closely with customer development, it aims to presuppose customer needs and reduce any wastage as time and resources) (Blank, 2013).

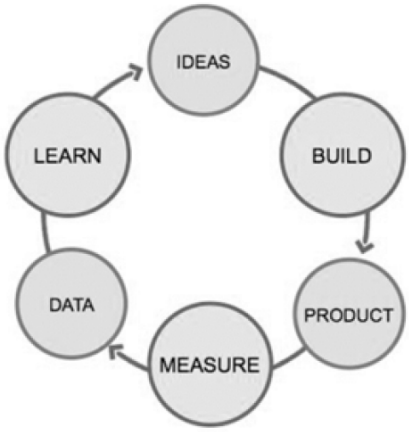

Figure 7. 5 - Build-Measure - Learn Cycle by Eric Ries

Source: (Ries, 2011)

Discussed and elaborated innovation models show multitude of aspects that have potential to be partially implemented in partnerships. Each model represents properties that might affect partnership collaboration and enhance its effectiveness by creating value to the client, partners and customers. However, to use innovation model accordingly, a proper integration must take place. Prolonged duration of partnerships gives enough time to use extracted benefits from the lean start-up kit. Initially lean start-up methodology was designed for companies in their early development stages, because of its simple and universal way of work (Ries, 2011). In research group's opinion, a great example of that would be possible usage of Build-Measure-Learn Cycle (Figure 7.5) to implement innovation models within partnership.

7.2 Communication

This subchapter explores possible communication model adaptations that could be used to benefit construction industry, referring to both already used models and modifications to fit construction sector. Model emphasis is laid towards partnership and its attributes that could be expanded to more inclusive usage all around the industry. Communication, when well-integrated, goes together with innovation, allowing participants to find more reliable, cheaper or faster alternatives to already existing methods, as well as it helps to improve the working environment (Orstavik, et al., 2015).

Well-established communication between partnership participants can as well be referred to as a stem from which all agreements and common ground rules are formed. Communication, among other few cornerstones, is one of the main needs for partnership to be fruitful and successful (Emmitt & Gorse, 2003). It is needed to manage the change inside of both, the participant companies and partnership itself, establishing and achieving coordinated and agreed goals, as well as keeping participants motivated and heard, so no ideas come to waste (Dainty, et al., 2006).

Due to existing complexity in construction industry case, communication can often play even more critical role, where multiple party involvement often can be regarded as multiple perspectives with own agendas (Emmitt & Gorse, 2003). For this case it is necessary to establish a clear path for the project as well as the members involved on how the communication will take place and what are the most effective ways to do so. Such path often is created employing communication models as sets of rules, to guide participants throughout work period (Emmitt & Gorse, 2003).

Models

Although loosely defined, in the shortest terms communication often is regarded as means for information transferring from the transmitting person to the receiver, where receiver can successfully understand the message (Torrington, et al., 2008). Models in such case will be the means on how the information will be transferred and how clearly it will be perceived and understood (Dainty, et al., 2006). Following are the positively perceived and relevant models in todays' construction industry.

Communication as a linear process

Linear process communication model is by far one of the most simplified explanations of communication chain. Its origins date back to works of Shannon and Weaver, where its developed versions are shown in as early as 1949 (Shannon & Weaver, 1949), later to be expanded on by Emmitt and Gorse whilst already focusing on construction background (Gorse & Emmitt, 2003). As seen in figure 7.6, model is developed in regards of

communication using electronic systems, as often is the main case, for face-to-face meetings may not happen on day to day basis. This model is for a simple, one-way information transmission.

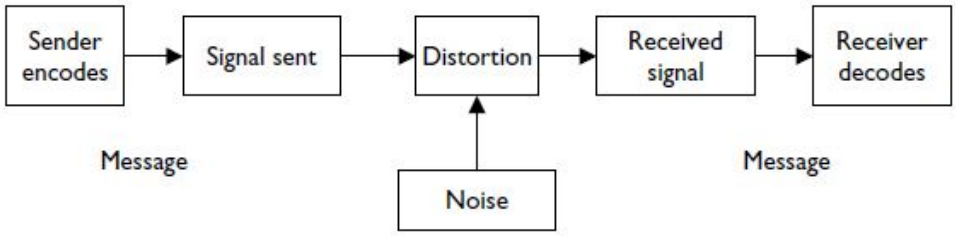

Figure 7. 6 - Linear Communication Process Model- Dainty et al. (2006)

Model, in its purest form, can be perceived as information transmitting from the original source to the target receiver, where first encodes the message, ensuring that it is stated in understandable terms for the receiver at the end of an established channel. Such messages tend to be affected by the "noise". Noise, according to (Dainty, et al., 2006), is an "important part of process that can impair the transmission" leading to irregularities and distortion when comparing message sent by the sender, encoding the message to the receiver, decoding it. Linear communication, often seen as transmission model, or just Shannon and Weaver model is a common ground, on which later communication advances have developed.

It was developed in early times, where main distance communication method were phones, not allowing additional intricacies which are available in face-to-face communication and thus prone to be misinterpreted. There is much unused potential with the model, e.g. ignoring the fact that most communication is potentially a continuous two-way instead of just a one-way communication (Dainty, et al., 2006).

Usage of such model in partnerships is often overshadowed by upcoming models, for its linear information transfer only allows one-way message sending. Partnership utilizes multidisciplinary environment to get constant input and feedback from different participants, thus only giving information might lead to losses of opportunities (Dainty, et al., 2006). Such approach is, however, beneficial on certain occasions, when there is a quick need to transfer updates without the need of another party to respond.

Transactional Model of Communication

Following the linear model is transactional one, that builds on previous one, adding more complexity and more flexibility. Originally developed by Paul Watzlawick (Watzlawick, et al., 1967) and Dean C. Barnlund (Barnlund, 1962); (Barnlund, 1968), the model has more emphasis on continuous interaction from both parties, that as Watzlawick stated, never stops. Model then was weighted and adjusted over and over going to Phillip Baguley's model (Baguley, 1994).

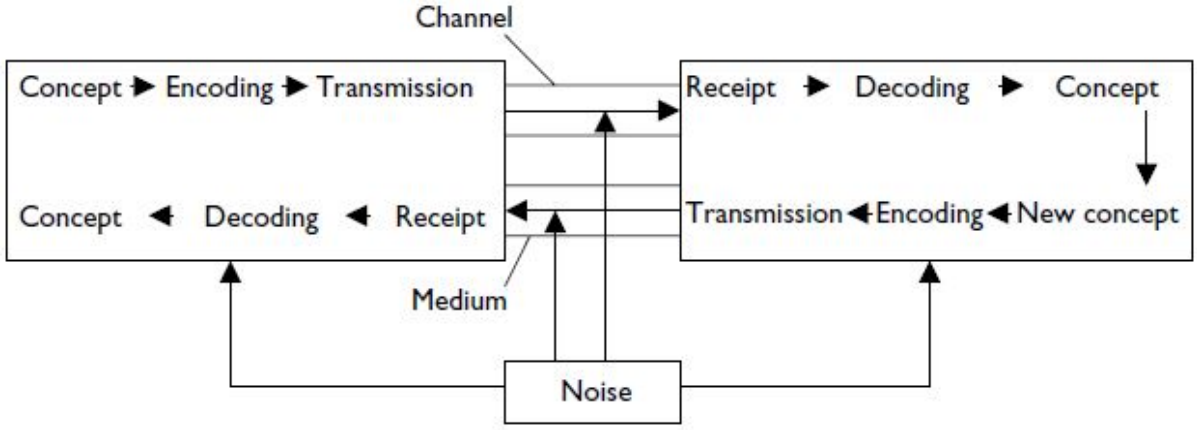

Figure 7. 7 - Transactional Communication Process. Based on Baguley (1994) from Dainty (2006)

Figure 7.7 shows a communication process that functions as a loop of both parties being senders and receivers of information. Naming list of functions stays same as in figure 7.6, except for an additional name of Medium, referring to means of transferring information from the sender to the receiver and so forth. Expected feedback in this form of communication would be not only a mere acknowledgement of received information but a formulated message going back from the receiver (Dainty, et al., 2006).

This model also includes more intricacies of information distribution and sharing, where much more than just a verbal or a text form of message can be transferred. This type of model allows sub-textual messages, such as manner of speech, response times, reactions to information etc. be received and interpreted during the exchange. However, due to additional factors to take into consideration, depending on used medium, noise can play an important role, lowering the impact of message or distorting parts of it (Dainty, et al., 2006).

Transactional model, as an example of two-way communication can be often seen when discussion is present. Thus, it actively fits with partnership setting, especially in construction projects with multidisciplinary participants. Utilizing this model allows to have quick feedback on new suggestions this way improving the quality of final ideas and reducing the risk of failures (Dainty, et al., 2006).

Both linear and transactional models can be regarded as informational approaches of communication, where the main goal of communication is to transfer information from the sender to the receiver. However, the ongoing development and complexity of communication requires to explain the following – constitutive model, as a counterpart to information transferring, constitutive model is argued to transfer much more than just an information block or information exchange.

Constitutive Model of Communication

Constitutive Model, unlike its counterpart informational approach, is used as a social practice to construct, maintain, continue to develop and modify the meanings used by the communicators. Its author argues that it is exactly the communication that shapes all practices of everyday life surrounding us. Constitutive model can be arguably regarded as a metamodel in communication, and other models can be formulated in already set boundaries where new and already existent theories can be refined and work together (Craig, 1999). In later years, Craig expands on his ideas writing a reflective work, arguing the growth in popularity of the model and its criticisms (Craig, 2009) following with multitude of citations in communication related research and further analyses (Manning, 2014).

The model presents communication as a driving force in ever developing human perception of surroundings. It states that ideas between multiple participants are refined through ongoing communication, by taking an unrefined one and sculpting it. Manning further argues that methods of communicating stem from already known set of traditions and approaches, which further expands on the need of adapting a constantly expanding, all-inclusive way of perceiving communication (Manning, 2014).

Constitutive model's strengths are utilized when communication becomes more complex, e.g. long-term partnership contract between multiple participating companies with varying agendas, experience and approaches. Whereas information sharing model would mean that every single interaction during a long-time span of partnership would only be information exchange. With Constitutive model, the length would lead to clearer and more refined communication over time due to participants' familiarity with each other, as well as developed relations. Every negotiation, disagreement, agreement or just a small talk will have a lingering impact that can be identified as much more than just an exchange of information (Manning & Kunkel, 2014).

Multitude of factors, like ethnicity, experience, worldview etc. play an important role in how information is shared and received, and complex situations often leave information sharing models as insufficient for such task. Constitutive model is used for taking human factor into consideration where even a different perception of gestures and way of communication can leave participants misunderstanding each other (Craig, 2007).

Constitutive model, when regarded as metamodel, shares a communication theory across multiple traditions, dictating how different communication types are identified and specified according to type of contact they create (Annex - 12.2 Constitutive Communication). Constitutive Communication Tradition table is taken from (Manning, 2014). Different deducted traditions, such as rhetorical or semiotic etc. have own set types

of communication occurrences, e.g. semiotic is mediation using signs to share information and so on. Each having own specifications and each having attributes when used in right circumstances, as author explains it (Manning, 2014).

Constitutive model, as an alternative to more widely known linear and transactional models, might by far be most beneficial to long-term communication agreements like partnerships. Communication in partnership changes over time due to prolonged relationship and exposure to its participants, creating less rigid commuting manner, allowing understanding of another party to develop (Manning, 2014).

Social Capital

When dealing with partnerships, another important term to take into consideration is social capital. Social capital is described as an investment in social relations with expectance of returns, as stated in "Social Capital" by (Lin, 2003). In various literature there is a multitude of descriptions for it, each arguing for own merits, one of most agreed things is the factor of profit for group or individual from taking a part in it. Social Capital utilizes attributes of networks and connection establishment, where individual can receive needed help from others due to existent formed relations or mutual connections (Lin, 2003).

Social Capital as a concept is made out of three main parts, each playing a critical part in explanation of this theory. These parts respectfully are **resources**, **hierarchy** (networks) and **homophily**, as described by (Lin, 2003).

Resources – these are material or otherwise goods, desired by the individual. Depending on different social group or community they will have different values for different individuals.

Hierarchy – the structure of network in which the individual is involved or related to in any of the ways. Can vary from network of friends to actual hierarchical dominance of organization or country and so forth.

Homophily – the relation or sentiment towards other individual(s) in said network. It can vary from a love interest to friend, to subordinate to a nemesis.

Following this theory, industries are being constantly affected and manipulated by these socio-factors, where chosen product in not necessarily the best, but most preferred by others; as well as the chosen partner for project is not necessarily the most fitting, but the one already familiar and trusted in collaborative environment (Liao & Welsh, 2005).

Having an established network means reduced uncertainty of information search and increased likelihood of project or venture success (Leyden, et al., 2014). An extensive network is shown to be among the highest success criteria for companies and individuals

alike, where influential acquaintances can directly affect the availability of opportunities (Lee, 2017). Such network abilities have shown to have positive impact of agreements, which in construction industry could mean better prices (or similar deals) from e.g. subcontractors or consultants.

Danish authors' take on Trust and Social Capital in Scandinavia defines the currently existent approach that Scandinavia, as a role model in social norms, seem to share (Svendsen & Svendsen, 2016). Authors argue about Scandinavian countries having low levels of corruption, social trust, happiness among many other criteria. All this points out to likelihood to cooperate and collaborate in working environment, which in turn would be one of the pillars of establishing a trusting network or forming a successful partnership case (Chowdhury, et al., 2016).

Social capital exemplar is often seen in Danish construction environment, where due to small country size, competitors often know each other and have previous work experience together (Svendsen & Svendsen, 2016). This matter can often have direct impact on formation of partnerships and vice versa – partnerships mean a long-term commitment, so participants want partners they can trust. Same goes to success factor of partnerships, where after a successful project together participants are more likely to collaborate with each other again (Cartlidge, 2006).

Shared Values

Long term project is often a subject of premade set of rules that come with the agreement. Additional to common agreed terms and conditions there can be a multitude of add-ons serving some kind of attribute to the project or participants, one of them being shared values. Shared values can be regarded as aligned end goals and united philosophy for all who participate in the project (Dainty, et al., 2006).

Starting with M. Porter and M. Kramer's concept of "Creating Shared Value" more attention was shown to company's shared values and economy as in a need for further advancement and establishment of bonds between business and society (Porter & Kramer, 2011). Since then, the idea was often tinkered upon, showing the actual need for common universal value usage, regarding social needs and participation (Wieland, 2017). The concept is aimed towards company approach and development regarding the society it is exposed to, but ideas that are being formulated can be transferred to partnership agreements. As shared values often are both, necessities to have for a long-term project, as well as often stemming from already existing ones in participating companies, like in a case of Vandpartner (Appendix - 11.2 ArhusVand interview).

As the shared value system dictates, establishment of common ground and united goals can often be directly leading to increased chances of a win-win situation, when multiple

participating companies are present. The values are not only economical, but as often social and environmental, involving multitude of aspects a company can participate in via social commitments (Porter & Kramer, 2011).

A well taught-out shared value system can be an incredible resource saving way. If participants are willing to work "under one umbrella" of rules and have common objective, the needed decisions can be negotiated in-between of active participants immediately when there is such a need, instead of waiting for higher bodies or standard policies to approve of their actions (Bartlett & Ghoshal, 1989); (Torrington, et al., 2008). This correct utilization of company resources can be seen in an ongoing Vandpartner partnership, where all disputes are being solved peacefully by the people who take direct part in the project (Appendix - 11.1 VAM A/S interview).

Although fondly regarded, shared values alone cannot ensure peaceful coexistence of the participants. As political philosopher Hobbes's theory pointing out, quarrel can start if multiple parties have identical preferences, e.g. profit, or certain contract agreement, and there is insufficient stream for all those desiring, e.g. contractors cannot get paid more than overall budget allows (Lloyd & Sreedhar, 2018). Shared values lead to reduced amount of aspirations, thus intensifying participant focus on available ones, which in turn can lead to more disagreements unless it is mutually beneficial (Moon, 1993).

Establishing Resonance

Establishment of common ground rules plays a crucial role in how and how fast will individuals develop a bond in communication when working together. Depending on preferred values, e.g. trust, participants will be more willing to open up and share their expertise when needed. Partnership setting often demands creation of such bonds, where all involved are willing to work on agreed common goals, often using own unique input for the best result (Thomas & Thomas, 2005).

Even so, having common shared project values would only serve as a mere tool to establish some form of resonance in-between of the participants. One must not forget how complex the construction industry is compared to others. Unlike more mainstream industries, construction cannot rely on sole participator type (e.g. Information Technology industry producing all works online) and the only way to produce results is to involve specialists from multiple areas (Emmitt & Gorse, 2007). Those would include architects, consultants, contractors or suppliers, often multiple firms of same area, have to collaborate to create a final product. There is a need to work together which means establishing common understanding, common ground for agreements and disagreements alike (Emmitt & Gorse, 2007). Often such need is reached using persuasion methods to handle conflicts

and promote participant openness and debate (Godefroy & Robert, 1998), (Harwood, 2002).

Such state can be regarded as resonance between participants, where different understandings and areas of expertise are normalized so participants are able to clearly absorb all information, as well as provide the much-needed feedback. Proper mutual understanding can lead to improved communication, clear mutual objectives and more positive attitudes towards seeking issue resolution with a win-win outcome (Thomas & Thomas, 2005).

Interpretation

Mentioned models and approaches are indeed only developed to explain interactions and information sharing and not the only ways to communicate by themselves. E.g. Linear process, or Shannon and Weavers model was originally created to explain computer interactions and later adjusted to human interactions (Shannon & Weaver, 1949), which some still perceive as a bit of a far stretch (Manning, 2014). Same goes to other models that should first be seen as guidelines on how to perceive existent situation in ongoing communication and later as possible means to improve it.

Another highly important factor to note is the human factor, where every single text and subtext can be interpreted differently by different people. Thus, leading to bigger and bigger gap of clarity in between of communicating parties in the long run. On top of that, the HOW text is said often is more important than WHAT was said and so on, multitude of factors will be affecting each interaction thus leading to difficulties in predicting the precise outcomes (Manning & Kunkel, 2014).

Current case of “Vandpartner” is being done by partiers that already have previous experience in partnerships, so it is expected by the research group that the participants of the partnership are well aware of good communication practices (Appendix - 11.2 ArhusVand interview).

The suggested models serve as a clarification point with suggestions on possible improvements, leading to yet higher performance communication-wise.

Stated models, however, depicts an important role in realization of why certain social choices are made and how they will be continued being made in the future. Partnership in construction industry involves multiple participants that have own pre-set agendas and personal goals, despite the need of following one agreed path throughout the project time. Well-established communication is a key to keep participants on track and motivated, thus reducing any uncertainties and inconveniences during the project (Dainty, et al., 2006).

Communication plays a crucial role in success of partnerships, a lot of it has to do with the span of the given time. Partnership projects tend to be much longer in duration, giving plenty of time for participants to familiarize with each other, thus creating more honest bonds and allowing clearer, faster communication and information sharing (Cartlidge, 2006). Although standard types of projects do not last such long time (in comparison), most of the mentioned practices and models are universal, meaning their attributes can be reused when applied correctly (Cartlidge, 2006). A good example of this would be by establishing participants' need to heavily communicate and brainstorm early on, where all participating parties are present, thus forcing bonding to happen much earlier. Another factor, that heavily influences such practice usage would be the Danish industry itself, as already stated, due to country's relatively small size, construction participants often have previous experience with each other helping to accelerate the bonding process (Svendsen & Svendsen, 2016).

There is a vast number of models from both innovation and communication to be used in order to enhance the ongoing project and collaboration, however, such would have positive effect only when implemented correctly and in good practices. Fostering innovation is crucial for success of a business in a competitive market, and it is up to the individual companies to choose own innovation methods and/or apply known innovation models. Well-established communication on the other hand, is an essential tool for any project/business to succeed and avoid possible pitfalls. Good communication practices can lead to reductions in unnecessary costs, time and possibility of rework, as well as more effective information sharing, which is crucial in multidisciplinary projects.

8 Discussion

Discussion chapter is used to summarise gathered solutions and logically weighting their viability. Due to table-condensed information it is necessary to logically reason why these solutions would be right choice for possible implementation and why companies should even consider them.

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Table 8.1 is a total list of attributes, that have a potential to be extracted from partnership practices and be implemented into more common project types. Total 10 of attributes, among which two (Innovation and Communication) are major ones, were gathered using interviews with VAM A/S and Aarhus Vand during the meetings, and later expanded on with following report chapters based on gathered relevant literature. Some of the attributes are "soft" or intangible and can often intertwine thus appearing together in certain cases. The attributes are to be mentioned being case sensitive having varying impact depending on project or the participants, thus should be seen as possible improvement areas.

Attributes table 8.1 is listing possible implementation methods for regular projects in column of "Suggestions". Due to relevance of the attributes, most of them are at least partially already used in regular projects, however, they are listed as areas of improvement to be looked into. As projects and their participants tend to greatly vary from case to case, it is important that these attributes are seen as areas to work on instead of following them blindly. Each project is a unique case and each of them will require a varying set of attributes for more positive outcome.

Major attribute - Innovation, is created as a result of trying to solve a problem and the desire to stay ahead of competition. Management should assume work culture that would inspire innovation and nurture it by openness and management techniques. Environment, where employees are empowered to solve problems, is a motivator to teams (Thomas & Thomas, 2005). Among many possibilities, it can be created by implementing a process that would help the combined team to question how they execute their work and what positive changes could stir new ideas (Thomas & Thomas, 2005). Suggestion for that could be another workshop or an *idea bank* – a practise of gathering ideas within Vandpartner. Additionally, tools like value management or lean thinking should be considered (Thomas & Thomas, 2005).

Second major attribute Communication can be understood as "*the oil that helps the wheels of a project turn smoothly"* (Petersen, 2013). Among many practices to establish a successful communication, several would be through establishing well developed communication links, as:

- Clearly defined contracts
- Mutual goals
- Fostering trust, respect and honesty, reliability
- Team-building
- Stakeholder involvement

Other solution would be developing communication plan – a dynamic document used for managing and controlling planned communications (Petersen, 2013).

Following table 8.1 lists the minor attributes, which can be extracted from successful partnership practices. Table columns are indicated as list of Attributes following with Literature, giving theoretical background and suggestions, offering possible measures to take towards implementing related Attribute respectively.

ATTRIBUTES	LITERATURE	SUGGESTIONS
Changing the Work Culture	It can be difficult to make people change their ways of working or communicating. Businesses should try to begin understanding in which areas, why and how collaboration-related culture brings attributes. Companies could consider altering their organisational structures and cultures towards promoting leadership style that supports collaboration and openness (Wilkinson, 2005).	Be mindful of the fact that each time a person is confronted with a change they perceive as negative or unwanted, they might go through a course of emotional responses (Petersen, 2013). - Consider Lewin's 3 phase model: "Unfreeze – shape – refreeze" (Appendix - 11.3 Supplementary models)
Continuous improvement	Continuous improvement is an evolving pursuit of adding value by reducing waste. Devote time during initial workshop to define key opportunity areas (Thomas & Thomas, 2005). Benchmarking can also be used to supply with a well-developed method to find new ways for improving performance; it can be used during workshops as well (Bennett & Peace, 2006).	Consider tools like value management; risk management; lean thinking; cross organizational learning (Thomas & Thomas, 2005); Other tools to consider: Continuous improvement cycle (Appendix - 11.3 Supplementary models)
Idea bank	It is natural that employees often want to contribute to the better good of their company. One way of doing it is by	Designing an interactive form of idea generation, possibly as a separate email or a review program. Employee motivation is

	providing useful ideas that could reduce work related problems or difficulties (Alexe, et al., 2014)	needed to successfully generate ideas; thus, this practice should be crafted with ease of usage and clarity in mind (Appendix - 11.2 ArhusVand interview).
Shadow Partner	Originally a KPMG (one of Big Six accounting firms) practice. The idea is to efficiently leverage expertise and knowledge in the company (Liebowitz & Beckman, 1998).	Take example from Tunstall Western Bypass case study: For each member of staff, designate a 'shadow partner' – a person from opposite team with whom they could directly communicate. If the problem cannot be resolved with a shadow partner, it is passed line up (Construction Industry Board (London) Working Group, 2001)
Teamworking / *What is best for the project*	From National Museum of Australia case, consider adopting the *what is best for the project attitude.*	Perhaps consider having a workshop dedicated to teamworking. Identify possible threats to teamwork and find solutions to avoid it. Possible threats: - Individualism: avoid putting personal needs above those of the team; avoid 'Team-Star' of 'Me First' attitudes (discussion topic) - Gender: research shows that men and women view teams differently. Discuss expectations and work culture in open-mind environment - Cliques: a group within a group, formed to achieve own goals (discussion topic) - Lingering grievances: anticipate that when people work together, conflict may

		arise in one way or another. The importance is to not leave 'bleeding wounds', but instead resolve it and practise honest communication - Lack of rewards: if an organisation wants its team to shine, think of ways for possible reward (Garner, 2012). - Discuss other threats in teams
Transparency / Involving the public / user friendliness	All around the globe construction sector is infamous for its lack of transparency; however, transparency is a great tool for creating trust between different stakeholders through verifiable actions (Nijhof, et al., 2009)	Nijhof, et al. (2009) suggest two routes for improving transparency: either by improving information stream prior and during the contract, or by improving transparency through actions of the company. Inspiration can be taken from case study of Miami Port: the public was involved, and people were educated about the project.
Trust	Trust between partners requires the ability to be reliable – when someone indicates that they will take certain actions, others know it will be done (Bennet & Peace, 2006) Trust might take years to build and a single thoughtless action to shatter it. It can be very well expressed through formula by Dr Tom Sant: Trust = Positive Experience divided by Risk.	Trust will increase as team members become more honest and open towards each other. Building trust can be done through three steps: 1. Initiate trust: define value; reduce cut-throat mindset 2. Build trust: keep promises; reduce monitoring Maintain trust: sincere feedback, no-blame culture, focus on solutions (Thomas & Thomas, 2005)

	Positive experience can be practiced through mutual respect, lesser defects, completing projects on time… (Thomas & Thomas, 2005)	
Workshops	The reason for workshops is to build a unified team from separate companies, ensuring mutual understanding and preventing cellar-mindset culture. The workshop should not be delayed more that it would be unreasonable, or the date should be set in advance of tendering (Thomas & Thomas, 2005). All parties, capable of influencing the outcome of the project, should attend the workshop. It is expected the workshop will require two days and will be held in setting where people can be further from their work space to fully concentrate on the project (Bennett & Peace, 2006).	Build a clear agenda focused on three essential features by Thomas & Thomas (2005): - Mutual objectives - Problem resolution - Continuous improvement Work together to resolve dilemmas and problems to ensure no personal grudges or personal clashes are developing (Bennet & Peace, 2006). A great idea would be to have a facilitator who aids people in broader thinking and concentrating on the general success of a project (Bennett & Peace, 2006).

Table 8. 1 - List of Attributes

The listed attributes are not unique to partnership projects by any means. However, previously covered cases indicate the prevalence of such practices in longer term projects as compared to standard contract type cases (Saussier & Brux, 2018). Attributes are just areas of potential development that are worth investigating, taking into account that projects are unique thus would require different set of such attributes integrated in order to benefit. Most of these attributes can be seen as stemming from either communication, innovation or mixture of both. And in order to benefit from any possible improvements from integration, such elements have to be stripped down until a bare core, indicating the exact useful elements to take on.

The length of partnership collaborations is arguably the main factor of why such attributes can easily prevail, compared to standard project cases (Calabrese, 2008). Due to continuous multi-year contracts, participants are bound to endure many clashes in work

ethics and opinions (Thomas & Thomas, 2005). However, such interactions can often naturally lead to some of the attributes developing in the project, e.g. trust forming when participants learn about each other more during the prolonged communication (of any form). The differences in project length would explain, why some of attributes are not being integrated into standard projects of daily basis (Hodge & Greve, 2005).
Regular length projects, as compared to partnership cases, can benefit from the same attributes, however the conditions for that should be developed, keeping in mind that some regular projects already have similar conditions or even use some of the attributes. Most of the attributes are implemented due to repetition of promoted practices, which only can work as well in a shorter span, but might not be used doubting their necessity. Increasing number of workshops whilst introducing to promoted practices at the very beginning of project can lead to more transparent, more cohesive work among participants. If the openness among professionals is promoted from the very beginning, participants will be more likely to open up to others and provide necessary expertise (Dainty, et al., 2006).

Attribute integration can be done with minor changes to how the projects are being done. As listed, attributes are mainly intangible and work-culture related, which means they can become more relevant in settings, where information sharing and trust are more common among the participants. Additionally, some of the attributes can be developed in a company setting (such as trust, transparency, shadow partner, etc.) and then encouraged to be used in projects thus expanding the range of involved members instead of forcefully making workers to adapt to work changes at the beginning of the project (Kesterson, 2018).

Setbacks, such as lack of trust are well grounded, knowing that each company has to compete for every project trying to find an edge against the competitors in order to win. Often this edge is expertise of professionals and it is only natural that company practices would be focused on preventing a possible loss of such edge. Thus, it is important that mere suggestions, as in this chapter are weighted by practices to see where their limits are regarding implementation of new work ethics, transparency, readiness to open up to market. It can be argued that in a case of need to open up and share expertise and work secrets with others, company might only teach their competitors the best practices, as well as learning such from the ones they are opening up to (Kesterson, 2018).

To keep validity of this report it was chosen to give one example of possible integration of the attributes. Additionally, integration of some minor attributes possibly can be clearly seen by industry professionals and should serve as a steering wheel to which direction it is worth focusing on. Out of the attributes, a viable combination was chosen to be used as an example. Proper usage of this combination should lead to positive results regarding

communication and innovation factors in new and/or ongoing standard projects. The combination would include several parts - a change in contract report leading to changes in everyday work; and assistance for the participants to adapts to those changes.

Original idea of the contract addition stems from the very beginning of the research process, later to be reinforced during meeting with representative of Aarhus Vand confirming that the partnership indeed is using a similar approach (Appendix - 11.2 ArhusVand interview). Then the idea was saturated on how a minor addition to a contract could lead to participants needing to share information and expertise instead of keeping "trade secrets". Thus, not leading to participants possibly losing in-house secrets, but collecting additional information and refining own methods to more applicable practices instead.

To build up on such a statement would mean that participants not only would have to change own work practices, but willingly share company's trade secrets, as it looked from the first glance. Yet, during the interview with Aarhus Vand representative, it was again reinforced as not true and such sharing often only leading to participants gain new knowledge about own field instead (Appendix - 11.2 ArhusVand interview). Most plausible way would be to continue using standard contracts for the projects, whilst adding a minor variation – an addition requiring participants to share expertise of the best practices to deliver the most suitable project as the end result.

Such addition would force participants to be bound by the contract to deliver the best they are ought to, and would also include the need to share and receive new insights, thus formulating best practices in each project using such method. Naturally, the resistance from first time participants is expected. Both the interviewed representatives from Aarhus Vand and VAM have mentioned it as an occurring issue respectively (Appendix - 11.1 VAM A/S interview;11.2 ArhusVand interview).

Contract binding participants to do so, might not lead to the desired result, which in our case is free information flow. Thus, the next step in integration has to be taken – added seminar(s) for the participants at the very beginning of the project aimed to present the best practices, already tried examples and give a push in trying to do so.

Some of the good construction practices are using workshops at the very beginnings of the projects, thus establishing connections between participating parties and leading to increase in project coherence (Dainty, et al., 2006). Suggested seminar should be carried by external professional for unbiased supervision. It can be done in a similar, friendly setting where participants are expected to commute with each other, establishing bonds and sharing information of their own expertise at the very beginning. Such seminar(s)

could require participants to do e.g. mini project in one evening, requiring them to use own practical background thus leading to them being more comfortable in doing so when discussing real issues later on (Dainty, et al., 2006).

In addition to seminars, printable material, such as special guidelines can be prepared in a form of a booklet or similar. Such material can include expected steps when communicating with people from different practices, best ways of sharing information and gathering feedback on issues to tinker upon. Such guidelines can be used throughout the project as each individuals' go-to material when in a need to gather certain type of feedback (HOP Associates, 2004).

Suggested solution of minor contract variation and additional seminar(s) was chosen due to its practical nature, where although implementing changes will cost resources, it can be seen as an investment with future attributes. Additionally, seminar setting would already be familiar to companies that use workshops, which already are as the best suitors to try this suggested change altogether.

As the report problem formulation states, the topic is as of integrating accepted practices from one contract form background to another. Partnership contracts have quite a few of positive aspects that standard contracts seldomly possess. Nonetheless, partnership contracts come with own setbacks so the most viable solution was looking into positives that could be extracted and used in standard contracts. There is a multitude of factors to take into consideration, arguably strongest one being human factor, where resistance to change often occurs (Lines, et al., 2015) and economical, where companies often are not willing to deviate from standard, already profitable practices (Lines, et al., 2015).

9 Conclusion

Conclusion chapter is used to review gathered information and re-establish a clear path on how this report was made. This chapter serves as a reasoned summary of the highlights throughout the report.

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This report was formed by focusing on a certain possible improvement area in construction industry – contract types and works specifically related to them. It was decided to look deeper into why there is a certain deviation among contract types; and could benefits from more specialized type be extracted to more general ones. The report was kick-started by meetings with two representatives from companies, currently involved in an ongoing partnership contract. Partnership contracts have shown alternative methods in certain work areas, indicating more positive end result and increased satisfaction from participants in successful cases.

Report was done by analysing the current case situation in Denmark and countries with similar development standing. When meeting representatives from VAM A/S contractor firm and Aarhus Vand public entity respectively, a vast amount of information was gathered. This information, as a primary source, has served as a cornerstone for whole project to develop further on. To expand on the ideas, additional information was gathered from similar western economies, thus relating to Danish one. This additional information was gathered as overviews on how those countries coped with partnership over the years, as compared to Denmark, as well as how it worked out on project level, when comparing it to ongoing Vandpartner collaboration. Gathered information led to the problem formulation and thus a further direction of the report:

What attributes of strategic partnership can be extracted and reused by industry for future benefits?

Although bringing positive results and multitude of benefits, partnership contracts seemed not to be so often used due to the downsides (such as entry barriers, specific demands regarding trust, etc.) they bring along with the attributes. As construction industry is known for avoiding unnecessary changes and risks (Orstavik, et al., 2015), it was decided to try and extract what partnerships are good at for companies, that are not willing to go through all the hustle to establish a functioning partnership.

Following analysis of construction involved entities (Client, Contractor and End-User) has led to a summary of the attributes, whereas a total of 10 were indicated as having clear positive impact if implemented correctly. Two of the attributes were indicated as major – innovation and communication, following by additional minor 8, which are more situational and case-sensitive. Most of the listed attributes are no new age material, but well known, performance and result increasing practices, that often tend to be neglected when ignoring their positive aspects while aiming to cut down on costs and time.

Focus area throughout report was kept on searching for possible small implementations in every day work, which could have a snowball effect and create more productive work environment with only little alterations to everyday work. Attribute implementation idea seemed most plausible due to minimal expected resistance if implemented one at the time, as well as being case sensitive and encouraging practices to implement only most beneficial ones for the situation.

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11 Appendix

11.1 VAM A/S interview

[00:10] How do you describe partnering?

I would describe from more historical advantage point which is that usually you have project- oriented contracts, they are time constricted and then you start making contracts with the same people and getting benefits of working with same people throughout the projects. In part of the industry we started doing partnering, which is creating this layer that says that "now we're in it together so we share, for instance, if there is any profit or there's not" and what I think what's important especially the contact we're in, that we have the strategic level on top of that, so there we are actually working towards some goals. It's not succeeding with the projects, but it succeeding with overall partnering concept. You have some structures which are on more strategic level which enables you to work more between contractor and planner and whatnot.

[02:07] So it looks like VAM enters strategic partnerships is very natural way, you just grow towards it, right?

We were part on the first concept the Aarhus Vand did. We have 3 years on this one, 6 years on last one and 1 or 2 years before that, on first one. We also won two big ones for Favskov Forsyning. It comes naturally for us, because it done it for few years and it is very value-based, coming down from strategic level.

[03:23] As you said you just won another contract, how is the competition for them?

Clients were working on layout for current competition for year and were not finished with it when they started pre-qualification. Before pre-qualification they had several hours where they introduced the project. We had about a month to write the tender, after that they picked out, out of 6 participants for partnering. Aarhus Vand, Favskov Forsyning and "[Inaudible word] Spildevand" were the clients making this bid. Three areas for the bid were Northern Part, Southern Part and Outskirts of Aarhus. In first round we got feedback and what they wanted to be changed. For second round only 4 were chosen. After that they decided to make contract with some of us. It was a long period of 3 or 4 months until we could sign the contract, after the summer was over. It gives a high certainty of set income for upcoming period.

[09:00] Do you take into consideration certain risks when entering partnership with another company?

We don't really have a say who will be another company, although we sometimes know whom we want to work with and or not. The biggest risk is NOT to get the contract, because that would mean being 6 years secluded from such income.

[10:20] Are there criteria on how you can evaluate success of such partnership?

There are multiple goals set, such as Vision, Mission, economical goals, customer satisfaction, innovation, collaboration and quality. Hardcore goals are economy, quality and customers. Innovation is partly hardcore, due to yearly 2% reduce of income. Collaboration is more of something to ensure things are running smooth. Every year we check up on goals and there are prizes depending on how close we are on achieving set goals. We always check up on economy, if that makes sense, and it doesn't only when quarrels between partners are happening. If everyone has to fight for all small bits, you won't get the ability to actually make the best possible projects.

[14:00] Are there any disadvantages so far? (Of this partnering agreement)

Well, we are in middle of this agreement (3 years currently) and there are no complains overall. Of course, there always are some ways to do things better that's why we use innovation to help. Things sometimes get really fast-paced and everyone thinking about economic consequences and that sometimes is opposite to innovation, so that sometimes takes some time to sit down and agree on how to do what's best. It is very people-oriented.

[15:55] Are you familiar with term "Goal Congruence"?

No. (Discussed in follow up question)

[16:50] Does everyone in your company knows the strategy?

I am pretty sure, yes. They definitely know the strategy. It also reflects on our projects, we know to have happy customers we must have happy employees. All comes from this and is aligned for us.

I believe that VAN is a bit of odd company in this conservative industry. Our company tries to look forwards and think on how to stay in front, working on developing strategy and culture.

[20:45] What are the possible negative sides of PPP? What do you see as issues compared to standard?

We would have issues if everyone did partnering for a long time, because you could be secluded from working with such client for a very long time. There are some issues, where company would have to scale really fast to adjust to overall needs of clients. What scares a lot of companies in Denmark it looks a really lot of work and they don't know if it pays off economy-wise. It would only lead to a really fierce competition and with every loss hard to recover from. Employees probably would be jumping from employer to employer, where winning employer would see loser's employees coming to work for him. It doesn't make sense to make partnering for a small project, it is a specific niche.

[24:30] What benefits strategic partnership brings to your company? How does it differ from regular?

Strategic partnership was part of developing the company, we got a lot of insights how to work strategically, in different ways. It was definitely a part of developing business. Strategic part might be easier to handle some issues that arise during projects. A lot of companies from similar area were using more like Partnering 1.0 not 2.0 because they were not establishing trust in between that helped a lot.

[26:30] Do you think it has anything to do with location, Denmark?

I think it had a lot to do with it. We used oral contracts for very long time. It is changing a little bit, but there is still the attitude of this kind. It is something structurally laid into this concept where we divide in two equal parts with our client. You need to have trust for this 2.0 to happen.

[28:35] How do you choose your partners?

Previous experience, it is not our choice though, it is client's choice whom they would like to work with. Partnering experience often plays a role.

[29:50] Are there any other partnering agreements you are currently in besides this?

We have bid on two other concepts in Vejle and [Inaudible] in past 2 years. We lost them to bigger players in the same league.

[31:00] Are there special criteria of partnership contracts compared to standard ones?

Yes. There is an incredible amount of detailing to it. Normally it is really long. On top of that, we have to enter into Partnering Contract, which is strategic, overall one. So Regular one with Strategic one on top. Because it is so long to write tender, we normally don't look into contract afterwards. Current project is the only time we had to come back to contract, because one of suppliers are changing some parts and we all have to agree on the changes, because the price calculation ways are changing. This dialog is lasting for over a year now. The steering group members sit down and have talks about it. We want to avoid creating a burden of being in partnering – that is to no one's interest.

[34:30] How do you approach such disputes?

No one wants to be really hard about it and we use dialogical process where they have to see it from our view and vice versa. No one wants to trap someone in contract for 6 years if they won't earn money from it because who is going to be here for next 6. Disputes are settled with dialog.

[36:30] Are there any issues or changes regarding laws and regulations?
Contract is under EU law. We are as main contractor and have more responsibilities. The way and conditions are pretty much the same. Surplus and losses we divide in two.

[39:05] Do you believe by partnering you get competitive advantage in the market?
It does, but we maybe not that good at utilizing that. Our resource planning is still not optimized. We done it a bit, but we have to become better so it would become an advantage.

[40:20] Do you use any business models as Lean, Agile, etc?
We are not really strict about those things and only take parts we can use. We try to use more of "does it make sense" approach. I try to make company more Agile, company tries to add more flexibility. All comes from the strategy and we need to be prepared for any case scenario.

[42:00] Do you have planning for worst case scenario?
Not yet, 3 years left in this agreement. Most of employees would prefer to work on only partnering contracts and we would like to stay in this field.
When we work in partnering we rather avoid arguments over 20k dkk issue and fix it, so client is happy and comes back for another time.

[44:30] Have you worked with other clients in partnering?
Besides these 3 no, not in partnering type at least.
When we deal with companies that are not used to it, it takes around a year for them to get used to working in this open way.

[46:40] Has VAM ever got an offer to merge or become part of a bigger company?
Not that I am aware of. These decisions are made on the advisor board. There were multiple companies that wanted to be bought by us. We bought one only once, gardener company with older employees.
Culture plays a big role and older people don't really want to change their ways.

11.2 ArhusVand interview

[0:16] In your opinion and your words, how do you describe partnering?

Yes, actually I did find a presentation about that, I was thinking that I could show you. Partnering for us is a special kind of contract. You know you got a frame contract, where you have all the arrangements about the prices and all the law details and things like that and then on top of the frame agreement you put what we call a partnering agreement, and in that partnering agreement we have written down some common ways or working in new way. So it's how we develop together, even though we are competitors together in the contract… in other {comunicipalities} they will be the worst enemies you can say, but during this contract they actually have to develop together, work together, share resource and things like that – so that's the main part of our partnering way that they have to develop their solution together with us. In the partnering contract there is also some **incitamenter**, some kind of goals that you can go after and then you can earn some more if you do very well. So for example when you do have a project you will see what is a target budget, and you will put that target budget together with prices from the frame contract. So if you have so much of this and this and this what would the target budget be. And then when you start the project you actually pay not the prices from the frame contract, but you pay the amount of hours that you work on the project, what you buy in the materials, all the efforts you have got on your project you actually pay for that. And then, if there is a difference between the real project and the target, then the difference we actually share. So that means if you are very good and if you can find a lot of not efficient things in the project then you can take it out, and then just get a cheaper project you can say, still with the same quality, then you are allowed to earn some extra money at the project. And that's one of the things that is very important in those projects. So if you got a problem in the project every part will look at the problem and they will start finding a solution very very fast, because you know – hours, hours, hours – then there's not as much to share at the end. And it is also the same rule that if the project gets more expensive than the target then the difference we have to share as well. So that means that the contractors, all the consultants – they have to pay us money for the project, they have to actually wield it. So that's some of the things we say in this partnering we have this arrangement, you can say, where the project is in focus and you can get benefits out of both of us. If you look at it backwards, then if the project was cheaper than the price, then it would have been the contractor who was having all of it – now we share the benefits.

[4:41] What are the criteria that you select the possible future partner?

That's a very good question, because normally it would only be cheapest price of the project.

[4:53] That's like it is in every tender?
Yes, exactly. But in this tender the price will only be 40%, maybe sometimes 35%, and then the rest will be what kind of organisation do they put into the project, what kind of experiences do they have, {where} have they experience with similar projects {other places} – do they know how to work with a project in the centrum, and then go for the project together not for their own benefits always. And this time we also said that we want to do innovation together as well. So we make small improvements every day and then we also make some very large development things – and that could be solutions, that could be new technology that we are using in the project… and to know about innovation we have also set this time as a criteria as well – 15% of the criteria was how are their experiences with innovation culture, innovation methods, innovation experiences, how can they prove experiences into projects and so on. So that was some of the criteria this time.

[6:25] And this probably could answer how you evaluate how successful was the partnership?
Yes, because we also have some goals and we have a vision. {opens catalogue} For the partners we have a vision here, and all of us are going for the vision; and then we've got these five goals and then we have the partners, and we are going to do all the projects and then every year we make plan for where do we want to develop and what do we want to develop together. And all of these small plans will help us reach the goals. So that's how you make strategy in your companies, we just make the same kind of strategy with fourteen companies.

[7:26] So you are right now in a partnership with fourteen companies?
Yes. This contract period is 6 years, and we started, we {had} tender in 2015, so we started in 2016. So we are 3 years almost in the contract. So half-way.
So we are three utilities {companies}, and then we are now eleven different companies in the same partnering contract.

[7:57] How did the company arrive to the idea or a need to start implementing strategic partnerships? Was it natural road for the company towards partnering or was it just like an idea for innovation? How that happened?
We have made this for the last 15 years, so some of the companies has been in this contract for the last 15 years, but there are always some new companies who are joining this and for them it's maybe a little bit hard to start with it - 'Do I have to tell you what I know a lot about even though you are one of my competitors?' you know. They are not good at it, but it comes very fast, because we say if you share then you will get a double input yourself. And then we also make a kind of {organisation} structure, so you can say

you've got all the small projects with three utilities {companies} and three contractors, and they meet every 3 months and then they have to work together with those development plans. So they sit together in the same meeting and they work together with developing things which they can benefit on all the projects afterwards. So it will be a person from utilities who's leading those meetings. So you get in a kind of form or structure where you have to share your knowledge, or your results, or whatever you have developed.

[9:45] So it's a natural way for a company to continuously grow?
Some of them have learned they really find that this is a place where you can what you want to develop at home, you can actually bring it in here and then you can develop it together with the customer. And you can develop together with some of the competitors in the market that have as much focus on development as you've got yourself and they know all the problems. Project leader from a consultant (three consultants) they sit with the same difficulties all of them, so if you tell about it, then some of them has tried something, some will say 'Aah you can do it this way, but not that way, we do that – it was expensive.' So they get a lot of benefits at their companies by developing together in this partnership. If we say we got this meeting every three months where all the project leaders meet and have this development plan, but all the steering group member they also meet each 4 - 5 months and say 'ok what's next focus we are going to have on this partnership so we can develop new solutions ' or that's how we can get better projects cheaper.

[11:30] So it's like representatives from all these fourteen companies meet every 3 months? Or is it for some certain project?
Only in different areas. So all the consultants meet, all the contractors meet; then we also have these companies {TV-inspection} where they drive into the pipes – they meet as well, so they are only two companies. So not all of us meet, but they meet for their subject area to develop in that.

[12:04] We had a question about goal congruence and overall strategy in the company.
I'm not sure I understand goal congruence.

[12:13] When people and operations work towards supporting the overall strategy of a company. Mission, Vision, Values work together like a pillar to support strategy. So let's start with easier question – do you know the company's strategy?
Yes.

[12:37] Does everybody working in Aarhus Vand know the company's strategy?

Not everybody. Supposedly should know everything about the strategy, but we have 3 major areas in our strategy. That is **growth**, **efficiency** and **innovation**. Ant that the three major part in our strategy, and everybody knows about that. Example is innovation strategy, that's hanging here on the door. This is how we want to implement strategy in our company. So if you want to know what we want to do in the strategy, then the strategy is hanging there. Actually, we are sometimes working in this room {big open area} when we are developing the strategy, so people can hear what their leaders and CEO's are talking about. They don't need to know all the details because in this strategy we've got a lot of projects and everyone is not supposed to know those projects, but they have to know the main direction for the strategy and they know that. And that company strategy we can see if we want to implement strategy then we have to take into our projects in the everyday work, some of it, and that's what we're doing in this partnership agreement. For example, we want to be 2% more efficient every year, and when we get projects, we make them for maybe 200mio. DKK and our hours {Aarhus Vand} are maybe only 1mio. DKK and the rest 199mio are actually something that we buy from others – that's consultants, contractors… so that 2% we have to force into other projects as well. That's why we are saying in the Partnering contract all the companies they get 2% less every year for the same work. And then they have to find new ways of working if they are still going to make the same project with the same quality, and we can't run faster. That means you have to find what doesn't make any value for the project and take it out. You have to introduce new technologies instead of doing manual processes.
So that's why we have the company strategy and we actually take that down to our main work, main projects.

[15:42] So basically Mission, Vision, Values support strategy of the company? And it contributes to forming strategic partnerships?

Exactly. Yes. I will show some directors about this on Friday. {shows PowerPoint for directors} You can see this is the 'future' in the water business – we can't just stand with the head in the ground and hope for something go, we have to work in new ways. {shows diagram for current situation in water market} This is the Danish situation that we get less prices for the water and we have to be more efficient every year, so this is our economic – it will go down, so we have to find new products, new ways of working – and this is **innovation** – it's going to help us with growth and how to become more efficient. And this is the company's strategy, that's the vision for the company and where we want to be in 2020.

These are the three areas that I was talking about: growth, efficiency and innovation. Here you can see 2% every year and then we start some projects at strategic level in the company. But we also have to bring this down to departments. That why these 3 utilities,

Aarhus Vand, Favrskov Forsyning and another, we all were going together to make one partnering agreement and twenty five framework agreements. This is the amount of all of us together in the partnership agreement, and that's the kind of subject that we put into the contract. When you have so many companies, how do we have to work in a strategical way? So we make a common strategy for those fourteen companies. It's a contract for six years with common vision and goals; we got 4 strategic development areas. Every year we are are together sharing our development plans and acting plans, this is our small strategic house {slide} – this is climate, IT, technology, efficiency. Then we have three ways of finding something special to go for – if the project is less than target it's a piece of cake for everyone to share. We also see every year how the companies behave, and work compared to the goals that we have every year. We also make some prices for innovation, so we hope they will not go more for innovation. This is the way we are thinking, we are using Lean, all these small improvements every day, but sometimes you have to make some major leaps, and that's why we are using innovation. And when we innovated new methods we can start making improvements again. And the improvements we are together with all the consultants and contractors, they are working together and making those plans every year and that's three contractors together, even though they are competitors, they have to make development plans for us so that we can go from our mission to the vison.

This is a type of development plan where you can see steps every year what you have to do. Innovation part is more difficult, we got a 6-step innovation process, we show that on the tender so that they can see how the utility thinks innovation, what kind of way is expected to think in. So this is {mumbling}, IT, brainstorming, then you develop, test them and implement it and upscale it. What they have developed in this partnership is allowed to be sold to other customers. Then they will use some of the investments in these development projects.

[21:27] So all of the parties, both the client, Aarhus Vand, and all the participants can use the material?

Yes. Sometimes it's a way of working we develop, sometimes it's something technical or what they can sell. We actually started an innovation group with representatives from the consultants, utilities and contractors. They sit down every 6 week and are responsible for making the structure about the concept, embedding the culture, some of them doesn't have that many experiences with innovations, some of them do, sometimes they have experience only in the leading level and maybe project leaders, but when it comes to men in the field they don't have a method to bringing innovation in every day life, so we have to find how do wee do that. And we also have plan and facilitate an innovative workshop, how do you do that? We have trained some people to do that, so that we wouldn't have to buy specialists for every time.

We also have made some campaigns – if you have a good idea then bring it in. don't keep it to yourself, we have made a mail address, send the idea in and innovation group will look at the idea and find out how we manage that idea – do we start a project, how we have to prioritize ideas and things like that. In this list we got 400 ideas, and everybody can see that.

[24:02] Did you involve students from schools in Aarhus?
No. We do that ourselves, but maybe we could have done that. {some irrelevant chatter} This is how we train the organization in how to work with innovative methods and solutions. {Pictures from workshops} This is where we teach each other, what is Prototyping and what is it good for, how do you manage it, how can you use it in everyday-work. Once a year 110 people, project leaders and those fourteen companies, we meet and share our results and goals and plans for next year and we also practice some new skills. We are thought in prototyping and then we try to do it. We have a big table with {lego} bricks and scissors and we start building small prototypes, and there's a challenge to build a prototype for it. It's amazing to see how people work with those bricks in hands. It's different when everyone is at their computers, always same discussions and conclusions. When you have to build it, you can see another side of the people, and sometimes all the roles change.

[26:50] Sounds like strategic partnership is not only about work and having the project done, but also to establish and maintain a contact between everybody, to build trust.
Yes, trust is main value in this partnership, you have to trust to open up and to share. It's also to give each other a network, because there are so many difficulties every day in the projects, but how do you solve them? If you only know the same ten people, you always to the same solutions. So it's to give them new network and some new knowledge, because they have very different knowledge in this partnership. There are so many specialists here, so use each other to find a solution.
After practising, we take a challenge from our everyday work and take it not for fun anymore, not for learning, but for practice. Then they start building a prototype for one of the real difficulties. […] In the morning we practice, in the afternoon there's real work.
[29:07 elaborates on experiences from one of the workshops]
Something that's very special is how wide is this thinking. This is the blue workers {picture} from three different consultants who are meeting about once a month and talk about what difficulties to they have , and then they try to figure out how they can make solutions. So we do this only on the leaders level, this is also for the workers.
[31:00 elaborates on example how do workers solve problems]
If they can't solve the problem, they can bring it to the project leader board, those who meet every 3 months, and they can make a development project, or they can get help from the innovation group.

When we say that we want an innovation culture, we have all these rays of thinking and methods that we can put into all the ideas and help {irrelevant}.

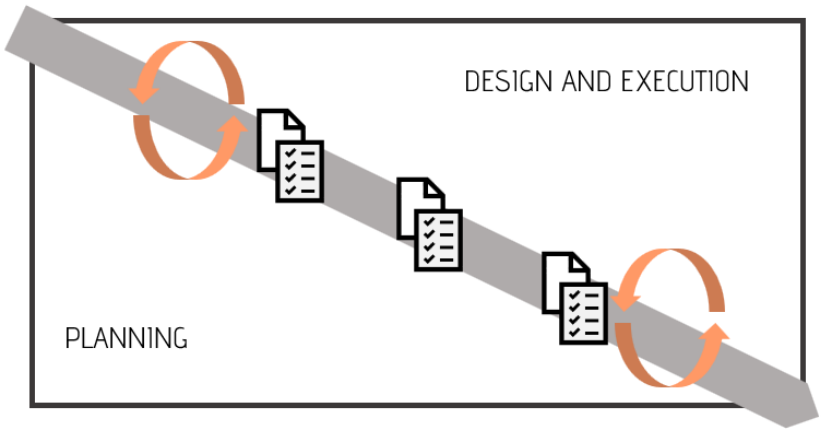
[32:05] If you make some profit, you split it; if you go into minus, you split it. So it sounds like when you have some disputes, or disagreements, you also talk it out instead of going through legal stuff?

Of course in the framed agreement we have how we solve problem. […] We go from Project Leaders, to chiefs to the CEO. But it's not very often we have to use it this way, because very often they solve it by themselves. And another thing is that you have these contracts for 6 years, it means that the 1st year we make five projects together and the next year we make ten projects together, so sure thing [if there is] something about me you don't like [how I manage etc.], so every year we see how is the culture in our projects, we can write down to each other what we don't like or where you could be better at. We improve our work every year by giving each other feedbacks. But with numbers from 1 to 10, like evaluation. So we are able to talk about difficulties and make solutions ourselves.

[33:48] When you have a contract with another party, you probably don't base it on just trust, so how detailed is the contract? How it's different from traditional contracts – is it more specific?

It is quite a bit tender framework we have. It's a different way we work because normally you will plan a project and that's consultant and utility and you make a tender {draws a scheme to illustrate} and then the contractors will win this and you will go in the field. You have to do many tasks and when you start the work in the field, you can see that if something is not written down, you can ask for some extra money for that.

We have it more like this: [see provided graph] plan and field. In the planning you still make the project, but when you have made the solution, you invite the contractors into the project as well. You start making this project and contractors are giving feedback to the consultants. The consultants are calculating the solution almost to the end.



Often, we say that the project is in the middle, you have the consultant, the contractor and the utilities – everybody has to have their focus on the project in the middle.

[36:40] There is no case that the project is designed 100% and sent to the contractor?
No. The contractors are saying 'OK' to the projects before the consultants are leading it. And that means that the contractors have a lot of good ideas how to make the right solutions, because they have all the right experience from the field! And consultants they got all the knowledge how to calculate, but they don't go into the field as much. When you combine those people the you get the best project 1st time. In this plan you can ask how do you make project in the field. Planning here [the graph] is the consultant, they are being a part of the project all the way through, even though […] contractors are responsible. It's a method of working where you use each other's knowledge all the way through the projects. […] We are going from a conflict culture, like 'aha, you didn't specify that' to a culture where we are working together. […]

[38:53] What about tenders? Are they public tenders with pre-qualifications or without?
Yes, it's an EU Tender [because of the amount higher than 37mio]. We had a meeting, we told companies that this tender will be in 2015. In the autumn 2014 we invited all the companies to a meeting and said if they want to hear about the meeting – we will tell them.

[39:31] Would you get into a partnership with a company from outside of Denmark?
No… It's difficult, because we have Danish customers. [Even if the company is here but is Italian etc.] the language that we are working in is Danish, so they need to have Danish people, and all the calculations have to be in Danish. They can hire Danish company ad make some kind of contract with them. But the common language is Danish.
So at that meeting 160 people arrived and over 60 companies. It's good to have those contracts, because you develop so much closer to your own business, you get more efficient company, because you are doing so much development with the customer and with other competitors. So they really want to have those contracts. That's why when you're choosing between the companies, the economic criteria for only 35% is enough to get a low price. We also can see how the economical […] is developing through the years and for when you started working in this way until now we have decreased by 35%. So that's quite a lot. When we have projects for 200mio then we can get a lot more projects for the same amount of [money].

[41:52] Over these many years you've been in partnerships, have you had any problem with any of the partner – for example, some experiences didn't work out?
We had a project leader where we couldn't continue working with him; he wasn't good enough or didn't have the same values for the projects. That was from the consultancy.
When we have twenty projects together, we don't want to see twenty project leaders. You can't make faithful working, you can't have it as narrow as you want to. We want two

project leaders, who have a portfolio with a lot of projects, and they can bring in their colleagues back at home.

[43:17] So do you have a plan B or a back-up plan?
Yes, in the frame contract it's said that we can go out of the contract within 3 months, but we have never done that. We can do that, but they can't.
There's also some things; if we developed new things, what is the price going to be for that at the next many projects? Of course, we have discussions for that, and how do we set the prices. It's something that we find out, but sometimes it has to go to the chief level to find out the right price.
We do have discussion, but it's nothing compared to earlier days [when fighting for money].

[44:16] when talking about sharing expertise – consultants working with people from the field – how does it differ from total contracts (totalenterpris)?
I think they share what they want to share by themselves. Here we force them to share more so that they maybe will do by themselves; they share where they get benefit by themselves.
Here we want them to share on much wider aspects.

[45:02] So you are experienced with these kinds of contracts as well?
Yes.

[45:05] How do you find them [contracts] compared to PPP?
PPP is very often for 10-15 years and is often not as many partners as this and we want to check out the market every 6 years. That's why we don't make these long-term like the PPP contracts.
[…] PPP is often for maintainers of streets for example – maintenance and operation.
We haven't made long term because we want to be a part of it ourselves and we want to be sure there's enough development in the projects/ in the contract. On those contracts the focus is mainly on the price, it's not as much developing as we want to.

[46:56] Do you think you're using a unique way? For example, those 6 years, and that you're lowering the price 2% each year. How did you come up with this?
To start, we have had this contract first for 4 years, then for 6 years, and the new one for 6. First time we asked what is reasonable – and then we said 10% in the next 4 years. When they said it's not going to happen – it actually did. And the next time we had tender we said we want 10% again. So the 1st year it's the price from the tender, and then the next five years is 2% every year. We have done that for 3 periods now. We're not sure what we will do next time, as they said, 'there's only the bone left, no fat or anything'. Maybe for

next time we have to think how we can get more innovation into prices as well; putting something extra but keeping the level the same.

[48:30] We see that on your website you have a Strategic Cooperation with the US. Can you tell more about that?

It's a cooperation between Aarhus Vand and some of the private companies in Denmark, some of them very big, like Grundfos, Danfoss – and they would like to enter American market, but it's very difficult having Danish product, compared to all the American products.

What we do is we have a colleague living there in the States, and he is the one going to the utilities [companies] over there and just talks about their everyday life, or what improvements would they like to have, or what kind of difficulties do they have. In Denmark we're very good with water, the water technology is high level. We provide the utilities over there with how we solve those issues in Denmark, we have some workshops. We visit them, and we invite them to Denmark to see how we are working, and to see our plans. When they decide they want it [Danish solutions] as well, we tell them which kind of Danish industry is developing the solutions for it. So that way we are helping to export technology to the American market. But I am not selling them [the technology], I am selling the experience and Danish solutions, and the companies are in the second row, so to say. It's working.

[51:14] Would you name it a strategic partnership?

It's called Water Technology Alliance. We have it in Chicago, California. We're starting in Hamburg, in Sidney, Australia as well. So, it is a way to use more partnerships to do more exports as well. It's the thinking of bringing people, knowledge together in a way where we trust each other and we benefit from all of it all of us.

The colleague I had was living in the United States for 2 years, he is coming back home, but he's coming back with a lot of network from there. He's been working with some of the universities in the States, because sometimes they also want a Danish solution combined with their American university solution. So, we get a lot of new knowledge back home in Denmark as well, and all of us get benefit.

[52:58] Is there any obstacles or disadvantages in forming such partnerships?

I think the main difficulty is that you have to find out how to form this contract; how many companies do you want to make contracts with and in what kind of way you want to work with that many people; how can you manage to make a strategy with that many companies together – they have different cultures, and they have strategies back in their own companies. Can you imagine how many ways of thinking and strategies we have to combine in partnership? So – how do you manage to make this concept work – that's one of the difficult parts of it, because companies, they are the market, they want to join the

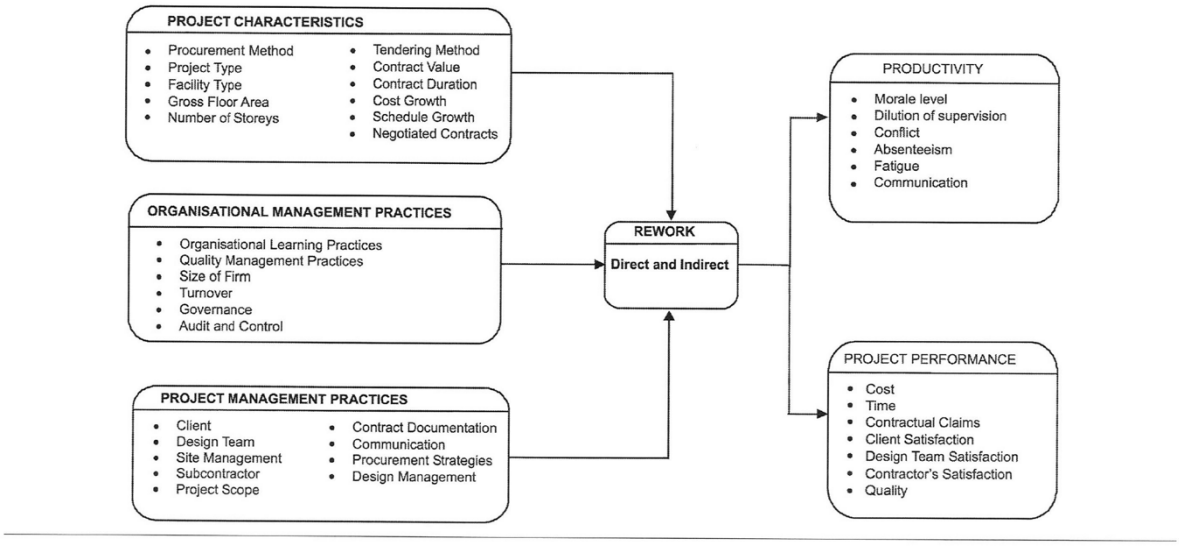
contract as is. Afterwards – how to manage in a way that we get the results? You can't just have a contract and expect that the result will just come up put of the blue. You really have to plan these workshops, to bring them together, to see if they are doing what we want to do. You need a lot of leadership in those contracts, and not only in your own companies, but leading fourteen companies to make new way of working in this business.

[54:54] How would you say Danish market is welcoming to try this kind of approach?

When we started 15 years ago it was very new and very hard, now it's easier. Now they [companies] manage to go into those contracts. But I'm very glad it's new companies all the time we get into new contract, because that would be hard work. It's a balance. I'm glad there's companies that win the next time as well, they use a lot of developing by themselves so that they can win a contract. We want to be sure they are still improving their ways of working.

11.3 Supplementary models

Rework model:



Source: (Love & Edwards, 2004)

Model from Love (2004) presents effects of rework. Effects were divided into two categories: productivity and project performance. It is important to mention that rework does not only affect project economy and quality of end-product. It also affects employees' productivity by, for instance: lowering their confidence in conducted work, initiate conflicts, or increase their fatigue.

Continuous improvement cycle:

Deming's Plan-Do-Check-Act model aids in sustaining continuous improvement, as well as a tool for resolving problems. It advocates that new initiatives/solutions should be planned out and later implemented. As it is still an on-going process, areas for improvement should be identified ('check' phase), and renewed practice ('act') can take place. It can also be a good idea to use PDCA cycle for setting and achieving milestones – within new reached goal, new standard is set, thus ensuring continuous improvement (Basu, 2004).

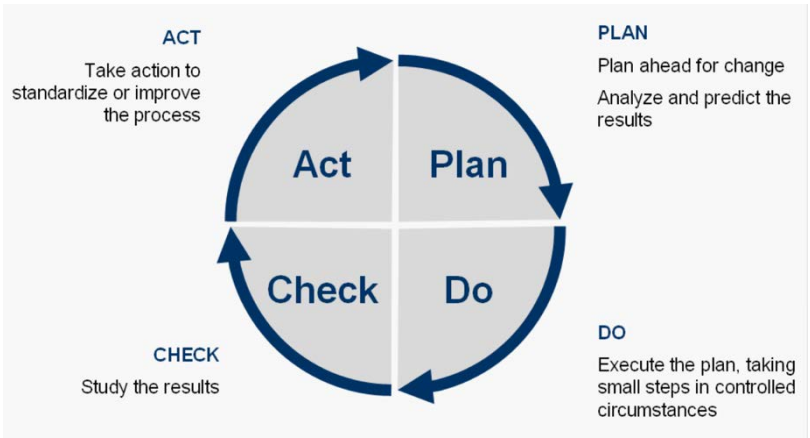


Figure 1 - Continous improvement cycle by Deming

Source: ***Invalid source specified.***

Lewin's 3 phase model:

Lewin was a humanitarian who believed that only through resolving social conflict, was it racial, marital, religious or industrial, the human condition could be improved. He also believed that the key to social conflict resolution was to promote learning and to endorse people to understand and restructure their perceived world. (Burnes, 2004)

Lewin believed, that for successful change, three steps were required: unfreezing – changing(moving) – refreezing (Lewin, 1947):

Unfreeze	Change	Refreeze
		
•Recognize need for change •Prepare for change •Encourage growth mindset, behaviour	•Implement change •Help employees to adapt •Establish mentors, training, role models, benchmarks •Clarify each step	•Reinforce changes •Provide continued support, mentoring •Create need for using new changes in ongoing projects

Figure 2 - Lewin's Change Model

Source: (Mulholland, 2017)

The process is further described in table below:

STEP	WHAT IT MEANS	MEANS OF ACHIEVING
Step 1: UNFREEZE	People have to leave their comfort zone and push themselves to understanding that change is necessary (Lewin, 1951). According to Lewin, in order to break through the wall and leave complacency and self-righteousness, sometimes requires bringing some emotional stir up. That, however, should be done avoiding humiliation, but rather in an open environment (Burnes, 2004) (Lewin, 1947).	- Open discussion - Workshop
Step 2: CHANGE	After 'Unfreezing' people are ready for transition – the planned change (Lewin, 1951). Project team has to create a new development and strategy change.	- Workshop - Continuous improvement cycle
Step 3: REFREEZE	The new change becomes the new norm (Lewin, 1951). The purpose of Refreezing is to stabilise the group and ensure that new behavioural norms are established (Burnes, 2004).	- In organizational terms, might require changes in company's norms, policies and practices and culture, (Burnes, 2004) (Lewin, 1951).

12 Annex

12.1 Factors for successful partnering

Table 4
Factors required for successful partnering (by involvement)

Factors for success	Total	Involved	No involvement	ANOVA	
				F Statistics	Significance level
Mutual trust	4.61	4.72	4.40	2.13	0.15
Effective communication	4.50	4.66	4.16	5.11	0.03
Commitment from senior management	4.47	4.66	4.08	7.04	0.01
Clear understanding	4.45	4.58	4.16	3.63	0.06
Acting consistent with objectives	4.17	4.38	3.72	10.05	0.01
Dedicated team	4.05	4.38	3.36	13.89	0.01
Flexibility to change	4.00	4.17	3.64	4.69	0.03
Commitment to quality	3.97	4.08	3.76	1.73	0.19
Commitment to continuous improvement	3.95	4.21	3.40	10.43	0.01
Long-term perspective	3.86	4.00	3.56	3.12	0.08
Total cost perspective	3.85	3.94	3.64	2.10	0.15
Formation at design stage	3.85	4.02	3.48	2.99	0.09
Good cultural fit	3.83	4.00	3.48	4.24	0.04
Company wide acceptance	3.78	3.89	3.56	1.54	0.22
Technical expertise	3.76	3.85	3.56	1.66	0.20
Financial security	3.69	3.77	3.52	1.31	0.26
Questioning attitudes	3.69	3.92	3.20	11.75	0.01
Availability of resources	3.68	3.79	3.44	2.40	0.13
Equal power/empowerment	3.63	3.74	3.40	1.40	0.24

Table 1 Constitutive Model of Interpersonal Communication as Metamodel

Tradition	Communication as . . .	Interpersonal metadiscursive vocabulary	Intellectual interests	Sample of recent topical, conceptual, or theoretical manifestations
Rhetorical	Art of discourse	Logic, emotion, values, personal and social orders, art, theory as method, presentation, articulation, construction	Words and their power; improvement of practice; values associated with informed judgment; words and action; matters of style, substance, appearance, reality, opinion, and truth	• Presentational and articulated rhetorics (Manning, 2014) • Rhetorical vision (Duck, 2011)
Semiotic	Intersubjective mediation via signs	Medium, sign, signifier and signified, nonverbal cues, icons, memes, meaning, indexicality, referent, language, medium	Understanding from common language; enduring possibilities for miscommunication; correctness and appropriateness of words and meaning; codes and media as neutral channels	• Multimodal meaning (Hood, 2010) • Network, mass, and interpersonal convergence (Jensen, 2010)
Phenomenological	Experiencing otherness	Dialectics, discourse, dialogue, contrapuntal analysis, supportiveness, description, reduction, interpretation, openness, tensions	Needs for human contact; mutuality; differences; dialogue; communication as skill; "the word is not the thing;" objective facts and subjective values	• Interaction theory (IT; Froese & Gallagher, 2012) • Relational Dialectical Theory 2.0 (Baxter, 2011)

(*Continued*)

Table 1 Continued

Tradition	Communication as . . .	Interpersonal metadiscursive vocabulary	Intellectual interests	Sample of recent topical, conceptual, or theoretical manifestations
Cybernetic	Information processing	Information, networks, boundaries, co-ownership, source, receiver, function, feedback, noise, redundancy, management	Information and logic; mind, brain, identity; complex, often unpredictable systems; differences and similarities in humans and machines; linearity, cause, and effect; differences between emotion and logic	• Personal and social networks (Parks, 2011) • Uncertainty and information management (Afifi & Afifi, 2009)
Sociopsychological	Influence, interaction, and expression	Variable, effect, behavior, emotion, personality, perception, attitude, cognition, interaction	Communication indicating or reflecting personality; beliefs, feelings, bias, and judgments; interpersonal effects in groups; humans as rational; mindfulness and mind; perception	• Emotions (Metts & Planalp, 2011) • Supportive communication (MacGeorge, Feng, & Burleson, 2011)
Sociocultural	Production and reproduction of social order	Culture, performance, identity, negotiation, practice, stories, rules and rituals, socialization, sensitization, co-construction	Individuals negotiating identities with society; society and its culture or cultures; social actions; agency and responsibility; social order	• Narrative and autoethnography (Bochner & Ellis, 2006) • Workplace relationships (Sias, 2009)

Critical	Discursive reflection	Oppression, resistance, individualism, ideology, dialectic, paradoxes, historicism, consciousness, emancipation	Circulation of power; freedom, equality, reason, and other similar values; awareness and insight; social order; questioning of objectivity; sites of knowledge	• Heteronormativity (Chevrette, 2013) • Race and whiteness (Herakova, Jelača, Sibii, & Cooks, 2011)
Pragmatist	Community pluralism; coordinating practical activities through reflexive inquiry and discourse	Community, interdependence, discourse, consequences, participation, cooperation, support and control, social capital	Incommensurability; participation; reflexivity and nonreflexivity; unsound discourse practices; applied pedagogy	• Action-implicative discourse analysis (Tracy, 2008) • Social capital and community organizing (St. John & Shepherd, 2004)

Source: (Manning, 2014, pp. 435-438)